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Challenges in Adherence to Magnetic Resonance Imaging Consensus Recommendations in Multiple Sclerosis: A Call for Improved Neurologist-Neuroradiologist Collaboration

Desafios na Adesão ao Consenso de Recomendações sobre a Ressonância Magnética na Esclerose Múltipla: Apelo à Melhoria da Colaboração Neurologia-Neurorradiologia

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Keywords: Consensus; Magnetic Resonance Imaging; Multiple Sclerosis/diagnostic imaging; Portugal
Palavras-chave: Consenso; Esclerose Múltipla/diagnóstico por imagem; Portugal; Ressonância Magnética

INTRODUCTION

The consensus on MRI in multiple sclerosis

Despite major treatment advances in multiple sclerosis (MS), neurologists still face some challenges: the delay in diagnosis and the monitoring of disease progression. Magnetic resonance imaging (MRI) plays an essential role in the clinical management of MS, aiding in the diagnosis, monitoring disease activity, and assessing treatment effects. In 2018 and 2020, the MS Study Group and the Portuguese Society of Neuroradiology published comprehensive guidelines for the use of MRI in MS, detailing the crucial information that neurologists should provide when requesting MRIs (part 1), as well as the suggested MRI acquisition protocols and the structure and content of neuroimaging reports from neuroradiologists (part 2).[1,2]

The recommendations specify that neurologists should provide detailed clinical information when ordering MRIs. For diagnostic scans, this includes symptom onset, clinical signs, and any pertinent history that may affect differential diagnoses. For follow-up scans, the purpose, clinical course, disease-modifying treatment (DMT) history, and any special patient needs, such as claustrophobia, should be noted.[1] On the neuroradiologist's side, the protocol should include non-gapped sequences in the brain and spinal cord at a minimum magnetic field of 1.5 Tesla and assessment should include identification of lesions using two different sequences.[2] Additionally, the report must comprehensively describe the MRI technique, including the magnetic field strength, anatomical coverage, sequences used, gadolinium administration, and comparison with previous imaging when available. The imaging findings section should report lesion distribution, load, gadolinium-enhanced lesions, atrophy, and incidental findings. The conclusion should provide a clear interpretation of whether the MRI criteria for dissemination in space (DIS) and time (DIT) are met accordingly to the McDonald 2017 criteria[3], along with an assessment of disease progression or any therapeutic complications.[2]

Study overview: compliance with MRI recommendations

The primary aim of the study published in this issue of Acta Médica Portuguesa was to assess the compliance with the Portuguese consensus on MRI usage in MS.[4] The study was observational and retrospective, spanning data from seven hospitals across the country. A total of 242 patients diagnosed with MS between February 2019 and December 2022 were included, with 732 MRI requests and reports analyzed. Compliance was assessed across three categories: the clinical information provided in MRI requests, the neuroimaging protocol followed during MRI acquisition, and the content of MRI reports.

The results showed significant discrepancies in compliance, particularly regarding the clinical information provided by neurologists in the MRI requests and the completeness of neuroradiologist reports. Only 28.8% of diagnostic MRI requests fully met the recommended criteria, and follow-up MRI requests fared even worse, with only 3.7% achieving full compliance. Similarly, MRI reports were also incomplete, with less than 5% of diagnostic reports covering all the required elements.

The study also compared the period before and after the publication of the second part of the MRI recommendations in 2020. While there was a notable improvement in the

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specification of MS phenotype in follow-up MRI requests, other areas showed no significant changes. Furthermore, the study compared compliance between public and private healthcare settings. Public hospitals had higher compliance with mandatory MRI sequences, but private hospitals outperformed public institutions in certain aspects of reporting, such as lesion topography and disease progression.

The neurologist's perspective

From the neurologist's perspective, the importance of adhering to MRI guidelines is essential. The quality of the neuroimaging report is heavily influenced by the clinical information provided when ordering an MRI. A description of symptoms, disease history, and any relevant comorbidities or special needs enables the neuroradiologist to tailor the MRI protocol to the patient's specific case. This collaboration is crucial for interpreting subtle findings in MS, where lesions and disease progression can sometimes be difficult to discern. This study highlighted a significant gap in this communication, with nearly 30% of diagnostic MRI requests lacking essential clinical details.

As MS management grows more complex, with evolving treatment regimens, it is vital for neurologists to provide clear and complete information for both diagnostic and follow-up MRIs. The new McDonald 2024 diagnostic criteria (Montalban X *et al,* 2024 – oral communication soon to be published) further emphasize this need by allowing for MS diagnosis in the context of a typical clinical presentation with just four topographies of typical demyelinating lesions, or even in the absence of MS-specific symptoms, with only two topographies involved, as long as at least six lesions (or the majority, if fewer than six) show a central vein sign, an emerging radiological MS biomarker. Notably, the requirement for dissemination in time (DIT) is no longer mandatory for diagnosis. This shift reduces reliance on symptom-based diagnosis and leverages the significance of high-quality MRI data. Therefore, neurologists need to receive detailed, standardized feedback from trusted neuroradiologists to ensure that MRI findings are interpreted accurately and can inform timely, confident clinical decisions.

The neuroradiologist's perspective

From the neuroradiologist's perspective, the adequate interpretation of MRI findings relies heavily on the consistency and reproducibility of imaging protocols and reporting. It is vital to implement protocols that enable reliable longitudinal comparisons and disease monitoring, alongside accurate reporting of both technical parameters and imaging findings. While this study demonstrates that the majority of brain and spinal cord MRI examinations included all mandatory sequences (82.5% and 71.1%, respectively), it also revealed poor compliance with technical requirements, which were met in fewer than 1% of the reports. This is concerning, given the established impact of the magnetic field strength, the accuracy of different sequences, and the timing delay of post-gadolinium acquisitions on the sensitivity for detecting and interpreting MS-related abnormalities on MRI.[5] Overall, these findings underscore the need to increase awareness of consensus recommendations for neuroimaging in MS to achieve higher standards of reporting.

Furthermore, neuroradiologists should recognize that MS is an evolving field, and as patient monitoring increasingly targets more complex processes, such as neurodegeneration and smoldering inflammation, the demands on neuroimaging will continue to grow. The upcoming diagnostic criteria will introduce new lesion topographies and specific imaging features – central vein sign and paramagnetic rim lesion, another emerging radiological MS biomarker – to diagnose MS, which will require the addition of dedicated sequences into imaging protocols and the inclusion of additional information in MRI reports. These coming changes highlight the need to revise the existing consensus recommendations and suggest that future guidelines will involve more complex protocols and more comprehensive reporting standards. Consequently, multidisciplinary collaboration is becoming increasingly important, and neuroradiologists and neurologists should be encouraged to work closely together.

Improving MRI practices in MS

In conclusion, the results of this study suggest that, while some progress has been made in aligning clinical practice with the Portuguese consensus on MRI in MS, significant gaps remain. These gaps highlight the need for further improvements in the communication between neurologists and neuroradiologists.

Magnetic resonance imaging has become a fundamental tool in the evaluation of MS, particularly with the emergence of new biomarkers like the central vein sign and paramagnetic rim lesions, which enhance diagnostic specificity. The upcoming McDonald 2024 diagnostic criteria will place even greater emphasis on MRI, underscoring the need to reflect on how we can optimize the MRI workflow in MS care. This study is a call for standardized, high-quality MRI protocols and reports, which are essential for accurate and timely MS diagnosis, treatment planning and follow-up.

AUTHOR CONTRIBUTIONS

MDS: Conceptualization and writing of the manuscript.
DB: Writing and critical review of the manuscript.
All authors approved the final version to be published.

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MDS has received speaker honoraria from Novartis and

Merck, has participated in an advisory board of Roche and has received support for attending scientific meetings from Bristol-Myers Squibb, Merck, Pfizer, Roche, and Sanofi.

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Sarcoma de Kaposi: Entre a Pele e o Mundo

Kaposi Sarcoma: Between the Skin and the World

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Palavras-chave: Portugal; Sarcoma de Kaposi/epidemiologia
Keywords: Portugal; Sarcoma, Kaposi/epidemiology

O sarcoma de Kaposi (SK), outrora considerado uma entidade rara em regiões como Portugal, reaparece com um perfil clínico e demográfico cada vez mais complexo. O estudo agora publicado na Acta Médica Portuguesa, por Pereira do Amaral *et al*, do Serviço de Dermatologia do Hospital de Santa Maria, referente a 113 doentes seguidos no mesmo hospital entre 2014 e 2023, confirma essa mudança silenciosa: uma prevalência elevada do subtipo epidémico, uma proporção significativa de doentes de origem africana (50,4%) e manifestações clínicas muitas vezes avançadas à data do diagnóstico.[1]

Este novo trabalho vem enriquecer o panorama nacional sobre o SK, consolidando um corpo de evidência construído nos últimos anos em diversos centros hospitalares portugueses. Desde o trabalho de Junger,[2] que analisou 118 casos no Hospital de Santa Maria ao longo de 19 anos após a introdução da terapêutica antirretrovírica (HAART), já se evidenciava a predominância do subtipo epidémico e o impacto da imunossupressão associada ao VIH. A revisão clínico-patológica de Resende *et al*,[3] no Hospital Egas Moniz, o estudo de Calvão da Silva *et al*,[4] em Coimbra, e a proposta de abordagem multidisciplinar de Mansinho,[5] complementam este quadro nacional e refletem uma evolução organizacional significativa no reconhecimento, diagnóstico e tratamento do SK.

Comparando com a literatura, os dados portugueses são consistentes com estudos epidemiológicos internacionais que mostram um aumento da incidência do SK epidémico em países de rendimento mais elevado, sobretudo em populações migrantes e em doentes VIH positivos.[6,7] Estudos africanos e asiáticos[8-10] reforçam a diversidade clínica do SK, com variantes histológicas mistas e apresentações extracutâneas frequentes. Estudos como o de Marcoval,[11] no Mediterrâneo europeu, evidenciam mudanças nos perfis clínicos e terapêuticos, paralelamente ao que se observa em Portugal, refletindo transformações nos fluxos migratórios, nos determinantes sociais da saúde e no acesso à terapêutica antirretrovírica.

A inclusão da imagem de uma obra de Domingos Rebêlo, reconhecido pintor açoriano cuja arte frequentemente retratou a vivência da emigração, reveste-se de particular significado neste artigo (Fig. 1). Esta escolha iconográfica transcende o valor estético: simboliza as profundas transformações sociais e demográficas que moldam a epidemiologia das doenças dermatológicas ao longo do tempo.

Se, no passado (e ainda no presente), patologias como a sífilis e a doença de Hansen acompanharam rotas migratórias, estigmas sociais e dinâmicas de exclusão, hoje, entidades como o sarcoma de Kaposi espelham, igualmente, fenómenos globais como a mobilidade populacional e a crescente complexidade na gestão de doenças infeciosas e dermatológicas em contextos multiculturais.

Analisar o passado é também uma forma de antecipar o futuro. Quando a sífilis se disseminou pela Europa no final do século XV, os franceses culparam os italianos, os italianos culparam os espanhóis, e quase todos apontaram o dedo à América recém-descoberta. Séculos depois, bastou um apagão digital em partes da Europa para que a Rússia fosse, de imediato, apontada como possível responsável. Esta tendência humana de atribuir culpas externas a fenómenos complexos — sejam eles infeciosos ou tecnológicos — revela tanto sobre a nossa forma de lidar com o medo como sobre os mecanismos de construção do 'outro'. Doenças como o sarcoma de Kaposi não são apenas expressões biológicas; são também espelho das estruturas de poder, da mobilidade global, da nossa memória coletiva e dos preconceitos ainda por resolver.

Portugal é um território moldado historicamente por movimentos migratórios. Desde a emigração em massa nas décadas de 1960 e 1970 — em fuga da guerra colonial, da pobreza e do regime autoritário — até à recente viragem para país de acolhimento, sobretudo a partir dos anos 1990, com a chegada de comunidades oriundas de países lusófonos e, mais recentemente, de contextos africanos e asiáticos, o país testemunhou um profundo reordenamento demográfico. Estes fluxos migratórios trouxeram consigo

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Figura 1 – "Os Emigrantes" é talvez a tela mais conhecida de Domingos Rebêlo. Pintada em 1926, retrata um grupo de pessoas no cais de Ponta Delgada à espera de deixar os Açores em busca de uma vida nova no estrangeiro, tendo-se tornado uma representação icónica da experiência emigrante. Mais do que uma simples cena de partida, esta tela é um retrato coletivo de incerteza, esperança e identidade. O olhar melancólico das figuras centrais, protegidas por um guarda-sol negro, contrasta com a vivacidade dos elementos que as rodeiam: a criança descalça, o registo do Senhor Santo Cristo, o instrumento musical, as laranjas — símbolos de pertença, fé e cultura insular. A aglomeração de corpos em pausa, à beira do embarque, evoca o limbo entre o conhecido e o desconhecido, uma metáfora poderosa para os estados de vulnerabilidade associados à emigração e, por extensão, ao adoecer em terra alheia. Esta pintura não é apenas um testemunho histórico: é um espelho da condição humana em trânsito, atravessada por determinantes sociais da saúde que hoje continuam a influenciar a distribuição e o impacto de doenças como o sarcoma de Kaposi. Reconhecer estas interligações exige mais do que competência clínica: exige sensibilidade histórica, atenção às vulnerabilidades sociais e uma prática médica verdadeiramente inclusiva, capaz de antecipar fenómenos emergentes e garantir equidade no acesso aos cuidados.

Quadro "Os Emigrantes", de Domingos Rebêlo, 1926. Óleo sobre tela, 235 x 295 cm. Colecção do Museu Carlos Machado, Ponta Delgada.
Fotógrafo: Fernando Resendes.

novos desafios para os sistemas de saúde, nomeadamente na identificação de doenças raras ou negligenciadas, muitas vezes com apresentações atípicas, e frequentemente agravadas por barreiras linguísticas, culturais e administrativas no acesso aos cuidados.

A presença significativa de doentes de origem africana na coorte portuguesa recentemente estudada, associada a formas clínicas avançadas e à imunossupressão por VIH, é um exemplo contemporâneo desta realidade. Tal como as 'placas' e 'nódulos' do sarcoma de Kaposi emergem na pele como sinais de uma agressão mais profunda, também os fenómenos migratórios revelam fraturas sociais e sanitárias que se tornam visíveis na prática clínica diária. É fundamental que os sistemas de saúde saibam ler estes sinais e mantenham a adoção de estratégias inclusivas, multiculturais e sustentadas para garantir equidade no acesso e continuidade nos cuidados.

Neste sentido, a obra de arte serve como ponto de ancoragem simbólica entre o passado e o presente, entre o território e o mundo, ajudando-nos a refletir sobre como a

pele (o maior órgão do corpo humano) — e as doenças que nela se manifestam — continua a ser um espelho fiel das tensões sociais, económicas e culturais que atravessam a Medicina: uma superfície em que a pele se torna tela, território e testemunho. Porque, no final, acima de qualquer avanço científico ou pressão sistémica, no coração da verdadeira Medicina, deverá permanecer o gesto simples e essencial de cuidar — com humanidade, com escuta e com presença — aquele que sofre.

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Value-Based Geriatric Care: Good News from Portugal

Cuidados Geriátricos Baseados em Valor: Boas Notícias de Portugal

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Palavras-chave: Geriatria; Prestação de Cuidados de Saúde; Qualidade de Cuidados de Saúde

INTRODUCTION

Portugal has a rapidly aging population, underscoring the critical need for specialized geriatric care. While geriatrics is not yet recognized as a medical specialty in Portugal, the Portuguese Medical Association acknowledges it as a competence.[1] Recent initiatives, such as the PROGRAMMING COST Action 21122 event in April 2024, entitled "Top 10 Value-Based Geriatric Care Models and Interventions: Towards a Sustainable Healthcare System, Improving Older Adults' Quality of Life"[2] have played a pivotal role in highlighting value-based care models (focused on improving patient outcomes while containing healthcare costs). Throughout the event, multiple sessions under the banner "Good News from Portugal" highlighted successful geriatric care models and interventions currently being implemented across the country (Table 1). While not exhaustive, these contributions were subsequently developed into the present manuscript, which brings together some of the most recognized and well-established approaches in the field.

Even though geriatric medicine is an emerging field in Portugal, several individual and collective initiatives have been developed. In this article, we will highlight the current status of the leading geriatric care models in Portugal.

Comprehensive geriatric assessment-based care models

In Portugal most doctors who have training in geriatric medicine carry out a comprehensive geriatric assessment (CGA) in various settings.[1] However, this is often done informally, without established guidelines or dedicated geriatrics departments. Guidelines published by Núcleo de Estudos de Geriatria da Medicina Interna (NEGERMI) and Grupo de Estudos de Saúde do Idoso/Geriatria (GESI) have helped physicians adopt systematic approaches to assessing older adults' functionality, cognition, emotional state, and nutrition. Despite progress, challenges remain, including a lack of standardized guidelines and geriatrics clinics conducted by non-specialists.

Currently, Portugal has nine geriatrics clinics, three oncogeriatrics clinics, three orthogeriatrics units, and two acute geriatrics departments. Although setbacks such as the COVID-19 pandemic have impacted services, plans are underway to expand specialized care offerings.

Falls prevention programmes

Fall prevention strategies operate at national, hospital, and community levels. The National Patient Safety Plan 2021 - 2026 includes measures to reduce falls in healthcare settings, while hospital guidelines, such as the use of the Morse Fall scale, help identify and address risks. At the

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hospital level, programs like "*Quedas*" at Unidade Local de Saúde (ULS) do Médio Tejo analyze and mitigate falls during hospital stays. Initiatives such as the "Age-Friendly Health Systems" project at Hospital Arcebispo João Crisóstomo focus on improving mobility and educating caregivers.[3] Community programs, including "*AtivaMente Bonfim*" in Porto and "*Academia de Mobilidade*" in Lisbon, offer physical activity and education to reduce fall risks.

Despite these advancements, access to fall prevention programs remains unequal, mostly concentrated in urban areas.

Orthogeriatrics

Orthogeriatrics in Portugal has advanced since the first dedicated unit was established in 2015 at ULS Gaia-Espinho,[4] enabling a multidisciplinary approach to older patients with orthopedic trauma, especially hip fractures. While more orthogeriatrics units have been created, many depend on individual practitioners and were disrupted during the COVID-19 pandemic. Currently, few hospitals with orthopedics trauma services have formal orthogeriatrics units, with others relying on internal medicine specialists upon request. The Fragility Fracture Network (FFN)-Portugal Orthogeriatrics Working Group is working on a national hip fracture registry and guidelines to expand orthogeriatrics units, underscoring a commitment to specialized geriatric care.[5]

Oncogeriatrics

Cancer is increasingly common in older adults, requiring specialized geriatric oncology management. Since 2019, the Portuguese Society of Oncology's Working Group on Oncogeriatrics has promoted the field through educational events and training. Hospital de São João in Porto has led with structured CGA-based oncogeriatrics

Table 1 – Value-based geriatric care models and key examples from Portugal

Value-based geriatric care model	Description	Good examples from Portugal
Comprehensive geriatric Assessment (CGA)	A systematic assessment to holistically evaluate older patients, including their functional, cognitive, emotional, and nutritional status.	The first CGA-based clinics were established in Lisbon (led by Prof. Gorjão Clara, 2010) followed by Coimbra (led by Prof. Teixeira Verissimo). Currently, many outpatient clinics exist in Portugal (Fig. 1).
Falls prevention programs	Multidomain interventions for fall risk reduction, including assessments, education, and environmental modifications.	National guidelines recommend using fall risk scales (e.g., Morse Fall Scale). "*Quedas*" project at Centro Hospitalar Médio Tejo; "*Hospital Amigo dos + Velhos*" at Arcebispo João Crisóstomo; "*AtivaMente Bonfim*" in Porto; "*Academia de Mobilidade*" in Lisbon.
Orthogeriatrics	Multidisciplinary care to optimize outcomes for older patients with orthopedic trauma, especially hip fractures.	The first orthogeriatric unit was established at ULS Gaia-Espinho in 2015, with other units developed since then (Fig. 1). In 2024, the Fragility Fracture Network-Portugal was created.
Oncogeriatrics	Cancer management guided by CGA to personalize treatment, optimize surgical outcomes, and address oncological needs.	Structured CGA consultations at Hospital S. João in Porto; the pGA > 70 project for perioperative care; oncogeriatrics consultations at Hospital CUF Descobertas since 2023 for breast cancer patients.
Vaccination programs	High-coverage campaigns targeting older adults for diseases like COVID-19 and influenza.	Seasonal campaigns achieving over 90% public trust and vaccination rates exceeding 65% for adults aged 80+. GESI and NEGERMI guidelines support systematic immunization strategies.
Acute Geriatric Units (AGUs)	Holistic geriatric care combines medical, rehabilitative, and social support to address older patients' complex needs. Focusing on acute care, functional preservation, and delirium prevention.	Since 2023, dedicated beds for acute geriatric care have been established at Hospital Curry Cabral and Hospital de Oliveira de Azeméis (Fig. 1).
Emergency Frailty Units	Units within Emergency Departments (ED) are dedicated to efficiently managing frail older patients.	Santa Maria Hospital prioritizes older patients (75+) with a Clinical Frailty Score ≥ 5, facilitating either home discharge or hospitalization in daylight-illuminated rooms. Integrated care plans involve primary care, hospital teams, social services, and community resources.
Integrated Care models	Care pathways are designed to seamlessly coordinate primary, hospital, and community services for older adults.	ULS Litoral Alentejano and ULS Matosinhos reduced emergency visits by 47% - 50%; development of digital monitoring tools for chronic disease, such as heart failure and diabetes.
Nutritional interventions	Programs addressing malnutrition in older adults at institutional, individual, and systemic levels.	Nutritional risk screening, standardized dietary guidelines for specific needs (e.g., dysphagia), and food/nutrition literacy programs by PNPAS.

GESi: Grupo de Estudos Saúde do Idoso; NEGERMI Núcleo de Estudos de Geriatria da Sociedade Portuguesa de Medicina Interna; PNPAS: Programa Nacional para a Promoção da Alimentação Saudável.

clinics since 2021, notably benefiting frail older adults.[6] The pGA>70 project uses CGA for surgical decisions, preventing functional decline and postoperative delirium. In 2022, the Portuguese Society of Senology included older women in its breast cancer consensus.[6] Hospital CUF Descobertas, a large private hospital in Lisbon, launched an oncogeriatrics clinic in 2023, setting a model for expanding such services across Portugal.

Vaccination

Vaccination campaigns have been vital in protecting older adults in Portugal from infectious diseases like COVID-19 and influenza. With over 90% of the population expressing trust in vaccines, the government provides free vaccinations for high-risk groups, including older adults.[7] For the 2023 - 2024 season, over 65% of those aged 80+ have been vaccinated, aided by partnerships with community pharmacies that enhance accessibility. This model has become a core part of the national immunization strategy.[7] Recent updates from NEGERMI and GESI have enhanced vaccination guidelines, emphasizing comprehensive coverage for the aging population.

Acute care inpatient unit

Acute geriatric units (AGUs) in Portugal have grown since the first unit was established at Gaia-Espinho (2015 - 2019), alongside an orthogeriatrics unit. This multidisciplinary model brought together specialists, nurses, physiotherapists, and social services to meet older patients' specific needs, emphasizing both medical and social support. New units opened at Hospital Vila Franca de Xira (2017 - 2019) and Hospital Curry Cabral (2023), reflecting a commitment to geriatric care despite past challenges. Using CGA-based interventions, AGUs focus on preserving patient routines and preventing delirium. In 2023, a new geriatric center opened at Hospital de Oliveira de Azeméis, with plans underway to further expand AGUs across the country in the coming years.

Emergency department frailty assessment units

Emergency department frailty assessment units prioritize the needs of older patients. For instance, Hospital de Santa Maria, a public university hospital in Lisbon, where 30% of ER patients are over 65, has established a fast-track system for frail individuals, prioritizing their care through specialized protocols and a trained team. This system

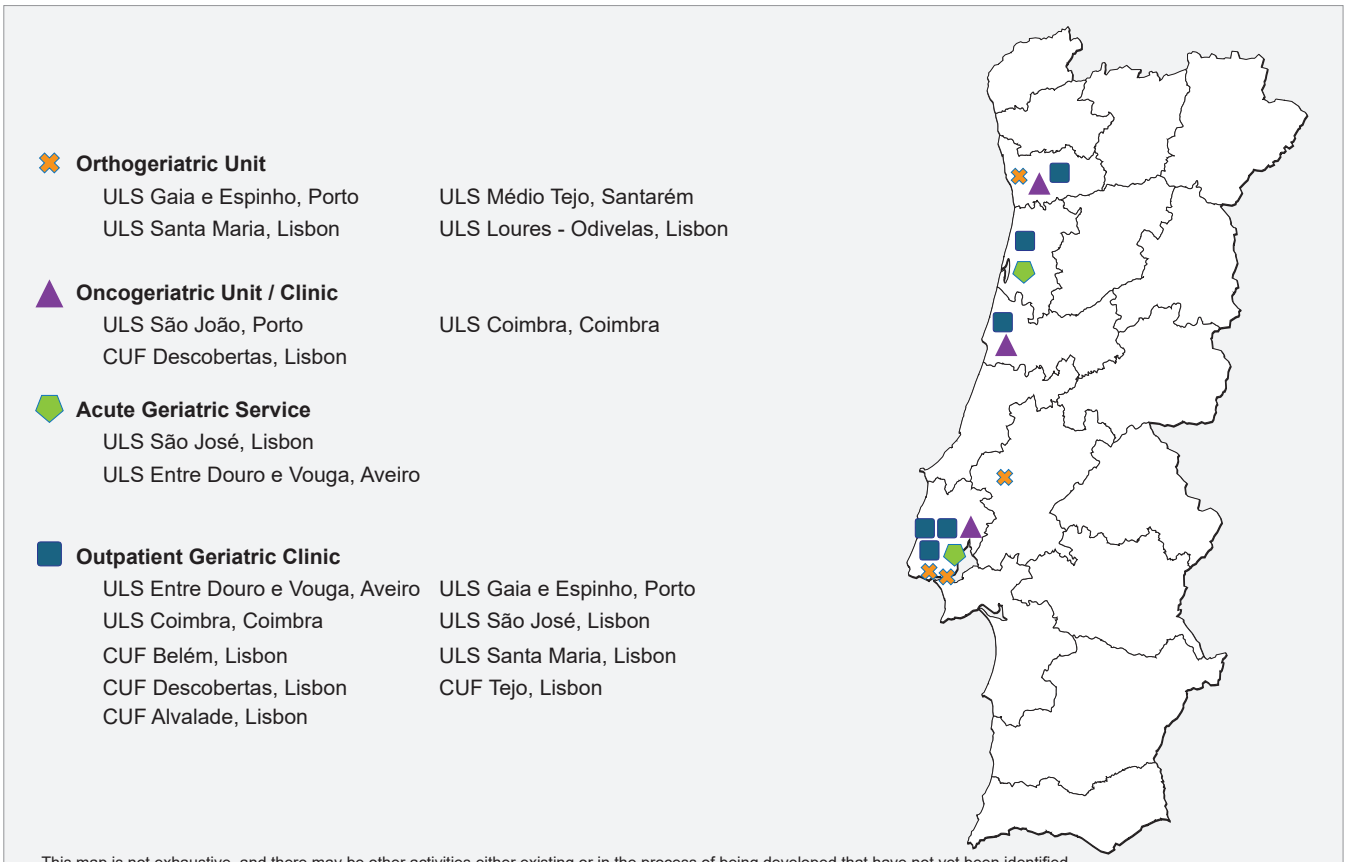

Figure 1 – Current map of value-based geriatric care models in Portugal

includes an integrated care plan linking patients, caregivers, and support services to facilitate home discharge or home hospitalization.[8] This project is aligned with European best practices, with NEGERMI translating materials to standardize geriatric emergency care across Portugal.[9]

Integrated care models

The aim of integrated care models in Portugal is to support older and frail populations through coordinated pathways across primary care, hospital, and community services. The National Health Service (SNS) has recently been reconfigured, with 39 local health units (ULS) managing both primary and hospital care.[10] While ULS do not ensure full integration, it may promote better care coordination.[11] Key aspects include population risk stratification and case management, as seen in ULS do Litoral Alentejano and ULS Matosinhos, reducing ER visits by 47% - 50% and hospital admissions by 50%. Digital tools for chronic conditions like heart failure are also in use and have achieved promising results in reducing emergency admissions. Portugal's integrated care models demonstrate a commitment to coordinated, person-centered care for older adults.

Nutritional interventions

Since 2012, Portugal's National Programme for Promotion of Healthy Eating (PNPAS) has addressed the nutritional needs of older adults through a multi-level approach. At the environmental level, it focuses on improving food quality in institutions, introducing a standardized diet manual aligned with international dysphagia guidelines (IDDSI) to ensure nutritionally adequate and appealing meals. Individually, it promotes nutrition literacy among older adults and caregivers, offering guidance on food intake, hydration, and meal enhancement to support self-care and health management.[12]

Portugal's National Programme prioritizes early malnutrition detection through screenings in electronic health records, supported by a 2023 directive for systematic nutritional risk assessments across the Portuguese National Health Service (SNS). Real-time data dashboards drive improvements, with efforts enhancing older adults' quality of life despite COVID-19 challenges.

CONCLUSION

Advancements in geriatric medicine in Portugal show a shift towards value-based care for older adults. Specialized care models like orthogeriatrics, falls prevention, and comprehensive geriatric assessments are improving outcomes and quality of life, gradually strengthening Portugal's geriatrics care framework despite structural limitations.

To make these value-based models standard practice across the healthcare system, significant investment in geriatric medicine is essential. The international COST Action PROGRAMMING supports this by promoting education in geriatric medicine for healthcare professionals at all levels.

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AUTHOR CONTRIBUTIONS

MA, SD: Study design, writing and critical review of the manuscript.

LM, LB, FO, GS, CB, AB: Writing and critical review of the manuscript.

AF, AV, RB: Study design, critical review of the manuscript.

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AF has a leadership or fiduciary role at the board of Sociedade Portuguesa de Nefrologia.

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ACTA MÉDICA PORTUGUESA
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Magnetic Resonance Imaging in Multiple Sclerosis: An Analysis of the Implementation of the Portuguese Consensus

Ressonância Magnética na Esclerose Múltipla: Uma Análise da Implementação do Consenso Português

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ABSTRACT

Introduction: Magnetic resonance imaging (MRI) plays a critical role in diagnosing and monitoring people with multiple sclerosis (MS). The 2020 Portuguese Consensus on Magnetic Resonance Imaging in Multiple Sclerosis aimed to standardize MRI use. This study evaluated the implementation of the consensus in clinical practice.

Methods: This is an observational, retrospective, longitudinal and multicentric study comprising patients diagnosed with MS between 2019 and 2022 from seven hospital centers in Portugal. We collected demographic data and details regarding MRI requests, protocols, and reports. We performed descriptive and comparative analyses between the period before and after guideline publication.

Results: We included 242 patients, mainly female (66.0%), with a mean age of 37 (SD 13). A total of 989 MRIs were performed, 69.1% follow-ups, 68.1% brain MRIs, and 31.9% spinal cord MRIs. Around half of the MRI requests fulfilled all the recommended information. All mandatory sequences in the neuroimaging protocol were performed in 82.5% of brain MRIs and 71.1% of spinal cord MRIs. None of the reports fulfilled all the suggested parameters. Magnetic resonance imaging technical description and imaging findings had the least compliance, mainly concerning gadolinium information (0.85%), lesion load (18.6%), and atrophy characterization (27.1%). After the implementation of the consensus, physicians reported the MS phenotype more often ($p < 0.05$) and neuroradiologists reported more technical parameters ($p < 0.05$). When MRIs were performed in a private setting, neuroimaging protocols were similar, but the reports fulfilled more frequently the suggested topics regarding the conclusion ($p < 0.05$).

Conclusion: This study suggests incomplete adherence to the Portuguese Consensus on MRI in MS. Information provided by the physician in MRI requests was often insufficient, which could hamper MRI protocol planning. Magnetic resonance imaging reports were frequently lacking relevant information for the diagnosis and follow-up of MS patients. Further efforts are needed to ensure full implementation and optimize MS care.

Keywords: Consensus; Magnetic Resonance Imaging; Multiple Sclerosis/diagnostic imaging; Portugal

RESUMO

Introdução: A ressonância magnética (RM) tem um papel crucial no diagnóstico e monitorização dos doentes com esclerose múltipla (EM). Este estudo pretende avaliar a implementação das Recomendações e Consensos do Grupo de Estudos de Esclerose Múltipla e da Sociedade Portuguesa de Neurorradiologia sobre Ressonância Magnética na Esclerose Múltipla na prática clínica.

Métodos: Realizou-se um estudo observacional, retrospetivo, longitudinal e multicêntrico englobando doentes com diagnóstico de EM entre 2019 e 2022 de sete hospitais portugueses. Foi obtida informação demográfica e dados relativos à requisição da RM, protocolos de aquisição e relatório. Foi realizada análise descritiva e comparativa.

Resultados: Foram incluídos 242 doentes, sendo 66% do sexo feminino. A média de idades ao diagnóstico foi 37 (DP 13) anos, predominando as formas surto-remissão (225, 93%). Foram incluídos 989 exames, correspondendo a 737 pedidos e relatórios. Um terço dos relatórios estava indisponível na data pretendida, com implicações em 83,7% dos casos, sendo a principal uma nova consulta (58,9%). Todos os critérios recomendados foram cumpridos por 28,8% das requisições de RM diagnósticas e 3,7% de seguimento. Todas as sequências obrigatórias foram executadas em 82,5% das RM crânio-encefálicas e 71,1% das RM medulares. Nenhum dos relatórios cumpriu todos os parâmetros recomendados, destacando-se a omissão mais frequente da dose de gadolínio, carga lesional e caracterização da atrofia cerebral. Após implementação das recomendações, os neurologistas reportaram com maior frequência o fenótipo da doença ($p < 0,05$) e os neurorradiologistas os parâmetros técnicos ($p < 0,05$). Os exames realizados em hospitais privados apresentaram protocolos de neuroimagem semelhantes, cumprindo mais frequentemente os tópicos sugeridos na conclusão dos relatórios ($p < 0,05$).

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Conclusão: Este estudo sugere uma adesão incompleta ao Consenso Português sobre RM na EM. A informação fornecida pelo clínico foi frequentemente insuficiente, o que poderá comprometer a planificação do protocolo de RM. No relatório havia regularmente informação relevante em falta relativa ao diagnóstico e seguimento dos doentes. São necessários esforços adicionais para garantir a implementação completa e otimizar os cuidados na EM.
Palavras-chave: Consenso; Esclerose Múltipla/diagnóstico por imagem; Portugal; Ressonância Magnética

KEY MESSAGES

- The study provides a detailed real-world evaluation of compliance with national MRI guidelines for MS. The multicenter design and large sample size enhance the generalizability of findings across Portuguese MS centers.
- Data show clear areas of underperformance, particularly in MRI request completeness and reporting quality.
- Retrospective design and non-random sampling may introduce selection bias and limit causality inference.
- Further measures should be taken to increase compliance, namely improving MRI request completeness.

INTRODUCTION

Multiple sclerosis (MS) is a chronic inflammatory autoimmune disorder of the central nervous system, primarily affecting young adults and causing significant disability. In Portugal, the prevalence of MS is estimated at 64.4 per 100 000 inhabitants.[1]

Magnetic resonance imaging (MRI) plays a fundamental role in MS, being essential not only for diagnosis – particularly after its incorporation into the McDonald Criteria in 2001 and subsequent refinement in the 2017 revision – but also for prognostic assessment, treatment monitoring, and detection of potential therapy-related complications.[2-4]

In Portugal, a panel of experts, comprising neurologists and neuroradiologists, developed a consensus on MRI use in people with MS (pwMS), with recommendations published in 2018 for diagnosis and follow-up, and in 2020 for imaging protocols and reporting standards.[5,6] While aligned with international guidelines, such as those from the Magnetic Resonance Imaging in Multiple Sclerosis (MAGNIMS) network, the Portuguese consensus aimed to address specific national challenges.[4-6]

The primary objective of our study was to evaluate the implementation of these recommendations in routine MS care across Portuguese neurology centers. The secondary objectives were to compare the period before and after the MRI guideline publications and to analyze the discrepancy in compliance between public and private settings.

METHODS

Study population and participating centers

We performed an observational, retrospective, longitudinal and multicentric study comprising pwMS from seven hospital centers in Portugal: Unidade Local de Saúde (ULS) Almada-Seixal; ULS de Amadora/Sintra; ULS de Coimbra; ULS Entre Douro e Vouga; ULS de Santa Maria; ULS São João and ULS de Trás-os-Montes e Alto Douro. We included adults who were newly diagnosed with MS between February 1st, 2019, and December 31st, 2022, according to the McDonald 2017 Criteria.[3] We established an inclusion ceiling of 30 pwMS for centers with a lower patient volume, which represented approximately 10% of the total MS population followed at those centers. In centers with a higher patient volume, the inclusion ceiling was 50 pwMS, accounting for, at most, 10% of their MS population. Data was systematically collected retrospectively using clinical records until this number was reached. Patients with missing information regarding the time of diagnosis, or whose MRI requests, images or reports could not be accessed were excluded.

Clinical and radiological assessment

For each selected patient, demographic data were collected, including age at initial diagnosis, sex, specific subtype of multiple sclerosis [relapsing-remitting multiple sclerosis (RRMS), secondary progressive multiple sclerosis (SPMS), primary progressive multiple sclerosis (PPMS)], date of diagnosis, and final diagnosis at the time of data collection. We included information regarding all MRI scans performed and reported both in public and private settings for each selected patient.

Details regarding MRI requests by the neurologist as well as MRI protocols and reports by the neuroradiologist were collected for every MRI scan performed by each patient between the time of diagnosis and the moment of data acquisition. The data collection and subsequent presentation of the results was based on the points described in the Consensus Recommendations of the MS Study Group and Portuguese Society of Neuroradiology for the Use of the Magnetic Resonance Imaging in Multiple Sclerosis in Clinical Practice.[5,6]

Data was categorized into three groups: clinical information provided by physicians in MRI request; protocol for brain and spinal cord (SC) MRI at baseline and follow-up; and neuroimaging report. The variables were treated as dichotomous variables (present or absent).

Regarding clinical information for diagnostic MRI, the

variables included date of symptom onset and evolution, description of main clinical signs, clinically important information and special precautions. For follow-up MRI the variables were the purpose of follow-up, diagnosis description, description of important clinical information, treatment information and special precautions.

Finally, neuroimaging report variables were divided into three areas according to the guidelines for a structured neuroimaging protocol, namely, technique (magnetic field strength, anatomic coverage, MRI sequences, gadolinium-based agent and dose, availability and date of previous test), imaging findings (lesion number and anatomical distribution, lesion load, atrophy, incidental findings, follow-up), and conclusion (interpretation, whether MRI criteria of dissemination in space (DIS) and dissemination in time (DIT) are fulfilled, follow-up conclusion).

Guideline compliance was obtained in each patient as the percentage of topics mentioned for each category in requests and reports, as well as mandatory brain MRI and SC MRI sequences performed. The specificities of the recommendations for each category are detailed in the Results section.

When MRI requests or reports included both brain and SC imaging, they were considered a single scan for details such as MRI request information and timing of MRI reports, but as separate scans for imaging protocols.

Data was stored in an anonymized and protected database with access restricted to the investigators. The study protocol was approved by each center's local ethics committee.

Statistical analysis

Data analysis was conducted using Statistical Software for Data Science (Stata) 14®. Continuous variables were reported as mean ± standard deviation or median (interquartile range), and categorical variables as frequency and percentage. Appropriate statistical tests were chosen based on distribution curves. Group differences were analyzed using the Mann-Whitney or chi-square tests, as appropriate ($p < 0.05$ for significance). Nonparametric tests were used to assess compliance with Portuguese guidelines, before and after publication of the second part in 2020. We used univariate linear and binary logistical regression to assess whether higher compliance with the guidelines in the request form was associated with higher compliance in the imaging sequences/report. For logistic regression compliance was converted into a dichotomous variable (full *versus* not full compliance) and used as the dependent variable. For multivariate logistic regression, a dichotomous variable reflecting MRIs fully performed in the public sector was added as independent variable. For linear regression compliance percentage was treated as continuous variable, either as a dependent or independent variable. We used the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity (HETTEST) and assessed collinearity using the variance inflation factor (VIF).

RESULTS

From February 1st, 2019, to December 31st, 2022, we enrolled 242 eligible patients, of whom 160 (66.0%) were female. The mean age at diagnosis was 37 ± 13 years. The final diagnosis was RRMS in 225 patients (93.0%), PPMS in 12 (5.0%), and SPMS in 5 (2.0%). The number of patients included in each center and their year of diagnosis are shown in Table 1. We included 732 MRI requests and reports, with a mean of 3 ± 1 MRI requests per patient. Among these, 369 (50.4%) were performed and reported in the requesting hospital, while 311 (42.4%) were performed and reported externally, and 52 (7.1%) were conducted in the requesting hospital but reported externally. Thus, we included a total of 989 MRIs: 674 were brain MRIs (68.1%) and 315 were SC MRIs (31.9%). From these, 306 (30.9%) were diagnostic MRIs and 683 (69.1%) were follow-up MRIs (Table 1).

We observed that 469 MRIs (81.4%) were undertaken before the subsequent outpatient appointment. The median time between request and scan was 130 (57 - 195) days. Nearly a third (172, 30.2%) of the follow-up MRIs did not have the report available for the appointment. The median time between the MRI request and the report was 141 (68 – 203) days. The unavailability of MRI results had consequences in 85.3% of those cases, resulting in rescheduled appointments (117 cases, 68.4%), delayed treatment switches (21 cases, 12.3%), delayed diagnosis (seven cases, 4.1%), and delayed adverse event identification (one case).

Concerning diagnostic MRI requests (Table 2), 60 cases (28.8%) contained all the suggested required information, with an average compliance rate of 64.6% (SD 2.8%). The date of symptom onset and evolution was the least mentioned topic (95 tests, 45.7%). In follow-up studies, 19 (3.7%) requests completely met the proposed information requirements, with an average compliance rate of 52.2% (SD 1.9%). The least fulfilled topics for follow-up studies were John Cunningham virus serostatus and previous treatment/immunosuppression regarding progressive multifocal leukoencephalopathy (PML) surveillance (24, 6.3%), followed by duration of treatment (111, 21.6%) and the date and clinical information from the last MRI (130, 25.5%).

Information on special needs, such as claustrophobia and potential allergies, was present in 66.0% of cases. However, three centers had a mandatory checklist (n = 385 scans). In centers without a checklist, 28.2% of MRI requests detailed this information.

Table 1 – Demographic and clinical characteristics of the study population (n = 242)

Characteristics	
Sex, n (%)	
Female	160 (66.1)
Age at diagnosis, mean (SD)	36.87 (12.58)
Hospital, n (%)	
ULSUC	50 (20.7)
ULSSJ	50 (20.7)
ULSTMAD	39 (16.1)
ULSEDV	30 (12.4)
ULSA/S	30 (12.4)
ULSASI	30 (12.4)
ULSSM	13 (5.4)
Diagnosis, n (%)	
RRMS	225 (93.0)
PPMS	12 (5.0)
SPMS	5 (2.1)
Year of diagnosis, n (%)	
2019	53 (21.9)
2020	65 (26.9)
2021	73 (30.2)
2022	51 (21.0)
Number of MRI requests per patient, mean (SD)	3.03 (1.47)
Total number of MRIs performed, n (%)	989 (100.0)
Diagnostic MRI, n (%)	277 (28.0)
Brain MRI	166 (16.7)
Spinal cord MRI	111 (11.2)
Follow-up MRI, n (%)	712 (72.0)
Brain MRI	508 (51.4)
Spinal cord MRI	204 (20.6)

SD: standard deviation; ULSEDV: Unidade Local de Saúde Entre Douro e Vouga; ULSTMAD: Unidade Local de Saúde de Trás-os-Montes e Alto Douro; ULSUC: Unidade Local de Saúde de Coimbra; ULSSM: Unidade Local de Saúde de Santa Maria; ULSSJ: Unidade Local de Saúde São João; ULSA/S: Unidade Local de Saúde Almada-Seixal; ULSASI: Unidade Local de Saúde de Amadora/Sintra; PPMS: primary progressive multiple sclerosis; SPMS: secondary progressive multiple sclerosis; RRMS: relapsing-remitting multiple sclerosis

Regarding neuroimaging protocol and MRI sequences (Table 3), all brain MRI mandatory sequences were performed in 556 (82.5%) MRIs, with an average compliance rate of 95.7% (SD 1.3%). The least performed mandatory sequence was sagittal T2-fluid attenuated inversion recovery (FLAIR) (90.2% overall; 81.3% diagnostic, 93.4% follow-up, $p < 0.01$). The most performed optional sequences were axial diffusion-weighted imaging (F) in 630 MRIs (93.6%), axial spin-echo (SE) T1 2D in 492 (73.1%) and 3D T1-weighted sequences in 296 (44.0%). Double inversion recovery sequence (DIR) was applied in 17 cases (2.5%). For SC MRI, all mandatory sequences were performed in 224 MRIs (71.1%), with an average compliance rate of 95.7% (SD 1.5%). The most performed optional sequence was sagittal SE T1 (273 studies, 86.9%), while the least performed was phase-sensitive inversion recovery (PSIR), in two MRIs.

None of the reports fulfilled all the suggested parameters across the three proposed criteria (technique, imaging findings and conclusion). Concerning MRI technique description, one (0.5%) diagnostic and three (0.6%) follow-up reports covered all suggested topics. The average compliance rate was 49.2% for diagnostic and 61.4% for follow-up reports, with gadolinium-based agent dosing being the least reported (0.5% diagnostic, 1.2% follow-up) together with magnetic field strength (12.6% diagnostic, 18.1% follow-up). Regarding imaging findings, seven (3.3%) diagnostic and 39 (7.5%) follow-up reports described all suggested

Table 2 – Diagnostic and follow-up MRI requests (n = 732)

Diagnostic MRI requests (n = 214)	**Yes, n (%)**
Date of symptom onset and evolution	95 (45.7)
Description of main clinical signs and clinical information	182 (87.9)
Description of special needs and potential allergies or other relevant information	126 (60.9)
All suggested topics regarding diagnostic MRI requests mentioned	60 (28.8)
At least 1 suggested topic regarding diagnostic MRI requests missing	148 (71.2)
Mean % suggested topics regarding diagnostic MRI requests mentioned, mean (SD)	64.6% (0.3)
Follow-up MRI requests (n = 518)	
Purpose of follow-up scan	502 (97.5)
Description of diagnosis	481 (93.4)
Description of clinical information considered important	236 (45.9)
DMT description	326 (63.3)
Duration of treatment	111 (21.6)
Information regarding PML surveillance study	24 (6.3)
Date and, if considered relevant, clinical information of last MRI performed	130 (25.5)
Description of special needs and potential allergies or other relevant information	342 (66.0)
All suggested topics regarding follow-up MRI requests mentioned	19 (3.7)
At least 1 suggested topic regarding follow-up MRI requests missing	496 (96.3)
Mean % suggested topics regarding follow-up MRI requests mentioned, mean (SD)	52.2% (0.2)

DMT: disease modifying treatment; PML: progressive multifocal leukoencephalopathy; SD: standard deviation

topics, with an average compliance rate of 51.8% for both. Regarding diagnostic studies, the least mentioned topics were subjective evaluation of lesion load (18.6%) and atrophy characterization (27.1%). Follow-up reports showed a similar pattern. In the conclusion section, 41 diagnostic reports (19.2%) and 165 follow-up reports (31.9%) included all suggested topics, with average compliance rates of 47.0% (SD 0.5%) and 50.1% (SD 0.4%), respectively. The least reported topics were MRI criteria of DIS and DIT in diagnostic MRIs (17.2%) and imaging signs of disease progression in follow-up MRIs (35.2%) (Table 4).

When comparing all MRI examinations before and after the implementation of the recommendations (Table 5), our analysis focused on MRI requests, neuroimaging protocols, and MRI reports.

Concerning requests, only the specification of the MS phenotype in follow-up MRI requests was significantly different (71.0% before, *vs* 94.0% after the recommendations, $p < 0.001$). Analysis of neuroimaging protocols did not yield any statistically significant differences between these two periods. For MRI reports, a higher percentage lacked sequence descriptions after the recommendations (7.8% before *vs* 11.1% after, $p = 0.01$). Additionally, reports more often omitted lesion number (49.4% before *vs* 61.5% after, $p = 0.039$) and location details (3.9% before *vs* 19.8% after, $p = 0.002$). The proportion of technical parameters mentioned was higher post-recommendations (51.7% before, *vs* 58.5% after, $p < 0.001$).

We also compared neuroimaging protocols, reports and the timeliness of response (i.e., whether the MRI was performed before the appointment and if the report was available) from public hospitals and private settings (Table 6). Magnetic resonance imagings performed at the requesting hospital were less often available at the intended time compared to those performed elsewhere (78.5% *vs* 84.9%, $p = 0.047$), with a median time from MRI request to MRI scan of 146 (68 – 200) *vs* 86 (36 - 161) days, respectively ($p < 0.001$). The median time from MRI request to availability of MRI reports was 162 (77 - 204) days in public settings and 94 (49 - 179) days in private settings ($p < 0.001$). Report availability for the next appointment was not different (67.2% *vs* 72.9%, $p = 0.14$).

Public hospitals fully complied with all mandatory brain MRI sequences more often than private settings (85.1% *vs* 79.0%, $p = 0.04$), despite comparable mean execution percentages (96.2% in public *vs* 95.1% in private, $p = 0.28$). Private settings had higher percentages of mandatory T2-FLAIR axial acquisitions (99.4% *vs* 96.7%, $p = 0.011$) for brain MRI protocols, but were outperformed by public hospitals in optional T1 3D (62.8% *vs* 18.6%, $p < 0.001$), T1 axial

Table 3 – Neuroimaging protocols and MRI sequences (n = 989)

Brain MRI (n = 674)	**Yes, n (%)**
Mandatory sequences	
Axial T2	667 (99.0)
Axial PD and/or T2-FLAIR	661 (98.1)
Axial T1 SE 2D + gad	615 (91.2)
Sagittal T2-FLAIR (2D or 3D)	608 (90.2)
All mandatory sequences performed	556 (82.5)
At least 1 mandatory sequence not performed	118 (17.5)
Mean % mandatory sequences performed, mean (SD)	95.7% (0.1)
Optional sequences	
Axial DWI	630 (93.6)
Axial T1 SE 2D	492 (73.1)
3D T1-weighted sequences	296 (44.0)
SWI	268 (39.8)
DIR	17 (2.5)
Spinal cord MRI (n = 315)	
Mandatory sequences	
Sagittal T2 SE or FSE	305 (96.8)
Axial T2	291 (92.4)
Sagittal T1 SE + gad	284 (90.2)
Sagittal PD (acquired in dual echo) or STIR	275 (87.3)
All mandatory sequences performed	224 (71.1)
At least 1 mandatory sequence not performed	91 (28.9)
Mean % mandatory sequences performed, mean (SD)	92.7% (0.1)
Optional sequences	
Sagittal T1 SE	273 (86.9)
Axial T1 SE + Gad	205 (65.1)
Axial 2D or 3D T2 FSE	98 (31.1)
PSIR	2 (0.6)

DIR: double inversion recovery sequence; DWI: diffusion-weighted imaging; FLAIR: fluid attenuated inversion recovery; FSE: fast spin-echo; Gad: gadolinium; PSIR: phase-sensitive inversion recovery; SE: spin-echo; SD: standard deviation

SE 2D (80.9% *vs* 62.5%, $p < 0.001$), susceptibility weighted imaging (SWI) (48.6% *vs* 27.7%, $p = 0.010$), and DIR acquisitions (3.9% *vs* 0.7%, $p = 0.010$). Regarding SC MRI, public hospitals conducted a higher percentage of PD sagittal or STIR mandatory sequences (94.7% *vs* 78.9%, $p < 0.001$), along with optional axial 2D or 3D T2 FSE (45.6% *vs* 14.3%, $p < 0.001$). Conversely, private hospitals performed more mandatory axial T2 sequences (96.6% *vs* 88.8%, $p = 0.009$) and optional T1 SE sagittal (93.9% *vs* 81.0%, $p < 0.001$) and T1 SE axial gadolinium sequences (77.6% *vs* 53.8%, $p < 0.001$).

In report content, public hospitals significantly outperformed private settings in mentioning magnetic field strength (24.7% *vs* 8.2%, $p < 0.001$), indicating the availability of previous scans (81.5% *vs* 67.3%, $p < 0.001$), and conducting comparison studies (85.2% *vs* 61.5%, $p < 0.001$). Public hospitals also reported lesion number (54.4% *vs* 25.1%, $p < 0.001$), brain atrophy (41.8% *vs* 28.0%, $p < 0.001$), and incidentalomas (44.6% *vs* 36.3%, $p = 0.022$) more frequently. Private hospitals outperformed in reporting the studied anatomical area (99.4% *vs* 96.7%, $p = 0.008$), MRI acquisitions (92.9% *vs* 85.5%, $p = 0.004$), lesion location (96.5% *vs* 76.0%, $p < 0.001$), interpreting findings (77.7% *vs* 58.7%, $p < 0.001$), and indicating progression (44.2% *vs* 24.0%, $p < 0.001$).

Public hospitals had higher compliance in meeting technical criteria (59.4% *vs* 56.3%, $p = 0.003$) and imaging findings (53.9% *vs* 49.7%, $p = 0.004$), while private settings

fulfilled more conclusion criteria (56.7% *vs* 41.7%, $p < 0.001$).

We used linear regression to assess whether improved communication (i.e., more complete requests) correlated with more complete reports. A higher average compliance with suggested topics in diagnostic MRI requests was significantly associated with higher compliance in imaging findings (R^2 0.03, beta 0.12, $p = 0.013$; HETTEST $p = 0.366$, VIF = 1.0) and conclusions (R^2 0.02, beta 0.15, $p = 0.04$; HETTEST $p = 0.7256$, VIF = 1.0). We also used logistic regression for the same purpose. For follow-up tests, higher compliance in MRI requests was significantly associated with full compliance in imaging findings (OR 1.04, CI 1.02 - 1.06, $p < 0.001$). When adjusting for compliance with suggested topics in follow-up MRI requests, reports from MRIs performed and reported in public institutions were less likely to fully meet all imaging description topics (OR 0.48, CI 0.24 - 0.99, $p = 0.049$).

DISCUSSION

The role of MRI in MS diagnosis, prognosis, and monitoring is undeniable. This is reflected in the evolving MS diagnostic criteria, incorporating MRI findings alongside clinical presentations, which has been helped by the discovery of new imaging biomarkers.[2-4] The MAGNIMS consensus and guidelines formed the ground rules that allowed

Table 4 – Diagnostic and follow-up MRI reports (n = 732)

	Diagnostic, yes, n (%) (n = 214)	**Follow-up, yes, n (%)** (n = 518)
Technique description		
Magnetic field strength	27 (12.6%)	94 (18.1%)
Anatomic coverage	210 (98.1%)	507 (98.1%)
MR sequences and planes acquired	198 (92.6%)	455 (87.8%)
Gadolinium-based agente	176 (82.2%)	459 (88.6%)
Gadolinium-based agent dose	1 (0.5%)	6 (1.2%)
Availability and date of a previous test	21 (53%)	388 (75.9%)
All suggested technique topics mentioned	1 (0.5%)	3 (0.6%)
At least 1 suggested technique topic not mentioned	213 (99.5%)	515 (99.4%)
Mean % suggested technique topics mentioned, mean (SD)	49.2% (0.1%)	61.4% (0.1%)
Imaging findings		
Number of T2 lesions	90 (42.5%)	200 (38.7%)
Anatomical distribution of T2 lesions	204 (96.3%)	393 (76.0%)
Subjective evaluation of lesion load	39 (18.6%)	166 (32.4%)
Number and anatomical distribution of gadolinium-enhancing T1 lesions and type of enhancement	190 (88.8%)	466 (90.0%)
Atrophy characterization with the use of validated clinical imaging scales	58 (27.1%)	198 (38.2%)
Incidental/non-MS related findings	90 (42.1%)	206 (39.8%)
Follow up: new T2 lesions, gadolinium-enhancing T1 lesions and increased size of previously detected MS plaques	—	379 (75.0%)
All suggested topics regarding imaging findings mentioned	7 (3.3%)	39 (7.5%)
At least 1 suggested topic regarding imaging findings not mentioned	207 (96.7%)	479 (92.5%)
Mean % suggested topics regarding imaging findings mentioned, mean (SD)	51.8% (0.2%)	51.8% (0.2%)
Conclusion		
Interpretation of findings and differential diagnosis	166 (77.6%)	333 (64.3%)
Indication if MR criteria of DIS and DIT are fulfilled according to the 2017 MS McDonald criteria	35 (17.2%)	—
Follow-up: conclude if there are imaging signs of new silent lesions or active plaques and identify potential therapeutic adverse effects	—	181 (35.2%)
All suggested conclusion topics mentioned	41 (19.2%)	165 (31.9%)
Mean % suggested conclusion topics mentioned, mean (SD)	47.0% (0.5%)	50.1% (0.4%)

DIS: dissemination in space; DIT: dissemination in time; SD: standard deviation

Table 5 – MRI examinations before and after the implementation of the recommendations

	Before consensus, yes, n (%)	After consensus, yes, n (%)	*p*-value
MRI requests			
Diagnostic MRI (n = 277)			
All suggested topics regarding diagnostic MRI requests mentioned	19 (31.7%)	41 (27.7%)	0.57Ŧ
Mean % suggested topics regarding diagnostic MRI requests mentioned, mean (SD)	65.0% (0.3%)	64.4% (0.3%)	0.89*
Follow-up MRI (n = 712)			
Description of diagnosis	10 (71.4%)	471 (94.0%)	< 0.001Ŧ
All suggested topics regarding follow-up MRI requests mentioned	0 (0.0%)	19 (3.8%)	0.46Ŧ
Mean % suggested topics regarding follow-up MRI requests mentioned, mean (SD)	52.7% (0.3%)	52.1% (0.2%)	0.92*
Neuroimaging protocols			
Brain MRI (n = 674)			
All mandatory sequences performed	52 (80.0%)	504 (82.8%)	0.58Ŧ
Mean % mandatory sequences performed, mean (SD)	96.9% (0.1%)	95.6% (0.1%)	0.45*
Spinal cord MRI (n = 315)			
All mandatory sequences performed	23 (85.2%)	163 (70.9%)	0.12Ŧ
Mean % mandatory sequences performed, mean (SD)	95.4% (0.1%)	91.6% (0.1%)	0.20*
MRI reports			
Technique description			
Magnetic field strenght	8 (10.4%)	113 (17.3%)	0.13Ŧ
Anatomic coverage	75 (97.4%)	642 (98.2%)	0.64Ŧ
MR sequences and planes acquired	71 (92.2%)	582 (88.9%)	0.010Ŧ
All suggested technique topics mentioned	1 (1.3%)	3 (0.5%)	0.34Ŧ
Mean % suggested technique topics mentioned, mean (SD)	51.7% (0.1%)	58.6% (0.4%)	< 0.001*
Imaging findings			
Number of T2 lesions	39 (50.6%)	251 (38.5%)	0.039Ŧ
Anatomical distribution of T2 lesions	74 (96.1%)	523 (80.2%)	0.002Ŧ
Subjective evaluation of lesion load	15 (19.7%)	190 (29.4%)	0.078Ŧ
Number and anatomical distribution of gadolinium-enhancing T1 lesions and type of enhancement	69 (89.6%)	587 (89.6%)	1.00Ŧ
Atrophy characterization with the use of validated clinical imaging scales	24 (31.2%)	232 (35.4%)	0.46Ŧ
Incidental/non-MS related findings	31 (40.3%)	265 (40.5%)	0.97Ŧ
Follow up: new T2 lesions, gadolinium-enhancing T1 lesions and increased size of previously detected MS plaques	11 (73.3%)	368 (75.1%)	0.88Ŧ
All suggested topics regarding imaging findings mentioned	5 (6.5%)	41 (6.3%)	0.94Ŧ
Mean % suggested topics regarding imaging findings mentioned, mean (SD)	53.7% (0.2%)	51.6% (0.2%)	0.37*
Conclusion			
Interpretation of findings and differential diagnosis	51 (66.2%)	448 (68.4%)	0.70Ŧ
Indication if MR criteria of DIS and DIT are fulfilled according to the 2017 MS McDonald criteria	8 (13.8%)	27 (18.5%)	0.42Ŧ
Follow-up: conclude if there are imaging signs of new silent lesions or active plaques and identify potential therapeutic adverse effects	6 (42.9%)	175 (35.0%)	0.54Ŧ
All suggested conclusion topics mentioned	15 (19.5%)	191 (29.2%)	0.074Ŧ
Mean % suggested conclusion topics mentioned, mean (SD)	42.2% (0.3%)	50.0% (0.4%)	0.089*

Ŧ: Pearson's chi-squared;
*: Two-sample t-test
DIS: dissemination in space; DIT: dissemination in time; SD: standard deviation

Table 6 – MRI examinations in public and private sectors (part 1 of 2)

	Public sector, yes, n (%)	Private sector, yes, n (%)	*p*-value
Neuroimaging protocols for brain MRI			
Mandatory sequences			
Axial T2	383 (98.7%)	284 (99.3%)	0.46ŦŦ
Axial PD and/or T2-FLAIR	377 (97.2%)	284 (99.3%)	0.046ŦŦ
Sagittal T2-FLAIR (2D or 3D)	360 (92.8%)	248 (86.7%)	0.009ŦŦ
Axial T1 SE 2D + gad	355 (91.5%)	260 (90.9%)	0.79ŦŦ
All mandatory sequences performed	330 (85.1%)	226 (79.0%)	0.042ŦŦ
Mean % mandatory sequences performed, mean (SD)	96.2& (0.13)	95.1% (0.12)	0.28*
Optional sequences			
Axial T1 SE 2D	314 (80.9%)	178 (62.5%)	< 0.001ŦŦ
3D T1-weighted sequences	243 (62.8%)	53 (18.6%)	< 0.001ŦŦ
Axial DWI	367 (94.6%)	263 (92.3%)	0.23ŦŦ
DIR	15 (3.9%)	2 (0.7%)	0.010ŦŦ
SWI	189 (48.6%)	79 (27.7%)	< 0.001ŦŦ
Neuroimaging protocols for spinal cord MRI			
Mandatory sequences			
Sagittal T2 SE or FSE	163 (96.4%)	143 (97.3%)	0.67ŦŦ
Sagittal PD (acquired in dual echo) or STIR	160 (94.7%)	116 (78.9%)	< 0.001ŦŦ
Axial T2 (lesion focused)	150 (88.8%)	142 (96.6%)	0.009ŦŦ
Sagittal T1 SE + gad (if T2 lesions present)	153 (90.5%)	132 (89.8%)	0.83ŦŦ
All mandatory sequences performed	127 (75.1%)	97 (66.4%)	0.089ŦŦ
Mean % mandatory sequences performed, mean (SD)	92.6% (0.14)	90.6% (0.15)	0.22*
Optional sequences			
Sagittal T1 SE	136 (81.0%)	138 (93.9%)	< 0.001ŦŦ
Axial T1 SE + gad	91 (53.8%)	114 (77.6%)	< 0.001ŦŦ
Axial 2D or 3D T2 FSE (for all spinal cord)	77 (45.6%)	21 (14.3%)	< 0.001ŦŦ
PSIR	2 (1.2%)	0 (0.0%)	0.19ŦŦ
MRI reports			
Technique			
Magnetic field strength	93 (22.1%)	28 (9.0%)	< 0.001ŦŦ
Anatomic coverage (brain or spinal cord and which segment)	407 (96.9%)	310 (99.7%)	0.007ŦŦ
MR sequences and planes acquired	363 (86.2%)	289 (92.9%)	0.014ŦŦ
Gadolinium-based agent	368 (87.4%)	267 (85.9%)	0.54ŦŦ
Gadolinium-based agent dose	7 (1.7%)	0 (0.0%)	0.022ŦŦ
Follow-up: availability and date of a previous brain and/or spinal MR test for comparison.	255 (79.7%)	154 (66.7%)	< 0.001ŦŦ
All suggested technique topics mentioned	4 (1.0%)	0 (0.0%)	0.085ŦŦ
At least 1 suggested technique topic not mentioned	417 (99.0%)	311 (100.0%)	0.085ŦŦ
Mean % suggested technique topics mentioned, mean (SD)	59.1% (0.15)	56.2% (0.12)	0.005ŦŦ

ŦŦ: Pearson's chi-squared
*: Two-sample t-test
DIR: double inversion recovery sequence; DIS: dissemination in space; DIT: dissemination in time; DMT: disease modifying treatment; DWI: diffusion-weighted imaging; FLAIR: fluid attenuated inversion recovery; FSE: fast spin-echo; Gad: gadolinium; PSIR: phase-sensitive inversion recovery; PML: progressive multifocal leukoencephalopathy; SE: spin-echo; SD: standard deviation

Table 6 – MRI examinations in public and private sectors (part 2 of 2)

	Public sector, yes, n (%)	Private sector, yes, n (%)	*p*-value
Imaging findings			
Number of T2 lesions	213 (50.8%)	77 (24.8%)	< 0.001Ŧ
Anatomical distribution of T2 lesions, specifying if juxtacortical/cortical, periventricular, infratentorial or in spinal cord	323 (77.3%)	269 (86.5%)	< 0.001Ŧ
Subjective evaluation of lesion load (mild, moderate, severe)	123 (29.5%)	82 (26.8%)	0.43Ŧ
Number and anatomical distribution of gadolinium-enhancing T1 lesions and type of enhancement (ring, solid, concentric, etc.)	373 (88.6%)	283 (91.0%)	0.29Ŧ
Atrophy characterization with the use of validated clinical imaging scales, such as global cortical atrophy (GCA) scale. The qualitative impression of the initial atrophy and/or atrophy progression should be included	176 (41.8%)	80 (25.7%)	< 0.001Ŧ
Incidental/non-MS related findings and its clinical significance	197 (46.8%)	99 (31.8%)	< 0.001Ŧ
Follow up: new T2 lesions, gadolinium -enhancing T1 lesions and increased size of previously detected MS plaques (comparison with previous scans)	260 (83.1%)	135 (59.2%)	< 0.001Ŧ
All suggested topics regarding imaging findings mentioned	31 (7.4%)	15 (4.8%)	0.16Ŧ
At least 1 suggested topic regarding imaging findings not mentioned	390 (92.6%)	296 (95.2%)	0.16Ŧ
Mean % suggested topics regarding imaging findings mentioned, mean (SD)	54.9% (0.20)	47.7% (0.20)	< 0.001*
Conclusion			
Interpret if findings are typical, atypical or not consistent with MS and, in this case, provide differential diagnosis	252 (59.9%)	247 (79.4%)	< 0.001Ŧ
Diagnostic: indicate if MR criteria of DIS and dissemination in time (DIT) are fulfilled according to the 2017 MS McDonald Criteria.	29 (24.0%)	11 (12.5%)	0.037Ŧ
Follow-up: conclude if there are imaging signs of new silent lesions or active plaques and identify potential therapeutic adverse effects (particularly, PML-IRIS).	84 (26.8%)	97 (44.7%)	< 0.001Ŧ
All suggested conclusion topics mentioned	106 (25.2%)	100 (32.2%)	0.038Ŧ
At least 1 suggested conclusion topic not mentioned	315 (74.8%)	211 (67.8%)	0.038Ŧ
Mean % suggested conclusion topics mentioned	43.3% (0.40)	57.1% (0.34)	< 0.001*

Ŧ: Pearson's chi-squared
*: Two-sample t-test
DIR: double inversion recovery sequence; DIS: dissemination in space; DIT: dissemination in time; DMT: disease modifying treatment; DWI: diffusion-weighted imaging; FLAIR: fluid attenuated inversion recovery; FSE: fast spin-echo; Gad: gadolinium; PSIR: phase-sensitive inversion recovery; PML: progressive multifocal leukoencephalopathy; SE: spin-echo; SD: standard deviation

the establishment of standardized protocols worldwide for optimal MRI use. In Portugal, the MS Study Group and the Portuguese Society of Neuroradiology published joint clinical practice recommendations and guidance for neurologists and neuroradiologists.[5,6] Given the recent review of MS diagnostic criteria and the prospect of adapting current recommendations, we sought to analyze the application of the current Portuguese consensus to assess areas for improvement.

In this study, we systematically obtained data on MRI requests and reports, to assess if daily clinical practice aligns with the recommendations. Most pwMS in our cohort were young females (66.0%) with RRMS (93.0%), reflecting the MS population, where the female-to-male ratio is approximately three to one and about 85% of pwMS present with an RRMS form.[7,8]

Most studies were conducted on time. However, nearly a third lacked an available report. The absence of MRI images and/or report could have significant consequences, such as diagnostic or treatment delays. Our study found that the need to reschedule appointments due to unavailable MRI results was frequent, while diagnostic or treatment delays were less common. Delays in diagnosis and treatment initiation are concerning, as evidence suggests they can negatively impact long-term outcomes for pwMS. This is particularly crucial between initial symptom onset and neurological assessment.[9,10] Moreover, factors related to the healthcare system, including access to MRI in

adequate timing, play a major role in patient management, since the guidelines from the National Institute for Health and Clinical Excellence recommend six weeks between the appointment and completion of necessary investigation.[11] It is known that even short delays in diagnosis and treatment initiation may increase long-term disability. Apart from these implications, a new medical appointment is time consuming and could lower the quality of care.[9,10]

When requesting an MRI, physicians should mention essential clinical details, detailed above. For follow-up MRIs, treatment history and patient diagnosis are crucial to guide MRI planification and provide structure to the report.[12] In our study, less than 30% of the diagnostic and 3.7% follow-up MRIs included all the required details. Information regarding symptom onset and evolution was the least mentioned topic in baseline MRI requests, while description of current or previous disease-modifying therapies and treatment duration, PML risk and prior MRI data were frequently overlooked on follow-up requests. Clinical information improves the reporting process, namely, interpretation accuracy, clinical relevance and reporting confidence, without affecting the reporting time.[13] This may be critical for interpretation of findings, in particular the presence of imaging DIS/DIT criteria in diagnostic MRIs or evidence of disease progression during follow-up, which is supported by our results. Information provided by the clinician is also important when deciding the MRI protocol, including the use of gadolinium.[14] The development of guidelines aims to overcome this problem; however, gaps persist.

In clinical centers where special needs such as claustrophobia and additional information such as allergies or renal/hepatic impairment have a specific and mandatory checklist, there was a higher percentage of information provided. Checklists could be easy to implement, enhance efficiency of the information provided and reduce missed details.[15]

Adhering to standardized brain MRI protocols is critical for accurate MS diagnosis and monitoring, enabling effective comparisons between baseline and follow-up scans.[6] Most scans included mandatory brain MRI sequences, which is encouraging. Optional sequences such as axial DWI and axial SE T1 2D scans were commonly performed, DIR scans were less frequent. This discrepancy may be attributed to the limited availability of DIR sequences on older MRI scanners and the increased technical complexity associated with their acquisition and interpretation.[4]

The frequent use of DWI is particularly justified in surveillance of high-risk PML patients, namely those exposed to natalizumab.[6] Other advanced techniques like DIR and SWI offer advantages in characterizing MS plaques, including cortical involvement, central vein sign, and paramagnetic rim lesions. Notably, the central vein sign and paramagnetic rim lesions not only serve as indicators of disability and MS progression but also enhance diagnostic sensitivity and specificity, particularly in light of the forthcoming diagnostic criteria. However, one disadvantage is the limited feasibility of using advanced MRI techniques, particularly in settings where imaging centers are at full capacity and equipped with 1.5T scanners, as commonly observed in many Portuguese healthcare institutions. In fact, certain advanced imaging sequences, such as those requiring higher magnetic field strengths or specialized hardware, may not be fully compatible or optimized for use with 1.5T scanners.[4]

Spinal cord MRI in pwMS is essential despite its challenges.[16] Consensus guidelines provide guidance on mandatory and optional sequences for SC MRI. In our study, there was high compliance with mandatory sequences.[6] While the SE T1 sagittal sequence is commonly performed, the underuse of PSIR raises concerns about its perceived benefits – enhances lesion detection by providing improved contrast with surrounding tissue – and feasibility in clinical practice. However, its limited adoption may be attributed to practical constraints such as time, technical complexity and relevant equipment limitations.[17]

Furthermore, we assessed the precision of MRI reports, which are usually largely dependent on clinical information and should be concise and acknowledge technical description, imaging reading and interpretation. In our study, none of the reports fulfilled all the suggested parameters in the three proposed criteria. In terms of MRI technique description, while most reports adequately described anatomical coverage and MRI sequences, details regarding gadolinium dose and magnetic field strength were notably absent. The latter is significant as it influences the completeness and accuracy of MRI interpretations, as this technical aspect significantly influences diagnostic accuracy in MS assessment.[17]

Regarding imaging description, a minority of studies had all the suggested details. Neuroradiologists frequently mentioned the anatomical distribution of T2 lesions but often omitted lesion load and atrophy characterization in reports, limiting disease severity, progression, and treatment response assessments.

Mirroring the information provided by physicians, the conclusion of the report was frequently incomplete, with few addressing all the suggested topics. The least reported topics in diagnostic MRI were imaging DIS/DIT criteria, as well as evidence of disease progression in follow-up MRI scans. Incomplete conclusions hinder comprehensive understanding of MRI findings and may hamper effective clinical decision-making. Enhancing the thoroughness and consistency of MRI reports is crucial for clinicians to have the necessary information to make informed decisions.[17] Better clinical information provided by the requesting physician may aid in improving report thoroughness, as demonstrated by the

correlation we showed between higher compliance in clinical information and higher compliance in reporting.

Comparing MRI scans before and after the 2020 consensus guidelines provides valuable insights into their impact on clinical practice. The increased frequency in MS phenotype information is noteworthy. However, it is concerning that there were no significant differences in neuroimaging protocols pre- and post-implementation periods. This suggests potential challenges in fully adhering to standardized protocols or in effectively implementing changes in clinical practice.[4] The increase in technical parameters reporting suggests a positive response to the consensus guidelines. Conversely, the reduction in information concerning lesion numbers and location raises concerns about the completeness of MRI reports.

Participating hospital centers have established varying protocols with private institutions, where private hospitals are contracted to perform MRI scans. We analyzed the data based on the setting where the MRI was conducted, comparing neuroimaging protocols and reports between settings, along with the timeliness of response, including whether the MRI was performed before the appointment and if the report was promptly available.

Scans conducted in public hospitals were less frequently available in time for the next appointment. However, the availability of the reports was similar in both settings. Thus, the location where the MRI was performed could influence the availability of MRI images but not reports, potentially impacting follow-up and therapeutic decisions when timely access to images is needed to make clinical decisions.

Neuroimaging protocols in private settings showed lower compliance with all mandatory brain MRI sequences, likely due to broader protocols, not adapted nor optimized for MS. Regarding reports in both settings, public hospitals notably outperformed the private sector in stating the availability of previous scans and making comparisons between them. This could be attributed to the unavailability of previous scans in private hospitals, while in public hospitals all scans conducted in public and private settings are often uploaded to public hospitals' patient records. Public hospitals also more frequently reported lesion count, brain atrophy, and incidentalomas. Conversely, private hospitals excelled in mentioning lesion location and interpreting findings, possibly due to the lack of previous scans to serve as comparison. Despite this, private reports more frequently indicated disease progression and better fulfilled recommended report conclusion criteria, including interpretation of findings, DIS/DIT criteria, and identification of new silent lesions, active plaques, or therapeutic adverse effects.

Therefore, when an MRI is performed in a public setting, one can anticipate more frequent comparisons between scans, while conclusions may be more detailed when the MRI is conducted in a private hospital.

Our findings have several limitations. One significant limitation was the lack of random sampling, as subjects were systematically selected from medical files based on availability until each center reached its target sample. This resulted from challenges in accessing full population lists and time constraints. Nevertheless, the large sample size and data uniformity may have mitigated this bias. Another limitation was restricted data access; in one center, MRI images and reports were unavailable in the hospital system, reducing participant availability from that center. Future studies should consider randomizing population to minimize biases. Additionally, the concept of a 'public setting' or 'private setting' as a whole may be limiting, as different centers may have varying guidelines and standards.

CONCLUSION

This study suggests that the Portuguese Consensus on MRI in MS has had limited impact on clinical practice, likely due to incomplete adherence by practitioners.

While public hospitals and private settings exhibit similarities in mandatory neuroimaging protocols, differences emerge in reporting practices. Despite the inherent limitations in this study, our findings emphasize the ongoing need to optimize MRI practices and strengthen communication between neurologists and neuroradiologists across healthcare settings. This is particularly relevant given the imminent adoption of new diagnostic criteria, which incorporate novel radiological markers and will demand more effective interdisciplinary communication and stricter adherence to standardized reporting protocols, ultimately contributing to improved diagnostic accuracy and patient management in multiple sclerosis. Future research endeavors should focus on addressing why national recommendations are not being followed and further refining MRI protocols and reporting standards to improve patient outcomes in MS management.

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AUTHOR CONTRIBUTIONS

RSR, DJP, JPG, LR, MS, MG, MS, JV, MJS: Study design, data analysis, critical review of the manuscript.

AC, AJM, ARC, CS, DC, FF, MS: Study design, data collection and analysis, writing and critical review of the manuscript.

All authors approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in October 2024.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

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AC received payment for the presentation *"Kesimpta: a Chave para Simplificar a Esclerose Múltipla"* from Novartis Farma; received support for attending meetings and/or travel from Merck, Janssen Cilag, Biogen Idec Portugal, Novartis Farma, Roche, Janssen Cilag and Sanofi.

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CS received payment from Merck for a presentation in MS Control Challenge meeting; received support for attending meetings and/or travel from Merck and Novartis Tecnifar.

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MS received speaker fees from Biogen, Merck and Novartis; received travel funding for meetings from Biogen, Novartis, Merck, Roche, Sanofi-Genzyme, Sandoz and Jannsen; served on an advisory board for Merck and Roche; received medical writing support from Merck.

DJP received consulting fees from Roche; received payment or honoraria from Roche and Bristol for lectures, presentations, speakers' bureaus, manuscript writing or educational events; received support from Roche for attending meetings and/or travel; has a leadership or fiduciary role in the Neuroradiology Specialty National Board at the Portuguese Medical Association, and the Portuguese Neuroradiological Society.

MCS received payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Bial; received support for attending meetings and/or travel from Merck, Biogen, Angelini and Bial.

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ACTA MÉDICA PORTUGUESA
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Kaposi's Sarcoma: Demographic and Clinical Features, Histopathology, Treatment, and Outcomes in a 10-Year Lisbon Hospital Study

Sarcoma de Kaposi: Características Clínicas e Demográficas, Histopatologia, Tratamento e Prognóstico em 10 Anos num Hospital em Lisboa

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ABSTRACT

Introduction: Kaposi's sarcoma (KS) is a rare angioproliferative neoplasm associated with human herpesvirus 8 infection, presenting as four subtypes: classic, endemic, iatrogenic, and epidemic. While well documented globally, comprehensive data on KS in Portugal remain scarce. The aim of this retrospective study was to provide a detailed analysis of KS cases diagnosed at Hospital Santa Maria, in Lisbon, between 2014 and 2023.

Methods: A total of 113 histopathologically confirmed KS cases were included, focusing on demographic, clinical, and histopathological characteristics, as well as treatment strategies and outcomes.

Results: The mean age at diagnosis was 59.4 years, with a male-to-female ratio of 4.4:1. Most patients (50.4%) were of African origin. Epidemic KS (45.1%) was the most prevalent subtype. Lesions mainly affected the lower limbs (47.8%), and disseminated, mucosal, and extracutaneous involvement were more common in HIV-positive patients. Tumor-stage lesions were frequent (59.3%). Single-modality treatment was used in 53.1% of cases, while 40.7% required combined therapies. Relapse rates were highest in endemic (39.1%) and iatrogenic KS (28.6%) subtypes. The disease-specific mortality rate was 8%.

Conclusion: Our findings suggest that KS remains a significant concern, particularly in immunosuppressed patients. Early diagnosis and multidisciplinary management are essential to improve outcomes. However, limitations such as potential biases from its retrospective design and the single-center scope should be considered.

Keywords: Sarcoma, Kaposi/diagnosis; Sarcoma, Kaposi/epidemiology; Sarcoma, Kaposi/pathology; Sarcoma, Kaposi/therapy

RESUMO

Introdução: O sarcoma de Kaposi (SK) é uma neoplasia angioproliferativa rara associada à infeção pelo herpes vírus humano 8, apresentando-se em quatro subtipos: clássico, endémico, iatrogénico e epidémico. Embora bem documentado globalmente, dados abrangentes sobre o SK em Portugal permanecem escassos. Este estudo retrospetivo tem como objetivo fornecer uma análise detalhada dos casos de SK diagnosticados no Hospital Santa Maria, em Lisboa, de 2014 a 2023.

Métodos: Um total de 113 casos de SK confirmados histologicamente foram incluídos, com foco nas características demográficas, clínicas e histopatológicas, bem como nas estratégias terapêuticas e desfechos.

Resultados: A idade média ao diagnóstico foi de 59,4 anos, com uma razão homem-mulher de 4,4:1. A maioria dos doentes (50,4%) era de origem africana. O SK epidémico (45,1%) foi o subtipo mais prevalente. As lesões afetaram principalmente os membros inferiores (47,8%), e o envolvimento disseminado, das mucosas e extracutâneo foi mais comum em doentes HIV-positivos. As lesões em estádio tumoral foram frequentes (59,3%). O tratamento com modalidades únicas foi utilizado em 53,1% dos casos, enquanto 40,7% exigiram terapêuticas combinadas. As taxas de recidiva foram mais elevadas nos subtipos endémico (39,1%) e iatrogénico (28%). A taxa de mortalidade específica da doença foi de 8%.

Conclusão: Os nossos resultados sugerem que o SK continua a ser motivo de preocupação significativa, particularmente em doentes imunossuprimidos. O diagnóstico precoce e a abordagem multidisciplinar são essenciais para melhorar o prognóstico. No entanto, as limitações inerentes ao desenho retrospetivo e ao caráter unicêntrico do estudo devem ser consideradas na interpretação dos dados.

Palavras-chave: Sarcoma de Kaposi/diagnóstico; Sarcoma de Kaposi/epidemiologia; Sarcoma de Kaposi/patologia; Sarcoma de Kaposi/tratamento

KEY MESSAGES

- Kaposi's sarcoma is a rare neoplasm that remains underexplored in Portugal, with few comprehensive studies available despite its clinical significance.
- In our study, the disease predominantly affected men, with 50.4% of patients being of African origin. The epidemic subtype is the most common, linked to Portugal's HIV prevalence.
- Advanced-stage lesions and extracutaneous involvement were more frequent in immunosuppressed patients, particularly those living with HIV.
- Tailored therapies, including highly active antiretroviral therapy (HAART), are critical for epidemic KS. Early diagnosis and multidisciplinary approaches are essential for better outcomes.

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INTRODUCTION

Kaposi's sarcoma (KS) is an uncommon malignant vascular neoplasm that most frequently affects the skin, although it can also involve mucous membranes, lymph nodes, and visceral organs.[1] First described by Moritz Kaposi in the late 1800s as an "idiopathic multiple pigmented sarcoma of the skin",[2] KS remained enigmatic until 1994, when human herpesvirus 8 (HHV-8) was recognized as the major causative agent, particularly in patients with acquired immunodeficiency syndrome (AIDS),[3] leading to its designation as Kaposi sarcoma herpesvirus. Human herpesvirus 8 is an oncogenic virus with variable prevalence worldwide, being more common in men who have sex with men (MSM), and in regions such as sub-Saharan Africa and Mediterranean-bordering countries.[4]

Kaposi's sarcoma exhibits considerable diversity in its epidemiological, clinical, and histopathological manifestations. Four main clinical forms are recognized: classic KS, affecting mainly elderly men of Mediterranean, Eastern Europe, or Middle Eastern origin; endemic KS, prevalent in sub-Saharan Africa; iatrogenic KS, occurring in immunosuppressed individuals, such as organ transplant recipients; and epidemic KS, associated with human immunodeficiency virus (HIV) infection.[5] Although the pathogenesis of KS remains incompletely understood, it is thought to result from a combination of viral infection, immunosuppression, and environmental exposures in genetically predisposed individuals.[6]

Diagnosis is based on clinical assessment, supported by histopathological and immunohistochemical analysis. Kaposi's sarcoma lesions exhibit three primary clinical and pathological stages – macule/patch, plaque, and tumor/nodule –, which often coexist in the same patient, reflecting the disease's progression.[7] Treatment approaches are heterogeneous and tailored, combining local and systemic therapies depending on the individual case.[8]

In Portugal, the demographic and clinical profiles of KS patients remain underexplored, with limited small-scale retrospective studies available.[9-11] Most of these studies lack a detailed breakdown of KS subtypes, making it difficult to assess potential epidemiological shifts or specific clinical challenges in different patient populations. This retrospective study seeks to provide a comprehensive analysis of patients diagnosed with KS at the Dermatology Department of Hospital Santa Maria, in Lisbon, over a 10-year period (2014 - 2023). By examining demographic, clinical, and histopathological characteristics, treatment modalities, and outcomes, this study aims to broaden the understanding of KS in Portugal and contribute to the optimization of patient care.

METHODS

Participant selection

Participants were selected from the database of individuals diagnosed with KS through skin biopsy at the Dermatology Department of Hospital Santa Maria, in Lisbon, Portugal, between January 2014 and December 2023. A total of 113 patients with primary or recurrent KS were included. Inclusion criteria consisted of a confirmed diagnosis of KS and the age of 18 years or older. Histopathological confirmation was conducted using hematoxylin and eosin staining, and immunohistochemistry positive for HHV-8, in cases with equivocal findings. Lesions were classified by histological stage based on their features:

- Macule/patch stage: presence of thin-walled vascular spaces in the upper dermis, accompanied by a sparse mononuclear infiltrate consisting of lymphocytes, plasma cells, and macrophages.
- Plaque stage: enlarged vascular spaces with a denser inflammatory infiltrate and spindle cell bundles surrounding angioproliferative clefts.
- Tumor/nodular stage: cutaneous lesions larger than one centimeter characterized by well-defined nodules composed of large fascicles of spindle-shaped endothelial cells and compact vascular slits.

Patients with incomplete medical records were excluded from the study. Ethics committee approval was obtained from the institutional Review Board of the hospital, and all procedures adhered to the principles outlined in the Declaration of Helsinki.

Data collection

Data were collected from electronic medical records, encompassing demographic details (age at diagnosis, sex, geographic origin, and comorbidities), clinical characteristics (location, appearance, number of lesions, extracutaneous involvement, and KS subtype), histopathological findings, treatment modalities, follow-up information, and patient outcomes. However, as this is a retrospective study, some electronic medical records were occasionally incomplete, which may have led to missing data for certain variables.

Statistical analysis

Statistical analyses were performed using SPSS® software (version 26.0). Descriptive statistical analysis was performed using measures of central tendency and dispersion measures. Inferential analysis was employed with both parametric and non-parametric tests. To evaluate the normality of distribution Kolmogorov-Smirnov and Shapiro-Wilk tests were employed when appropriate. Levene's test was used to verify homogeneity of variances. Qualitative

variables were compared with the χ^2 test (QQ) and Fisher's exact test. Quantitative variables were compared with the Student t-test or an independent samples Mann-Whitney U test (MW). Inter-rater reliability was calculated through Cohen's κ with the strength of agreement being classified according to Landis *et al*.[12] Significance was defined as α = 0.05, with all tests being bilateral.

Table 1 – Demographic, clinical and histopathological features, treatment modalities, and outcomes of KS patients treated at our institution between 2014/2023

		n (%)
Age	Minimum	27
	Maximum	97
	Mean (standard deviation)	59.4 (17.7)
Sex	Male	92 (81.4)
	Female	21 (18.6)
Origin	Africa	57 (50.4)
	Europe	50 (44.3)
	Others	6 (5.3)
Localization	Lower limbs	54 (47.8)
	Disseminated	20 (7.7)
	Head and neck	3 (2.7)
	Mucosal involvement	6 (5.3)
Lesion type (clinical)	Tumors/nodules	74 (65.5)
	Plaques	26 (22.1)
	Macules/patches	14 (12.4)
Number of lesions	< 10	70 (62)
	> 30	17 (15)
KS subtype	Epidemic	51 (45.1)
	Classic	25 (22.1)
	Endemic	23 (20.4)
	Iatrogenic	14 (12.4)
Involvement	Only cutaneous	93 (82.3)
	Cutaneous and extracutaneous	20 (17.7)
HIV	No	62 (54.9)
	Yes	51 (45.1)
Transplanted	No	106 (93.8)
	Yes	7 (6.2)
Iatrogenic immunosuppression	No	110 (97.3)
	Yes	3 (2.7)
HHV-8 status (peripheral blood)	Positive	5 (4.4)
Treatment	Single	60 (53.1)
	Multiple	46 (40.7)
Relapse	No	82 (72.6)
	Yes	25 (22.1)
Deceased	No	80 (70.8)
	Yes	33 (29.2)
Death related to KS	No	104 (92%)
	Yes	9 (8%)

RESULTS

This study included 113 patients, whose demographic, clinical and histopathological features, treatment modalities, and outcomes are summarized in Table 1.

Demographics

Patients' ages were between 27 to 97 years old, with a mean age at diagnosis of 59.4 (± 17.7) years. A statistically significant difference in mean age was observed, with patients with epidemic KS being younger compared to those with other variants, while patients with classic KS were older than the remaining subtypes (Table 2).

The cohort was predominantly male (n = 92, 81.4%), with a male-to-female ratio of 4.4:1. More than half of the patients (n = 57, 50.4%) were of African origin. The diagnosis of KS was made in 59.3% (n = 67) of cases during Dermatology appointments, followed by Dermatology urgent care in 24.8% (n = 28), and the inpatient setting of the Infectious Disease department in 15.9% (n = 18) of cases.

Clinical characteristics

Lesions were most found exclusively in the lower limbs, affecting 47.8% of patients (n = 54), followed by lower limb involvement with other sites in 19.5% (n = 22; predominantly the upper limb in 16 cases). In addition, 17.7% of patients (n = 20) presented with disseminated cutaneous lesions, of which 70% (n = 14) were HIV-positive. Mucosal involvement was observed in six patients, four of whom were HIV-positive. The most common clinical lesion type was tumors or nodules (n = 74, 65.5%), followed by plaques (n = 25, 22.1%).

The number of lesions varied, with 61.9% (n = 70) having less than 10 lesions. Regarding the clinical diagnosis, the hypothesis of KS was considered in 75.2% (n = 85) of cases. The other most frequently considered clinical hypotheses were pyogenic granuloma (n = 11, 9.7%), malignant melanoma (n = 5, 4.4%), and post-inflammatory hyperpigmentation (n = 3, 2.7%).

Regarding the clinical subtypes, the epidemic form of KS was the most common (n = 51, 45.1%), followed by the classic form (n = 25, 22.1%), endemic (n = 23, 20.4%), and iatrogenic (n = 14, 12.4%).

Immunosuppression was present in 57.5% of patients (n = 65), mainly due to HIV infection (n = 51, 45.1%), renal transplantation (n = 7, 6.1%), ongoing chemotherapy for other malignancies (n = 3, 2.7%), or chronic corticosteroid use (n = 3, 2.7%). Extracutaneous involvement, predominantly involving lymph nodes, lungs, and stomach, occurred in 17.7% (n = 20) of cases, with a higher prevalence in immunosuppressed patients (n = 17, 85%), especially in HIV-positive patients (n = 15, 75%).

Among the HIV-positive patients, 56.9% (n = 29) had CD4 counts below 200 cells/mm^3, with a median CD4 count of 53 cells/mm^3 in this group. However, 19 patients had CD4 counts above this threshold and 10 patients had CD4 counts above 400 cells/mm^3 at the time of diagnosis.

The HHV-8 status in peripheral blood samples was assessed in only five patients, all of whom tested positive for the virus.

Histopathological features

Histopathological analysis confirmed KS in all cases, with immunohistochemistry for HHV-8 showing positivity in all cases where performed (n = 51) – Fig. 1. Tumors or nodules (n = 67, 59.3%) were the predominant lesion type, followed by plaques (n = 30, 26.5%), and patches (n = 16, 14.1%). Cohen's kappa coefficient for agreement between the clinical and histopathological classifications of KS

Table 2 – Comparative overview of the main clinical subtypes of KS

	Epidemic KS (n = 51)	Classic KS (n = 25)	Endemic KS (n = 23)	Iatrogenic KS (n = 14)
Mean age (standard deviation), years	49.1 (13) ***p* < 0.001** (MW)	75.7 (11.5) ***p* < 0.001** (MW)	59.5 (18) *p* = 0.975 (t test)	67.6 (15.8) *p* = 0.056 (t test)
Male, n (%)	42 (82.4)	20 (80)	18 (78.3)	12 (85.7)
Extracutaneous involvement, n (%)	15 (29.4)	0	3 (13)	2 (14.3)
Relapse rate, n (%)	8 (15.7)	5 (20)	9 (39.1)	4 (28.6)
Disease related mortality, n (%)	5 (9.8)	1 (4)	2 (8.7)	1 (7.1)
Histological classification				
Tumor/nodule, n (%)	28 (54.9) *p* = 0.389 (QQ)	14 (56) *p* = 0.704 (QQ)	20 (86.9) ***p* = 0.002** (QQ)	5 (35.7) *p* = 0.055 (QQ)
Plaque, n (%)	15 (29.4) *p* = 0.532 (QQ)	8 (32) *p* = 0.484 (QQ)	2 (8.7) ***p* = 0.030** (QQ)	5 (35.7) *p* = 0.518 (Fisher)
Macule/patch, n (%)	8 (15.7) *p* = 0.673 (QQ)	3 (12) *p* = 1 (Fisher)	1 (4.4) *p* = 0.186 (Fisher)	4 (28.6) *p* = 0.111 (Fisher)

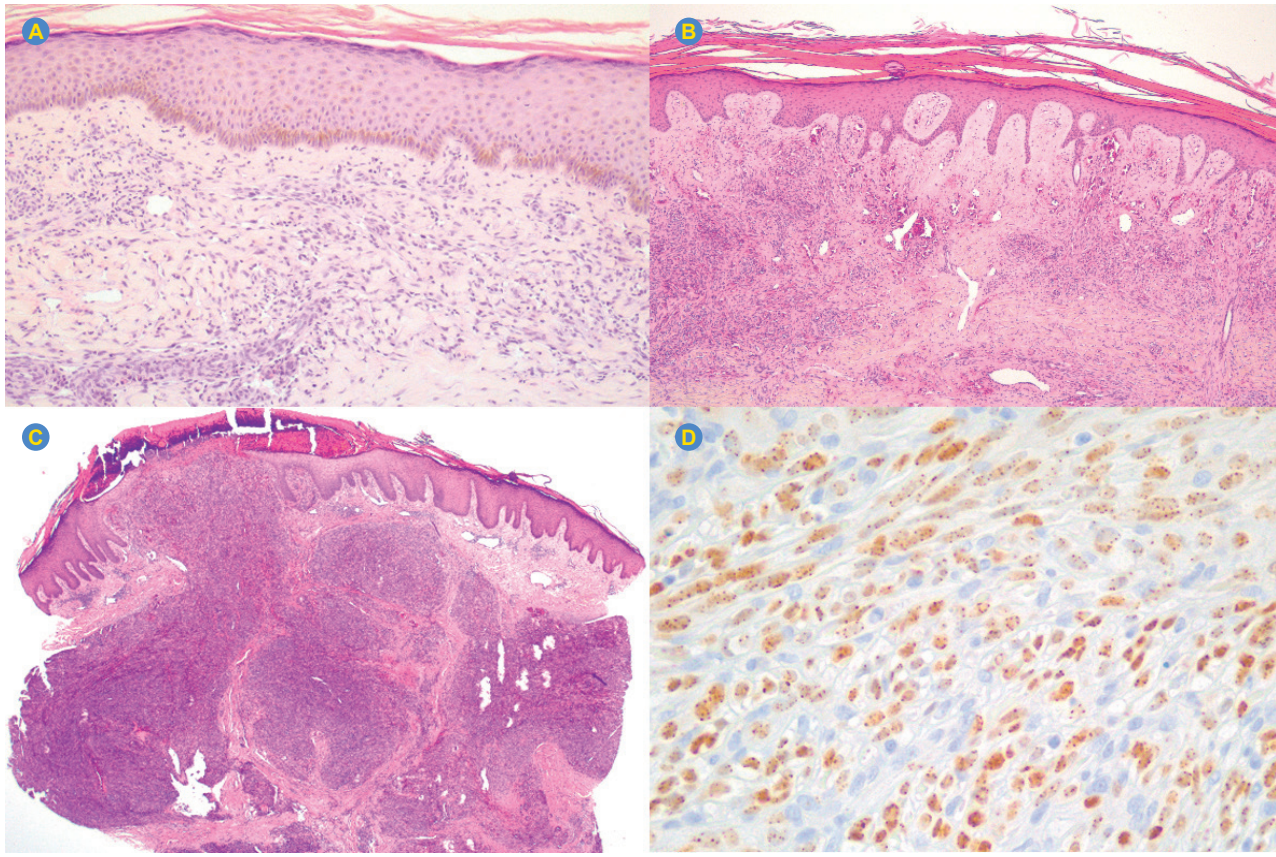

Figure 1 – Histopathological features. (A) Patch stage, H&E x 100; (B) Plaque stage, H&E x 40; (C) Tumor stage, H&E x 16; (D) Immunohistochemistry positive for HHV-8.

showed substantial agreement [κ = 0.60 (95% CI, 0.47 - 0.74), $p < 0.001$] between the two classifications.

Patients with endemic KS showed a significantly higher frequency of tumors/nodules and, to a lesser extent, plaques, compared to other subtypes (Table 2).

Treatment modalities

A single treatment modality was used in 53.1% of patients (n = 60), while 40.7% (n = 46) required multiple approaches (Fig. 2). In three transplant patients, the only treatment provided was the reduction of immunosuppressive

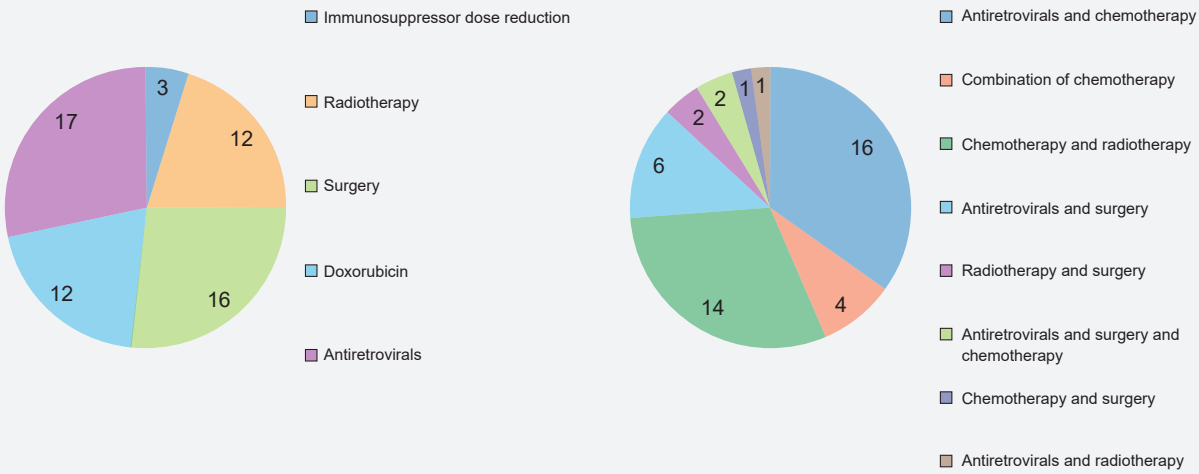

Figure 2 – Distribution of single and combined treatment regimens in patients with KS in our cohort

therapy. Treatment data was unavailable in seven cases.

Local therapies, such as surgical excision or radiotherapy, were used in 58 patients (29 for each modality). Systemic therapies were used in 54.9% (n = 62) of cases, with highly active antiretroviral therapy (HAART) for HIV-positive patients being the most common (n = 42, 37.2%). In 17 patients, HAART was used as the only therapy. Chemotherapy was administered to 44.2% (n = 50) of patients, with pegylated liposomal doxorubicin being the most used chemotherapeutic agent (n = 24, 38.7%). Thirty-four patients (30.1%) required second- or third-line chemotherapy with various systemic combinations such as doxorubicin, paclitaxel, pembrolizumab, and etoposide.

Response to treatment

A complete response maintained for at least two years was achieved in 30.1% (n = 34) of patients, while 65 patients (58.4%) had a partial response. Six patients had no response to treatment (5.3%) – Fig. 3.

Disease progression or relapse during the follow-up period occurred in 26 patients (23%) despite treatment. Notably, relapse rates varied between the different types of KS. Endemic KS had the highest relapse rate, affecting 39.1% (n = 9) of patients, followed by iatrogenic KS with a relapse rate of 28.6% (n = 4). In contrast, classic KS had a relapse rate of 20% (n = 5), while epidemic KS had the lowest rate at 15.7% (n = 8).

Mortality

The overall mortality rate in the cohort was 29.2% (n = 33), and the disease-specific mortality rate for KS was 8% (n = 9). Overall mortality was highest in patients with epidemic KS (n = 15, 45.5%), followed by endemic KS (n = 7, 21.2%), iatrogenic KS (n = 7, 21.2%), and classic KS (n = 4, 12.2%). Mortality due to KS dissemination was highest in patients with epidemic KS (n = 5, 56.6%), followed by endemic KS (n = 2, 22.2%).

DISCUSSION

Kaposi's sarcoma, even though it is a rare condition, remains a significant global health concern, particularly among immunosuppressed individuals and African populations.[13] Our hospital holds a privileged position for studying this neoplasm due to its close collaboration with the Infectious Diseases Department – resulting in a high influx of HIV-positive patients –, its role as a reference center for Portuguese-speaking African countries (PALOP), and its distinctive Dermatology urgent care service in Portugal, which manages a high volume of diverse patient cases.

Demographically, our findings concur with previous studies, confirming Portugal as one of the European countries with a higher age-standardized incidence rate of KS.[13,14] The mean age at diagnosis was 59.4 years, which is consistent with reports from other studies,[10,11,15] highlighting KS's predilection for older adults, especially those in their sixth

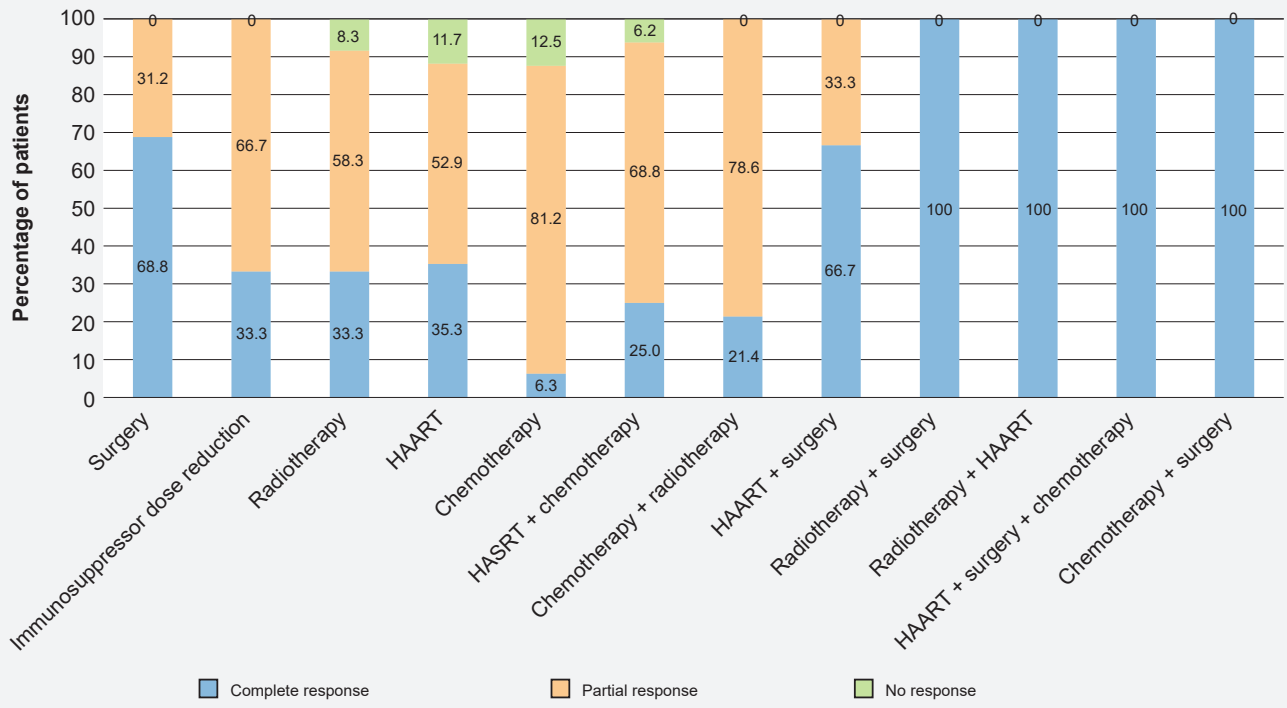

Figure 3 – Distribution of response to treatment according to each treatment regimen in patients with KS in our cohort

decade of life. However, our cohort had a younger mean age than reported in Turkey,[16] where classic KS predominates. This is likely due to the higher prevalence of epidemic KS in our cohort (45.1% *vs* 1.1%), which typically affects younger HIV-positive individuals, contrasting with classic KS that mainly impacts older Mediterranean men.[17]

A comparative overview of published Portuguese series is presented in Table 3, highlighting key epidemiological differences. Notably, our cohort includes a higher proportion of patients of African origin and a broader representation of KS subtypes, particularly the epidemic and endemic forms. These distinctions may reflect both evolving demographic patterns and the specific referral profile of our tertiary hospital.

In terms of sex, our study's male-to-female ratio of 4.4:1 is closely related with published data from European countries, showing KS's higher incidence in men. This may result from biological factors, like the role of sex steroids in immune regulation, and epidemiological factors, including the higher prevalence of HIV among MSM, a high-risk group for epidemic KS.[18,19]

The cohort's geographical diversity is notable, with 50.4% of patients originating from African countries, where endemic and epidemic forms of KS are more prevalent.[20] This diversity reinforces the role of Hospital de Santa Maria as a reference center for this population, contributing to a higher prevalence of these forms of KS in our cohort and providing a unique opportunity to study KS in these

Table 3 – Kaposi's sarcoma cases reported from Portugal

	Junger J[9]	Resende C[10]	Calvão-da-Silva J[11]	Present study
Year	2013	2014	2021	2025
Region	Lisbon	Lisbon	Coimbra	Lisbon
Period, years	19 (1994 - 2012)	13 (2001 - 2013)	10 (2010 - 2019)	10 (2014 - 2023)
n	118	91	38	113
Age, years (mean)	45	59.8	38	59.4
Male/female ratio	3.1	6	6.6	4.4
Origin				
Europe	62 (52.5%)	85 (93.4%)	31 (81.6%)	50 (44.3%)
Africa	36 (30.5%)	6 (6.6%)	-	57 (50.4%)
Others	-	-	-	6 (5.3%)
Location				
Lower extremity	67 (56.8%)	66 (74.2%)	9 (59%)	54 (47.8%)
Upper extremity	6 (5.1%)	-	1 (2.6%)	9 (8%)
Lower/upper extremity	13 (11%)	-	-	18 (16%)
Genitals	2 (1.7%)	-	3 (7.9%)	0
Trunk	12 (10.2%)	-	2 (5.3%)	3 (2.7%)
Head/neck	-	-	1 (2.6%)	3 (2.7%)
Generalized	-	-	12 (31.6%)	20 (17.7%)
Systemic involvement	7 (5.9%)	-	14 (37%)	19 (16.8%)
Immunosuppression	-	-	26 (68.4%)	65 (57.5%)
Variant				
Epidemic	74 (62.7%)	28 (30.8%)	16 (42.1%)	51 (45.1%)
Classic	26 (22%)	61 (67%)	12 (31.6%)	25 (22.1%)
Endemic	5 (4.3%)	1 (1.1%)	0	23 (20.4%)
Iatrogenic	13 (11%)	1 (1.1%)	10 (26.3%)	14 (12.4%)
Histopathology				
Macule/patch	-	14 (15.4%)	-	16 (14.1%)
Plaque	-	29 (35.8%)	-	30 (26.5%)
Tumor/nodule	-	48 (52.7%)	-	67 (59.3%)

-: not available; n: number of patients

high-risk populations.

A key observation is the diversity of KS subtypes, with epidemic KS as the most prevalent (45.1%), aligning with Portugal's relatively high HIV prevalence in Europe.[21] Interestingly, the iatrogenic subtype, accounting for 12.4% of cases, was predominantly seen in solid organ transplant recipients.

Lesions primarily affected the lower limbs (47.8%), consistent with a global pattern of KS.[22] Disseminated cutaneous lesions and mucosal involvement were more common in HIV-positive patients, indicating more advanced disease stages.[23] Most patients (82.3%) had cutaneous-only involvement, while 17.7% had extracutaneous spread at the time of the diagnosis, mainly involving lymph nodes, lung, and the gastrointestinal tract, especially among patients with epidemic KS. This finding lines up with previous studies, showing a higher incidence of extracutaneous involvement in HIV-positive patients, even in the post-HAART era.[24,25] In contrast, classic KS showed no extracutaneous involvement, consistent with its typically indolent nature.

Despite being an AIDS-defining illness commonly associated with CD4 counts below 200 cells/mm^3, KS remained prevalent even in HIV-positive patients with higher CD4 counts and suppressed HIV viral loads. This persistence may be attributed to immune dysfunction, weaker responses to HHV-8, and increased cancer risk.[26]

The histopathological analysis confirmed advanced-stage KS in most cases, with 59.3% of patients presenting with nodular or tumor-stage lesions, facilitating KS as the primary diagnostic consideration during initial consultations. However, early-stage lesions such as macules or patches posed diagnostic challenges, even with histological analysis, complicating early detection.[27,28] In these cases, immunohistochemical analysis for HHV-8 was performed when needed to support the diagnosis.

The high concordance between clinical and histopathological classifications emphasizes the reliability on clinical staging, which is particularly valuable when histopathological resources are limited.

Given the heterogeneity of KS, there are no standard therapeutic guidelines, leading to varied treatment approaches and outcomes.[29] In this cohort, most patients (53.1%) were managed with a single treatment modality, while 40.7% required combined therapies.

Among transplant patients, reducing immunosuppressive therapy was the primary management strategy, demonstrating the delicate balance between controlling KS and preventing organ rejection.[30]

Local treatments, such as surgical excision and radiotherapy, were used in nearly half of the cases, especially in patients with localized disease. Notably, cryosurgery and electrosurgery – often employed in dermatological practice – were not used in this cohort, likely due to the advanced stage of most lesions and the preference for more definitive treatments.

Systemic chemotherapy, particularly pegylated liposomal doxorubicin, was the most used systemic regimen, either alone or in combination, followed by paclitaxel, aligning with international treatment guidelines.[8,29,31]

The majority of patients had complete or partial responses to treatment, particularly when combined with local therapies. Notably, HAART alone was sufficient for achieving partial and complete responses in 88.2% of patients, emphasizing its critical role in managing epidemic KS. Endemic KS and iatrogenic KS had the highest relapse rates, possibly due to more advanced disease at diagnosis, difficulty in achieving long-lasting immune control of HHV-8, and persistent immunosuppression.[32,33]

The overall disease-specific mortality rate of 8% is in line with findings from other studies.[11,34] This rate was consistent across subtypes, except for classic KS, which had the lowest mortality, reflecting its typically indolent course. Although KS is often manageable, it remains a significant cause of mortality in patients with advanced or systemic disease.

This study is one of the largest KS cohorts analyzed in Portugal, providing a robust dataset that encompasses a diverse patient population, including individuals from the Portuguese-speaking African countries and those with HIV, less-studied KS subtypes within a European context. However, its retrospective design introduces potential biases, including incomplete data for some variables, such as HHV-8 status. Additionally, the single-center scope may limit the generalizability of findings to other healthcare settings.

CONCLUSION

This retrospective study offers valuable insights into the demographic, clinical, and histopathological features, as well as treatment and outcomes, with an exploratory statistical analysis of KS cases diagnosed over a decade at a tertiary hospital in Lisbon, Portugal. With 113 patients included, it expands knowledge about KS in Portugal, where data on the disease remain limited. Our findings emphasize the importance of early diagnosis, multidisciplinary management, and tailored therapeutic approaches to reduce relapse rates and improve outcomes, especially in immunosuppressed patients.

AUTHOR CONTRIBUTIONS

All authors contributed equally to this manuscript and approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed

according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in October 2024.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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The Perspective of Psychiatry and Child and Adolescent Psychiatry Residents About Psychotherapy Training in Portugal

Perspetivas dos Internos de Psiquiatria e Psiquiatria da Infância e da Adolescência sobre a Formação em Psicoterapia em Portugal

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ABSTRACT

Introduction: Psychotherapy is an effective treatment for various mental disorders. Most recommendations advocate training in psychotherapy for psychiatry and child and adolescent psychiatry residents. However, incorporating psychotherapy training into the curricula of psychiatric residency programs has proven difficult. In Portugal, competence in psychotherapy is not mandatory to become a psychiatrist or a child and adolescent psychiatrist. Our study aims to describe the perspectives of psychiatry and child and adolescent psychiatry residents on psychotherapy training in Portugal.

Methods: The authors developed a voluntary, anonymous, online self-reported questionnaire to be applied to psychiatry and child and adolescent psychiatry residents. Data was collected during 2023.

Results: The response rate was 29.9%. The main results were that most Portuguese psychiatry and child and adolescent psychiatry trainees stated that their institution did not provide psychotherapy training (95.2%) and were dissatisfied with the psychotherapy training provided by their residency centers (96.8%). All residents agreed that psychotherapy training involves a significant financial investment, and almost all (96.8%) believed it involved a substantial investment in terms of time in the long term. Likewise, most trainees (94.4%) considered psychotherapy training should be included within the residency work schedule. Crucially, psychiatry and child and adolescent psychiatry residents were interested in psychotherapy training (93.6%), and most regarded psychotherapy as a mandatory competence of the residency training program (85.7%). More than two-thirds (70.6%) of residents considered initiating or continuing psychotherapy training after residency. Regarding the modalities that should be included in the residency program, residents pointed out cognitive-behavioral therapy, family therapy, interpersonal psychotherapy, psychodynamic psychotherapy, and support psychotherapy. About 40% of respondents mentioned they were in personal psychotherapy during the residency.

Conclusion: Modifications in residency curricula should seriously be considered so that future psychiatrists can be qualified to provide effective psychotherapy treatment. The authors believe they provided relevant data pooled from future psychiatrists and child and adolescent psychiatrists which can be useful to help define training in a perceived essential competence.

Keywords: Adolescent Psychiatry/education; Child Psychiatry/education; Internship and Residency; Portugal; Psychiatry/education; Psychotherapy

RESUMO

Introdução: A psicoterapia é um tratamento eficaz para diversas perturbações mentais, sendo recomendada a sua inclusão na formação dos internos de psiquiatria e psiquiatria da infância e da adolescência. No entanto, a incorporação da formação em psicoterapia nos currículos dos programas de internato tem-se revelado difícil e, em Portugal, competência em psicoterapia não é obrigatória para ser psiquiatra. Este estudo pretende descrever as perspetivas dos internos de psiquiatria e psiquiatria da infância e adolescência sobre a formação em psicoterapia em Portugal.

Métodos: Os autores desenvolveram um questionário *online*, autoaplicável, voluntário e anónimo para ser preenchido por internos de psiquiatria e psiquiatria da infância e adolescência. Os dados foram colhidos em 2023.

Resultados: A taxa de resposta foi de 29,9%. A maioria dos internos portugueses de psiquiatria e psiquiatria da infância e da adolescência apontou que a sua instituição não oferece formação em psicoterapia (95,2%) e manifestou insatisfação com a formação em psicoterapia fornecida pelas suas instituições (96,8%). Todos os inquiridos concordaram que a formação em psicoterapia envolve um investimento monetário significativo, e quase todos (96,8%) acreditaram que envolve um investimento substancial em termos de tempo a longo prazo. Igualmente, a maioria dos inquiridos (94,4%) defendeu que a formação em psicoterapia deve ser incluída no horário de trabalho do internato. De ressalvar, os internos manifestaram interesse na formação em psicoterapia (93,6%), e a maioria considerou que a psicoterapia deve ser uma competência obrigatória do programa de formação do internato (85,7%). Mais de dois terços (70,6%) dos internos consideram iniciar ou continuar formação em psicoterapia após o internato. Relativamente às modalidades que deveriam ser incluídas no programa de internato, os internos destacaram terapia cognitivo-comportamental, terapia familiar, psicoterapia interpessoal, psicoterapia psicodinâmica e psicoterapia de suporte. Cerca de 40% dos inquiridos mencionaram que estavam em psicoterapia pessoal durante o internato.

Conclusão: É necessária uma reflexão séria sobre alterações curriculares para que os futuros psiquiatras possam ser qualificados a fornecer tratamento psicoterapêutico. Os autores acreditam que fornecem dados relevantes dos futuros psiquiatras que podem ser úteis para ajudar a definir a formação numa competência percecionada como essencial.

Palavras-chave: Internato e Residência; Portugal; Psicoterapia; Psiquiatria/educação; Psiquiatria do Adolescente/educação; Psiquiatria Infantil/educação

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KEY MESSAGES

- Psychotherapy is an effective treatment for various mental disorders, and its inclusion in psychiatry residency programs is recommended by international standards.
- The majority of Portuguese psychiatry trainees state that their institution does not provide psychotherapy training and that they are dissatisfied with the provided psychotherapy training.
- To the authors' knowledge, this is the first study aiming entirely to study Portuguese psychiatry and child and adolescent psychiatry residents' perspectives on psychotherapy training.
- We provide relevant data for evaluation by directors of residency programs about training in a perceived essential competence.

INTRODUCTION

Psychotherapy is an effective first-line or adjunctive treatment for various mental disorders in international guidelines.[1-3] Most European and North American recommendations advocate training in psychotherapy for psychiatry and child and adolescent psychiatry (CAP) residents.[4-6] However, incorporating psychotherapy training into the curricula of psychiatric residency programs has proven difficult, even in countries where psychotherapy training is required to become a psychiatrist, like Canada, Denmark, England, Ireland, and the United States of America (USA).[4,7-11]

A narrative review published by our team shows that psychiatry residents worldwide are interested in and value training in psychotherapy, some even considering that it should be a mandatory skill for psychiatrists.[12] Even so, most psychiatry residents feel dissatisfied with the training available in residency curricula, pointing out concerns related to the quality of resources, such as psychotherapy courses, case supervision, designated time within the residency period, and financial constraints.[12] To the authors' knowledge, no studies have investigated the perspective of CAP residents on psychotherapy training during the residency.

In Portugal, there are separate residency programs for psychiatry and CAP, even though trainees have placements in each other's medical specialty.[13,14] Both residencies last five years and encompass two main areas: clinical rotations and a didactic curriculum, which define compulsory placements suggested in specific years of the residency as well as a period of elective placements. The specific objectives of both residencies recommend that trainees should acquire competencies in the main modalities of psychotherapy, and this is one of the components evaluated as part of the final examination to become a specialist (first degree in the medical career).[13-16] However, this is an optional competence, and trainees can become specialists without having had any psychotherapy training during their residencies.

Using an online self-reported questionnaire, Pinto da Costa *et al* evaluated the perspective of Portuguese psychiatry residents on various components of the psychiatry residency, including some questions related to psychotherapy training.[17] The main finding of their 2013 study concerning psychotherapy training during residency was that most trainees supported the inclusion of psychotherapy training as a mandatory placement during residency.[17] Residents who were receiving or had received training in psychotherapy chose cognitive-behavioral therapy (CBT) (60.0%), psychodrama (28.0%), interpersonal (20.0%), family (16.0%), and psychodynamic (8.0%) therapies. Trainees in the last years of residency had psychotherapy training in higher percentages.[17] The psychotherapies elected to be included as mandatory were cognitive-behavioral (62.5%), family (42.5%), and psychodynamic (26.3%) therapies, with these last two having a higher percentage of interest in comparison to what residents chose for their training.[17] However, this study did not focus specifically on the perception of residents about psychotherapy training during residency, and further data are needed to fully understand the training needs for this specific component in Portugal. Further published studies conducted in other countries were designed to evaluate only specific aspects of the perceptions of psychiatry trainees regarding psychotherapy training, offering more insights into this area of investigation.[12]

Accordingly, our study aimed to describe the perspectives of psychiatry and CAP residents on psychotherapy training in Portugal.

METHODS

The authors developed a voluntary, online, anonymous self-reported questionnaire written in Portuguese to explore the perceptions of individual CAP and psychiatry trainees about psychotherapy training during residency. Our questionnaire was based on surveys used in international studies with a similar aim.[8,10,18-21]

In addition to sociodemographic questions, most of the questionnaire was comprised of 33 Likert-scaled items (rated from 1 "strongly disagree" or "nothing important" to 5 "strongly agree" or "extremely important"). These questions explored psychotherapy training aspects related to the residency center, residency in general, identity and personal perspectives, career plans, psychotherapy training

components, and the role of psychotherapy in psychiatric care. The survey also included two yes/no items about personal psychotherapy experience before and during residency and three multi-select multiple choice questions inquiring about which modalities of psychotherapy trainees were more interested in, which should be included in the residency program, and which were most valuable for their current and future clinical practice. For trainees who had personal psychotherapy at any time during residency (prior or ongoing), additional questions were included to clarify the modality used in personal psychotherapy, where psychotherapy was conducted (public system or private practice), frequency of sessions, duration in months, reasons why they engaged in personal psychotherapy, and the perception of personal psychotherapy improving competency as a psychiatrist. For candidates with no exposure to personal psychotherapy during their residency, we asked the reasons why they did not engage in personal psychotherapy, and if they planned to engage in the future. A copy of the full questionnaire is available upon request.

The Ethics Committee of the Faculty of Medicine of the University of Porto reviewed and approved the study and corresponding questionnaire (reference number 206/CE-FMUP/2023).

Individual invitations for CAP and psychiatry residents to participate in the survey were sent via e-mail by the two national associations of CAP and psychiatry trainees [Associação Portuguesa de Internos de Psiquiatria (APIP) and Associação Nacional de Internos de Psiquiatria da Infância e da Adolescência (ANIPIA)]. One follow-up e-mail and posts on social media were used to promote participation. The invitation detailed procedures for anonymity and assurance of confidentiality (no identifiers were used). Data were collected between October and December of 2023. The authors obtained the total number of Portuguese CAP and psychiatry trainees in this period by contacting the Central Administration of the Health System [Administração Central do Sistema de Saúde (ACSS)].

Statistical analysis of results was performed using the Statistical Package for Social Sciences® (SPSS®), version 29. Descriptive data analyses were executed. Likert scale results were recoded into two categories, based on looking for agreement or disagreement to the sentence of each item. Comparisons between categorical variables were made using the chi-square test (χ^2) or Fisher's exact test (FT), considering a significant level of $\alpha = 0.05$. Corrections for multiple analyses were not performed, given the exploratory aim of this study. Regarding residency center districts, we aggregated residents from centers in the two main Portuguese districts (Lisbon and Oporto) and trainees from centers in other districts. For training years, residents were separated into two pairs of two groups: first years (1st to 3rd years) and last years (4th and 5th years), and first year (1st year) and other years (2nd to 5th years), according with similar studies in the literature.

RESULTS

Questionnaires were completed by 126 of 422 eligible psychiatry and CAP residents with a response rate of 29.6% and 31.1%, respectively (total response rate of 29.9%). Table 1 provides sample characteristics. Most respondents (81.7%) were psychiatry trainees. Around two-thirds (69.0%) of the respondents were female, and the median age was 29 years (range 25 - 41). The proportion of residents who worked in residency centers located in the main districts of Portugal (Lisbon and Oporto) was similar

Table 1 – Sample sociodemographic characteristics

	Psychiatry trainees (n = 103)	**CAP trainees** (n = 23)	**All trainees** (n = 126)
Sex (n; %)			
Male	36; 35.0	3; 13.0	39; 31.0
Female	67; 65.0	20; 87.0	87; 69.0
Age (median; range)	29; 25 - 41	29; 26 - 41	29; 25 - 41
Year of Residency (n; %)			
1	21; 20.4	3; 13.0	24; 19.0
2	22; 21.4	8; 34.8	30; 23.8
3	22; 21.4	5; 21.7	27; 21.4
4	21; 20.4	6; 26.1	27; 21.4
5	17; 16.5	1; 4.3	18; 14.3
District of the residency center (n; %)			
Lisbon and Oporto	42; 40.8	18; 78.3	60; 47.6
Other districts	61; 59.2	5; 21.7	66; 52.4

CAP: child and adolescent psychiatry

to those working in centers elsewhere (47.6% and 52.4%, respectively).

The main findings are presented in Table 2. Most respondents (95.2%) stated that their institution did not provide psychotherapy training, and most (96.8%) were dissatisfied with the psychotherapy training provided by their

Table 2 – Main findings of psychiatry and child and adolescent psychiatry residents' perspectives on psychotherapy training (section 1 of 2)

	Psychiatry trainees (n = 103)	**CAP trainees** (n = 23)	**All trainees** (n = 126)
Residency center (n; %)			
Institution does not provide psychotherapy training.	99; 96.1	21; 91.3	120; 95.2
Dissatisfaction with the psychotherapy training provided by the residency center.	99; 96.1	23; 100	122; 96.8
Department has qualified professionals with competence in psychotherapy training.	29; 28.2	4; 17.4	33; 26.2
Department does not provide structured theoretical psychotherapy training.	87; 84.5	18; 78.3	105; 83.3
Department does not provide psychotherapy supervision.	91; 88.3*	16; 69.6*	107; 84.9
Residency (n; %)			
Psychotherapy should be a mandatory competence of the residency training program.	91; 88.3	17; 74.0	108; 85.7
Psychotherapy training should be included within the residency work schedule.	97; 94.2	22; 95.6	119; 94.4
Psychotherapy training should be consolidated in a placement during the residency.	85; 82.5	21; 91.3	106; 84.1
Thinking of seeking, or already sought, additional training in psychotherapy, outside the training institution.	101; 98.0	22; 95.6	123; 97.6
Training programs should formally evaluate trainees' competence in different psychotherapy modalities.	44; 42.7	6; 26.1	50; 39.7
Personal psychotherapy should be mandatory to trainees during the residency.	42; 40.8	9; 39.1	51; 40.8
Identity and personal perspectives (n; %)			
Interest in psychotherapy training.	96; 93.2	22; 95.6	118; 93.6
Psychotherapy is a necessary competence in psychiatry clinical practice.	86; 83.5	22; 95.6	108; 85.7
Psychotherapy is an integral part of professional identity.	65; 63.1	19; 82.6	84; 66.7
Pride of becoming a psychotherapist.	70; 68.0	19; 82.6	89; 70.6
Psychotherapy training was the main reason for choosing residency in psychiatry.	13; 10.3	3; 13.0	16; 12.7
Decreased interest in psychotherapy training during the residency.	14; 13.6	5; 21.7	19; 15.1
Psychotherapy training should be left only to other mental health professionals, like psychologists.	8; 7.8	5; 21.7	13; 10.3
Psychotherapy training involves a big investment in terms of time at a long term.	99; 96.1	23; 100	122; 96.8
Psychotherapy training involves a big monetary investment.	103; 100	23; 100	126; 100
Difficult access to institutions dedicated to psychotherapy training.	53; 51.4	10; 43.5	63; 50.0

Table 2 – Main findings of psychiatry and child and adolescent psychiatry residents' perspectives on psychotherapy training (section 2 of 2)

	Psychiatry trainees (n = 103)	CAP trainees (n = 23)	All trainees (n = 126)
Career plans (n; %)			
Interest in starting or continuing psychotherapy training after residency.	69; 67.0	20; 87.0	89; 70.6
Interest in incorporating psychotherapy knowledge, but psychopharmacology will be the base treatment in clinical care.	51; 49.5**	5; 21.7**	56; 44.4
The base treatment in clinical care will be based on psychotherapy, and less with psychopharmacology.	12; 11.6*	7; 30.4*	19; 15.1
Will to provide structured psychotherapy to patients.	37; 29.4	9; 39.1	46; 36.5
Psychotherapy is a lucrative way of life.	18; 17.5	3; 13.0	21; 16.7
Psychotherapy training components (n; %)			
Importance of theoretical training.	101; 98.0	22; 95.6	123; 97.6
Importance of personal psychotherapy.	59; 57.3	17; 74.0	76; 60.3
Importance of number of cases accompanied during the residency.	67; 65.0	19; 82.6	86; 68.2
Importance of supervision.	84; 81.6*	23; 100*	107; 84.9
Psychotherapy role in psychiatry care (n; %)			
Psychotherapy is important in the contemporaneous clinical practice.	84; 81.6	20; 87.0	104; 82.5
Psychotherapy is part of a model of care that values evidenced based healthcare.	93; 90.3	22; 95.6	115; 91.3
The combination of psychotherapy and psychopharmacology is the best treatment for some psychiatry disorders.	102; 99.0	23; 100	125; 99.2

CAP: child and adolescent psychiatry
*: $p < 0.05$
**: $p < 0.005$

residency centers. However, around one-quarter of the trainees (26.2%) believed their department had qualified professionals competent in psychotherapy training.

Most trainees (85.7%) regarded psychotherapy as a mandatory competence of the residency training program. The vast majority (94.4%) defended that psychotherapy training should be included within the residency work schedule, and most (84.1%) defended the consolidation of psychotherapy training as a placement during the residency.

Most trainees (93.6%) were interested in psychotherapy training. Only 15.1% of residents considered that their interest in psychotherapy training decreased during the residency. All respondents agreed that psychotherapy training involved a significant financial investment, and almost all (96.8%) believed it involved a substantial investment in terms of time in the long term. Decreased interest in psychotherapy training during the residency was associated with last years' residents (4th and 5th years; FT, $p = 0.021$) and some aspects of professional identity and residency: low interest in psychotherapy training in general (FT, $p < 0.001$), perception of psychotherapy as an unnecessary competence in psychiatry clinical practice (FT, $p < 0.001$), not viewing psychotherapy as an integral part of professional identity (χ^2, $p = 0.014$), low pride in becoming a psychotherapist (χ^2, $p < 0.001$), regarding psychotherapy an optional competence of the residency training program (FT, $p < 0.001$), perception of psychotherapy training not being included within the residency work schedule (FT, $p = 0.010$), and not seeking, nor thinking of pursuing, additional training in psychotherapy, outside the training institution (FT, $p = 0.003$). No significant differences were found between aspects related to career plans, personal psychotherapy, institutional factors, and view of psychotherapy's role in psychiatric care.

More than two-thirds (70.6%) of residents considered

initiating or continuing psychotherapy training after residency, and 36.5% mentioned they would be providing structured psychotherapy to patients. This rate was significantly increased in first-year trainees compared to trainees from other years (χ^2, $p = 0.046$).

Trainees rated the importance of training components as follows: theoretical training (97.6%), supervision (84.9%), number of cases accompanied during the residency (68.2%), and personal psychotherapy (60.3%). Half of the respondents mentioned they had easy access to institutions dedicated to psychotherapy training. While residents outside the two main Portuguese districts (Lisbon and Oporto) reported lower access to psychotherapy training centers, this difference did not reach statistical significance (χ^2, $p = 0.074$).

Figure 1 shows the frequency distribution of the expression of interest in different psychotherapy modalities in the study sample and in CAP and psychiatry residents. The psychotherapy modality sparking more interest among trainees was CBT (87.3%), followed by family therapy (58.7%), interpersonal psychotherapy (58.7%), and psychodynamic psychotherapy (38.9%). These modalities were also identified as most valuable for the residents' current and future clinical practice (Fig. 2) and selected for inclusion in residency programs (Fig. 3). Stratified analysis by specialty showed that interpersonal and support psychotherapies were the most relevant to be included in residency programs for psychiatry residents (χ^2, $p = 0.005$ and χ^2, $p = 0.040$; respectively) *versus* family therapy for CAP residents (χ^2, $p = 0.010$) (Fig. 3).

Personal psychotherapy

Less than half (40.5%) of the respondents had current or prior exposure to personal psychotherapy during the residency. CAP trainees engaged more in personal psychotherapy during residency than psychiatry trainees (χ^2, $p = 0.028$).

For most trainees who engaged in personal psychotherapy, sessions were performed weekly (60.8%) in private practice, outside the residency center (92.2%). The median duration of treatment was nine months (range 2 - 36 months), and the most frequent modalities were CBT (52.9%), psychodynamic (25.5%), and interpersonal (15.7%) psychotherapies. The majority (86.5%) agreed personal psychotherapy improved their competencies as psychiatrists.

The main reasons for initiating personal psychotherapy were suffering or psychiatric symptoms (78.4%), self-knowledge (62.7%), general objectives of psychotherapy training

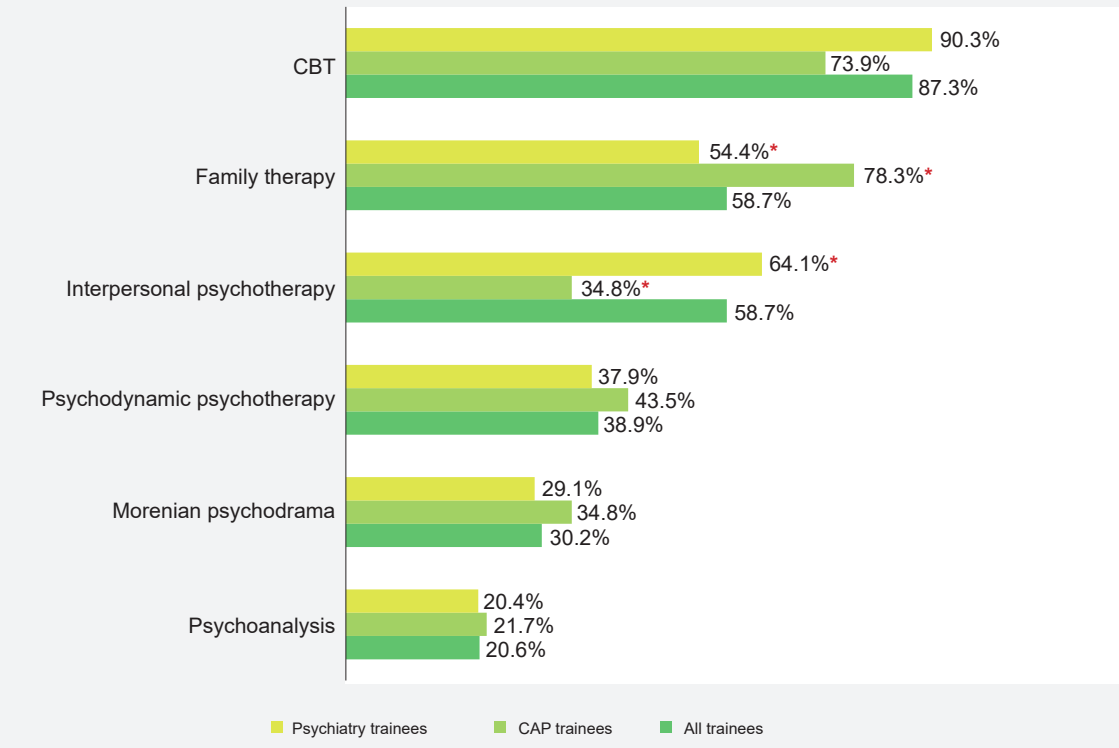

Figure 1 – Frequency distribution of residents' interest in psychotherapy modalities
CAP: child and adolescent psychiatry; CBT: cognitive-behavioral therapy
*: $p < 0.05$

(52.9%), and recommendation to undergo a process of personal psychotherapy by the residency director (17.6%).

Of the residents who were on personal psychotherapy, more than half (54.7%) planned to do so in the future. The main reasons found for residents not engaging in personal psychotherapy during residency are presented in Fig. 4.

Respondents who engaged in personal psychotherapy were more interested in psychotherapy training

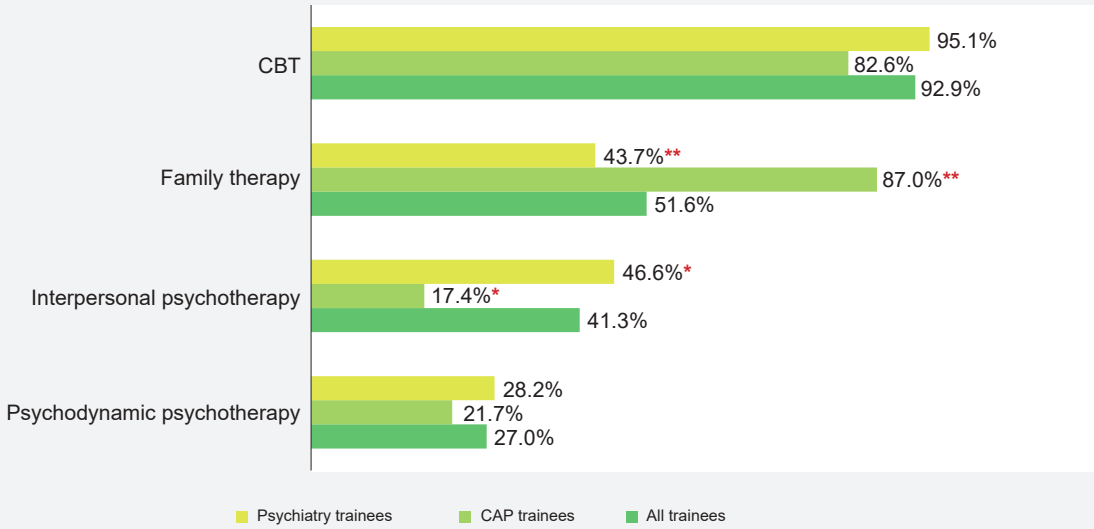

Figure 2 – Frequency distribution of psychotherapy modalities with more value to present and future clinical practice according to trainees
CAP: child and adolescent psychiatry; CBT: cognitive-behavioral therapy
*: $p < 0.05$
**: $p < 0.001$

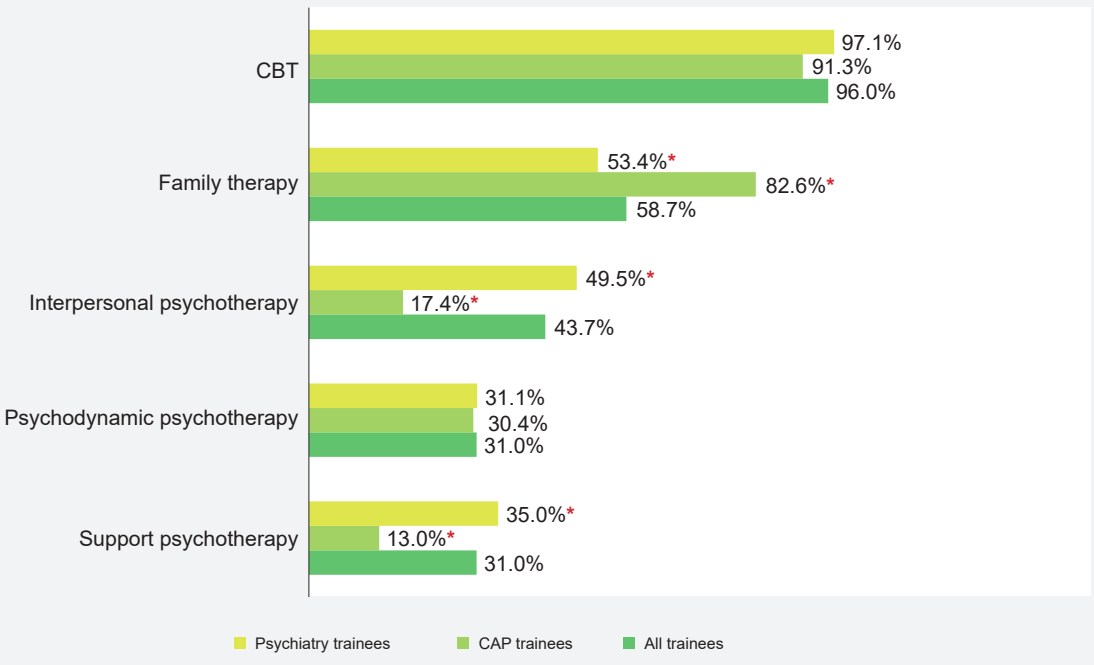

Figure 3 – Frequency distribution of psychotherapy modalities that should be included in the residency programs according to residents
CAP: child and adolescent psychiatry; CBT: cognitive-behavioral therapy
*: $p < 0.05$

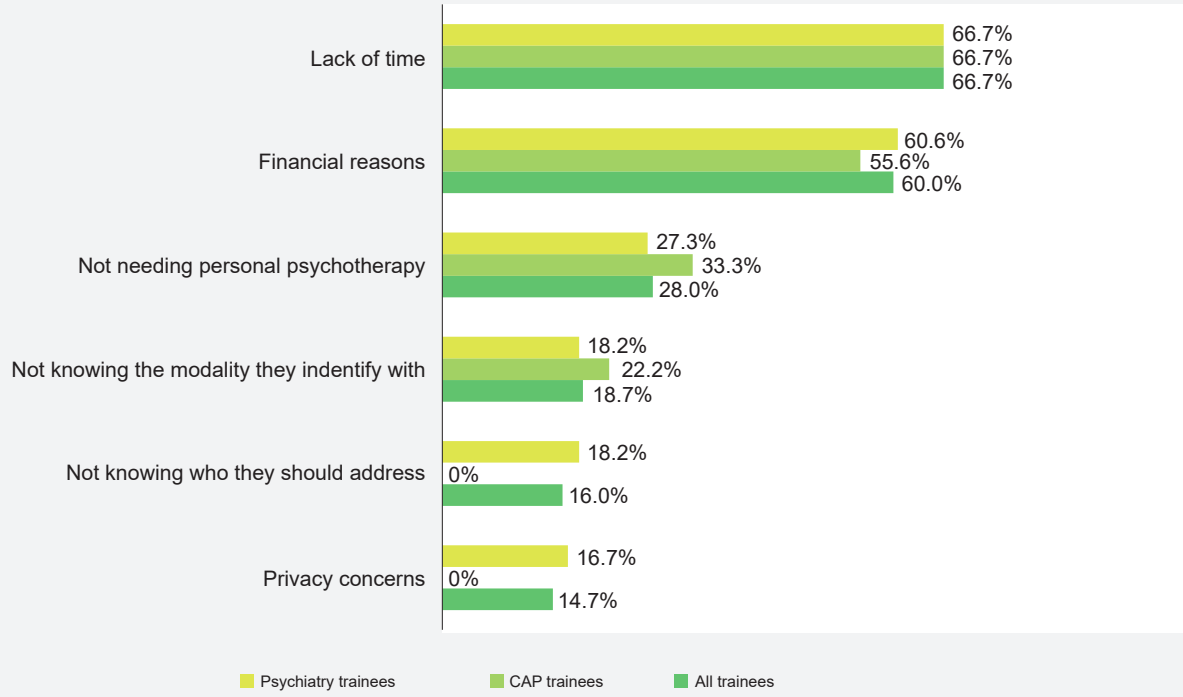

Figure 4 – Main reasons for not engaging in personal psychotherapy during residency
CAP: child and adolescent psychiatry

(FT, p = 0.021) and perceived psychotherapy as an integral part of their professional identity (χ^2, p = 0.007) when compared to those who did not engage in personal psychotherapy.

DISCUSSION

To the authors' knowledge, this is the first study assessing the perspective of Portuguese CAP residents on psychotherapy training and the first study specifically studying the perspectives of Portuguese psychiatry residents on psychotherapy training.

The main finding was that the majority (95.2%) of Portuguese CAP and psychiatry trainees stated that their institution did not provide psychotherapy training. In accordance with previous reports in the literature from similar studies in other countries, Portuguese trainees reported dissatisfaction with the psychotherapy training provided by their residency centers,[9,22-24] and pointed out concerns related to time and cost of psychotherapy training.[7,21,25-27] Also in agreement with other studies, we found that Portuguese residents were interested in psychotherapy training, regarded psychotherapy as a mandatory competence of the residency training program, and as an integral part of their professional identity.[7,8,10,17,19,24,26-28]

As reported in previous studies of Danish and Portuguese residents, we found that the vast majority of trainees considered that psychotherapy training should be included within the residency work schedule, and that consolidation of psychotherapy training should be a placement during the residency.[7,17] Moreover, around one-quarter of Portuguese psychiatry and CAP trainees believe their department had qualified professionals who were competent in psychotherapy training and could provide psychotherapy training. These suggestions could help institutions address trainees' concerns about the time and cost of psychotherapy training.

A substantial number of residents considered initiating or continuing psychotherapy training after residency, but only a minority mentioned they would be providing structured psychotherapy to their patients. This rate was higher in first-year trainees vs trainees from other years of residency, a finding also reported in the literature.[10,19] We hypothesize that reduced access to psychotherapy training and subsequent difficulty in becoming a licensed psychotherapist may explain the reduced willingness to provide psychotherapy as a psychiatrist. Our data also showed that some trainees tended to lose interest in psychotherapy training as they progressed in the residency. This could be attributed to professional identity and future career plans, dissatisfaction with the quality of the psychotherapy curricula, lack of support, and low self-perceived competency in psychotherapy.[10,18] In our study, we found that the perception of psychotherapy training not being included within the

residency work schedule also contributed to reduced interest in pursuing psychotherapy training. Incorporating high quality psychotherapy training in the residency might reduce this tendency. Only one study in the literature, concerning Canadian psychiatry trainees, found that the majority of psychiatry trainees (around 70%) were generally satisfied with their psychotherapy training.[10] In this study, the satisfaction with overall training experience and supervision and feeling competent to perform psychotherapy were significantly associated with the decision to practice psychotherapy after completion of residency.[10] This finding further suggests that maintaining residents' interest in psychotherapy requires improvements in the residency curricula.

Half of the respondents mentioned they had easy access to institutions dedicated to psychotherapy training, and there were no significant differences regarding accessibility in the main Portuguese districts (Lisbon and Oporto) vs elsewhere. The rising number of online psychotherapy courses after the COVID-19 pandemic could explain this finding. Regarding psychotherapy training components, trainees valued theoretical training and supervision more than the number of cases accompanied during the residency and personal psychotherapy, and therefore, efforts to include or improve theoretical training and supervision could be made. We suggest that this training could be implemented with online national groups for accessibility and cost-effectiveness purposes.

Among all residents, CBT was elected as the preferred modality to be included in residency training, followed by family therapy, interpersonal psychotherapy, psychodynamic psychotherapy, and supportive psychotherapy. These findings are in agreement with the conclusions of Pinto da Costa *et al*.[17] Adjustments could be made to psychiatry and CAP residency programs as psychiatry trainees defended more the inclusion of interpersonal and support psychotherapies compared to CAP residents, who preferred the inclusion of family therapy.

Regarding personal psychotherapy, some respondents agreed that it should be mandatory for trainees during their residency. As reported in a 2003 study[23] developed in Australia and New Zealand, we found that personal psychotherapy was less valued than theoretical training, supervision, and a number of cases accompanied during the residency. Still, in other studies developed in the USA and Canada, trainees considered personal psychotherapy a valuable part of psychotherapy training.[20,27,29]

Almost half of the trainees were undergoing personal psychotherapy during residency, similar to what was found for Canadian psychiatry trainees,[29] and more than it was found in a study of residents from the USA.[30] Similarly to these studies, we found that most trainees' personal psychotherapy sessions took place weekly, were long-term, and were conducted mainly in private practices.[29,30] For both USA and Canada, most of the residents' personal psychotherapy had a psychodynamic basis,[29,30] in contrast with our finding of CBT being the most frequent personal psychotherapy modality in Portuguese trainees. The majority of trainees agreed that personal psychotherapy improved their skills as psychiatrists. The main reasons identified by Portuguese trainees for initiating personal psychotherapy were the existence of suffering or psychiatric symptoms, self-knowledge, and general objectives of psychotherapy training, in comparison with self-awareness, self-understanding, personal growth, and professional development, which were the most common reasons for USA and Canadian residents as well.[29,30] Of the residents not on personal psychotherapy, more than half planned to do it in the future. As found in other studies,[29,30] the main reasons for not engaging in personal psychotherapy were lack of time and financial factors and therefore, efforts must be made to promote it during residency. Trainees who engaged in personal psychotherapy were more interested in psychotherapy training and perceived psychotherapy more as an integral part of professional identity than respondents not in personal psychotherapy, as found by Lanouette *et al*.[19]

Regarding future studies, psychotherapy courses could be developed and applied to residents during the residency, and a questionnaire could be used to assess the perspectives of psychiatric residents on psychotherapy training after the course. Another hypothesis would be to analyze the perspectives of other mental health professionals, such as psychiatrists or residency program directors, about psychotherapy training. Finally, validating a questionnaire to be applied in various countries would help compare the same aspects and find ways to improve psychotherapy training, encompassing elements of what happens in countries where residents are more satisfied with their psychotherapy training.

There are some limitations to this study, mostly related to the methodology. An online self-reported questionnaire has inherent limitations, even though it was done for accessibility purposes. A selection bias may be present since participants may be more interested in psychotherapy than non-participants. Questions about the validity of the questionnaire can arise since there is no validated questionnaire in this field of investigation. Another limitation was the relatively small sample size, meaning that some findings of this questionnaire must be interpreted with caution. However, the overall response rate is comparable to similar studies developed in other countries and represents almost one-third of the study population.[18,24] A possible motive for the low response rate could be collecting data online rather than physically in each residency center. Other possible ways to increase participation in similar future studies could

be reducing the size of the questionnaire or sending the link of the questionnaire to the responsible of each residency center.

CONCLUSION

The incorporation of psychotherapy training into the psychiatry residency program is recognized to be challenging in various countries, and so is the case in Portugal. The authors found that Portuguese psychiatry and child and adolescent psychiatry trainees were dissatisfied with the psychotherapy training provided by their institution. Nevertheless, these residents are interested in psychotherapy training and regard psychotherapy as a mandatory competence. Further work is needed to clarify the aspects related to the lack of psychotherapy training in residencies, as perceived by trainees, and to test the best approaches for psychotherapy education in this context. Serious reflection about modifications in residency curricula must be made so future psychiatrists trained in Portugal can be qualified to provide the best care for their patients.

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AUTHOR CONTRIBUTIONS

RMS: Study conception and design, data acquisition, analysis and interpretation, writing of the manuscript.

OvD: Study conception and design, data interpretation, writing of the manuscript.

All authors approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in October 2024.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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ACTA MÉDICA PORTUGUESA
A Revista Científica da Ordem dos Médicos

Processos de Autorização de Acesso a Registos Clínicos Hospitalares: O Caso de um Estudo Multicêntrico

Authorization Processes for Access to Hospital Clinical Records: The Case of a Multicenter Study

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RESUMO

A prática clínica gera diariamente um manancial de dados, recolhidos com o fim de prestar cuidados de saúde. No entanto, estes dados encerram em si um potencial de contributo na geração de conhecimento. Este estudo visou descrever o processo de submissão de pedidos de acesso a registos clínicos para investigação e a heterogeneidade na avaliação de um projeto de investigação de âmbito nacional, pelos conselhos de administração e as comissões de ética dos hospitais, centros hospitalares e unidades locais de saúde do Serviço Nacional de Saúde. São descritos os procedimentos e os tempos de espera. Os resultados deste estudo evidenciam uma considerável variabilidade no processo de submissão de pedidos de acesso a dados clínicos e avaliação de protocolos de investigação. Evidenciam igualmente longos tempos de espera até à obtenção de autorizações. Este estudo revela a necessidade urgente de continuar a discussão sobre as questões éticas e legais que os estudos que necessitam de acesso a registos clínicos, ou outros dados de saúde, envolvem.

Palavras-chave: Anonimização de dados; Comissões de Ética Clínica; Confidencialidade; Investigação Biomédica; Portugal; Registos Electrónicos de Saúde; Registos de Saúde Pessoal

ABSTRACT

Clinical practice generates a wealth of data daily, collected for the purpose of providing healthcare. However, this data holds the potential to contribute to the generation of knowledge. The aim of this study was to describe the process of submitting requests for access to clinical records for research and the heterogeneity in the evaluation of a national research project by the boards of directors and ethics committees of hospitals, hospital centers, and local health units within the Portuguese national health service. The procedures and waiting times are described. The results of this study highlight considerable variability in the process of submitting requests for access to clinical data and the evaluation of research protocols. They also reveal lengthy waiting times for obtaining authorizations. This study underscores the urgent need to continue the discussion on the ethical and legal issues involved in studies requiring access to clinical records or other health data.

Keywords: Biomedical Research; Confidentiality; Data Anonymization; Electronic Health Records; Ethics Committees, Research; Portugal; Health Records, Personal; Portugal

INTRODUÇÃO

A prática clínica gera diariamente um manancial de dados, recolhidos com o fim de prestar cuidados de saúde. No entanto, estes dados encerram em si um potencial de contributo na geração de conhecimento. A utilização de registos clínicos para investigação envolve princípios éticos e legais, cujo debate tem vindo a ser feito,[1-3] mas o equilíbrio entre direitos individuais dos doentes/utentes/cidadãos e a necessidade de investigação é um debate que permanece fundamental.

O acesso direto aos registos clínicos hospitalares é essencial para obter informações detalhadas e abrangentes que nem sempre estão disponíveis noutras fontes de dados. Para doenças pouco frequentes, é crucial que esse acesso ocorra de forma coordenada e homogénea em vários hospitais, através de estudos multicêntricos, de forma a permitir uma avaliação mais robusta da resposta ao tratamento, do risco de recidiva e de outros aspetos clínicos que seriam insuficientemente representados com dados de um único hospital.

Este trabalho visa descrever o processo de submissão de pedidos de acesso a registos clínicos para investigação e a heterogeneidade na avaliação de um projeto de investigação de âmbito nacional, pelos conselhos de administração (CA) e as comissões de ética (CE) dos hospitais, centros hospitalares e unidades locais de saúde do Serviço Nacional de Saúde (SNS).

O projeto de investigação em questão foi um estudo observacional retrospetivo multicêntrico que teve por objetivo descrever os casos de leishmaniose diagnosticados em Portugal Continental, nos hospitais do SNS, no período entre 2010 e 2020. A metodologia detalhada deste projeto encontra-se publicada.[4] Pretendeu-se incluir todos os

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hospitais, centros hospitalares e unidades locais de saúde públicos de Portugal Continental (45). O contacto foi realizado por *email*, para CA e/ou CE, de acordo com os dados disponíveis nas páginas oficiais das instituições. O primeiro contacto, a solicitar acesso a processos clínicos, foi realizado no dia 28 de setembro de 2021, sendo utilizado o mesmo corpo de texto e enviado o mesmo protocolo do estudo em anexo, incluindo um pedido de dispensa de consentimento informado. Em caso de não resposta, foi repetido o envio do mesmo *email* aproximadamente às quatro e às oito semanas após o contacto inicial.

Os tempos de resposta dos CA e CE foram registados de acordo com as datas de emissão de parecer ou autorização constantes nos documentos oficiais enviados aos investigadores ou na data de receção de *email* com indicação de parecer favorável, nos casos em que não houve envio de documento oficial.

Os procedimentos para avaliação do projeto e os tempos de espera encontram-se resumidos na Fig. 1 e na Tabela 1, globalmente.

Não foi obtida resposta de três hospitais, após múltiplas tentativas de contacto. Dos 42 em que foi obtida resposta, sete informaram a equipa de investigação de que não foram encontrados casos de leishmaniose no período em estudo. O processo foi continuado nos restantes 35. Num hospital, o estudo foi aprovado pela CA sem necessidade de avaliação pela CE. Nos restantes 34 hospitais, o projeto foi submetido e encaminhado para avaliação pela respetiva

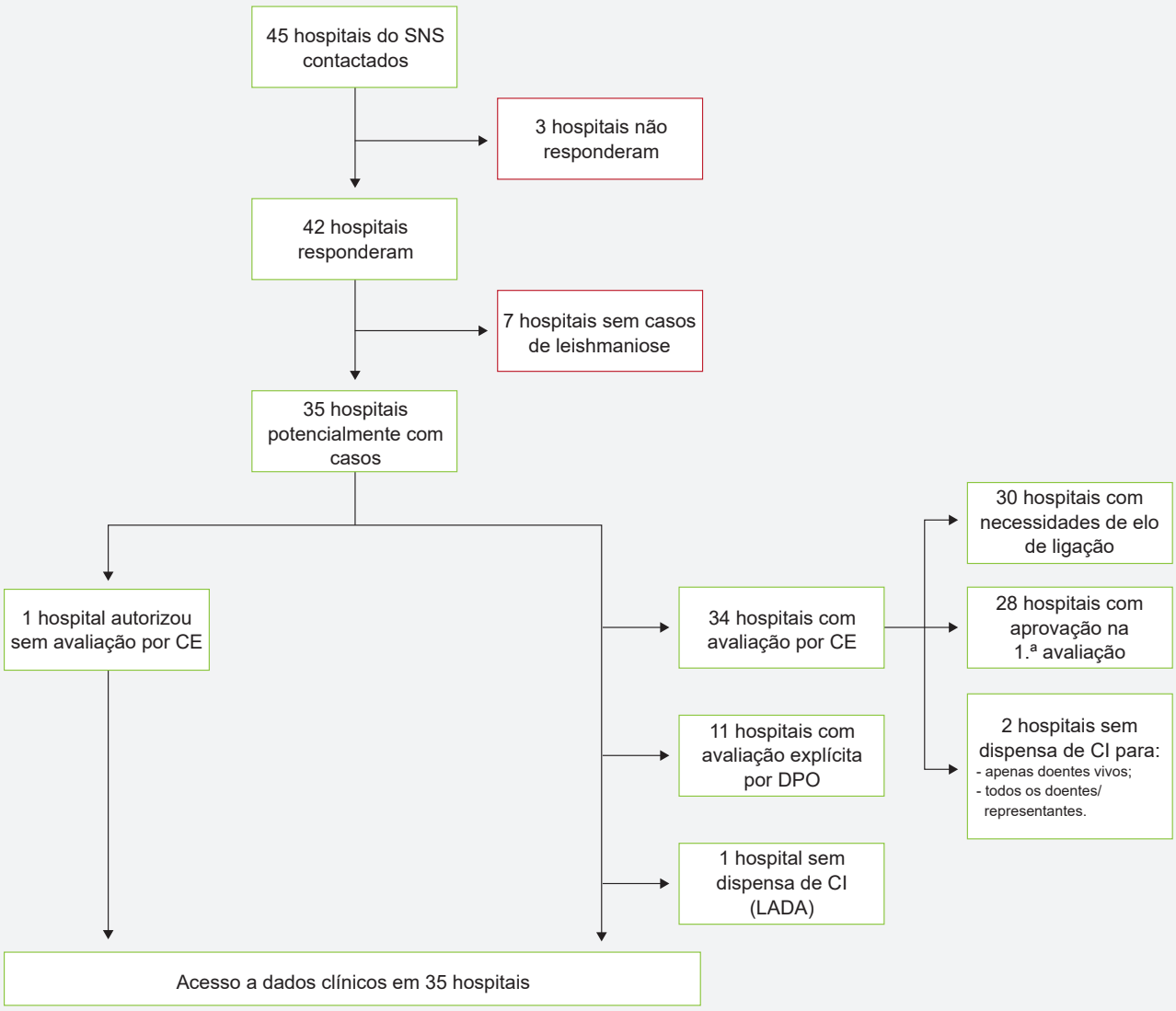

Figura 1 – Procedimentos na avaliação do projeto de investigação para acesso a registos clínicos
CE: comissão de ética; CI: consentimento informado; DPO: *data protection office* (encarregado de proteção de dados); LADA: Lei de Acesso aos Documentos Administrativos; SNS: Sistema Nacional de Saúde.

Tabela 1 – Tempos de espera (mínimos, máximos e medianos) na avaliação do projeto de investigação para acesso a registos clínicos

Tempos de espera	Semanas
Tempo desde 1.º contacto até submissão à CE, mediana	20,1
(mínimo - máximo)	(0,0 - 44,0)
Tempo desde submissão à CE até 1.ª resposta, mediana	5,4
(mínimo - máximo)	(0,1 - 63,0)
Tempo desde parecer final da CE até autorização da CA, mediana	1,1
(mínimo - máximo)	(0,0 - 20,9)
Tempo entre primeiro contacto com hospital e autorização, mediana	28,2
(mínimo - máximo)	(8,1 - 84,1)

CE: comissão de ética; CA: conselho de administração

CE. Uma CE solicitou parecer da CE da instituição universitária responsável pelo projeto.

A documentação para apreciação pelas CE foi diferente entre instituições, segundo formulários próprios, e incluiu declarações dos elos, sendo que, em vários hospitais, a articulação com esses profissionais ficou sob a responsabilidade do investigador principal (externo a essas instituições).

Em 28 instituições, o parecer favorável foi obtido na primeira avaliação; nas restantes seis, o projeto foi reapreciado uma a quatro vezes pelos seguintes motivos: necessidade de obtenção de consentimento informado; retificações no conteúdo da folha de consentimento; necessidade de assinatura de acordo de parceria no tratamento de dados; sugestão de avaliação pela Comissão Nacional de Proteção de Dados. O pedido de dispensa de consentimento informado foi rejeitado em três hospitais. Em dois, por parte das CE: uma exigiu consentimento de todos os doentes/representantes e outra apenas dos doentes ainda vivos à data do estudo. Noutro hospital, a dispensa de consentimento obtida com base em apreciação ética foi posteriormente impedida com base na lei de acesso aos documentos administrativos.

Os resultados deste estudo evidenciam uma considerável variabilidade no processo de submissão de pedidos de acesso a dados clínicos e avaliação de protocolos de investigação. Revelam igualmente um tempo longo de obtenção de autorizações. Neste caso, para realizar um estudo multicêntrico, o primeiro contacto foi estabelecido em setembro de 2021 e a última autorização obtida em maio de 2023, num total aproximado de dois anos.

Independentemente da obtenção de consentimento, os registos clínicos foram, e continuam a ser, utilizados para investigação. Nesse sentido, existe, desde já, um dever de informação aos cidadãos. Por exemplo, as páginas *web* das instituições deveriam informar os cidadãos de que os seus dados – acautelados os direitos legais e éticos, sob apreciação ética e legal dos CE e CA – estão a ser usados para o progresso da ciência, melhoria da informação para decisão política e para a melhoria dos cuidados e da saúde.

Este estudo mostra a necessidade urgente de continuar a discussão sobre as questões éticas e legais que os estudos que necessitam de acesso a registos clínicos, ou outros dados de saúde, envolvem. É necessário que as regras de acesso e cedência sejam explícitas e haja padronização dos processos de submissão de protocolos de investigação. A situação atual constitui uma barreira à investigação de índole nacional multicêntrica, aumentando a complexidade e a demora global dos processos, tal como já foi evidenciado quer para processos com as CE,[5,6] quer para acesso a dados de saúde.[7]

O reconhecimento de pareceres favoráveis de uma CE pelas outras instituições, assim como consenso nacional nos requisitos legais exigíveis, nomeadamente no que concerne as legislações de proteção de dados e de acesso a documentos administrativos, poderia ser considerado e desenvolvido.

CONTRIBUTO DOS AUTORES

RAR: Curadoria de dados, análise formal, investigação, metodologia, redação do manuscrito.

CM, LG: Metodologia, supervisão, validação, revisão.

CC: Conceptualização, análise formal, metodologia, administração de projeto, supervisão, validação, redação, revisão e edição do manuscrito.

Todos os autores aprovaram a versão final a ser publicada.

PROTEÇÃO DE PESSOAS E ANIMAIS

Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia da Associação Médica Mundial atualizada em outubro de 2024.

CONFIDENCIALIDADE DOS DADOS

Os autores declaram ter seguido os protocolos do seu centro de trabalho acerca da publicação de dados.

CONFLITOS DE INTERESSE

Os autores declaram não ter conflitos de interesse relacionados com o presente trabalho.

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The Contribution of Simulated Patients to Undergraduate Medical Education: A Pathway to Educational Excellence

O Contributo dos Doentes Simulados na Educação Médica Pré-Graduada: Um Caminho para a Excelência Educacional

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ABSTRACT

The aim of this narrative review is to explore the state of the art in using simulated patients' methodology, highlighting its benefits and advocating for its widespread adoption as a cornerstone of excellence in training. The use of patients in undergraduate medical education is essential and recommended at an early stage of medical training. However, using real patients is accompanied by several difficulties, such as patient privacy and the unpredictability of patient conditions. Simulated patients are now an integral part of medical school faculty. They should be viewed as some of their most valuable collaborators as their spectrum of activity has been progressively expanding, and they are taking on new challenges and responsibilities. Its efficient use leads to the development of technical competence in performing procedures and the ability to make decisions about diagnosis or treatment. They are also essential in training the ability to communicate efficiently with patients and work as a team. The use of simulated patients to teach physical examination has dramatically expanded its use, with emphasis on training in gynecological or breast examination in women or genital and rectal examination in men. The possibility for the student to receive feedback from the simulated patient during or after the simulation represents a unique opportunity for the student to understand the 'patient's' point of view and reflect on their limitations and opportunities for improvement. Using simulated patients in medical assessment ensures that students are exposed to the same clinical scenario and evaluated according to the same criteria. The simulated patient, acting as a performance evaluator, provides a level of reliability identical to that of clinical evaluators, enhancing the credibility of the assessment process. The development of hybrid scenarios allows the combined use of simulated patients and simulators to increase the realism of the simulation scenario. From an administrative perspective, using simulated patients in medical education involves recruitment and training, and the biggest challenge is the financial resources it requires. In the ever-evolving landscape of medical education, the use of simulated patients is no longer a mere complement to traditional teaching methods but an indispensable tool for preparing future physicians.
Keywords: Clinical Competence; Education, Medical, Undergraduate/methods; Patient Simulation

RESUMO

Este artigo de revisão narrativa procura revelar o estado na arte do contributo dos doentes simulados para a educação médica e incentivar as escolas médicas a adotar esta metodologia como um pilar essencial da formação de excelência. A utilização de doentes no ensino médico pré-graduado é considerada fundamental. No entanto, a utilização de doentes reais é acompanhada por diversas dificuldades, como as relacionadas com a sua privacidade e a grande variedade de apresentações clínicas. Os doentes simulados são atualmente parte integrante do corpo docente das faculdades de medicina e devem ser encarados como sendo dos seus colaboradores mais valiosos. O seu espectro de atuação tem vindo progressivamente a alargar-se, assumindo novos desafios e responsabilidades. A sua utilização conduz de uma forma eficiente ao desenvolvimento de competência técnica no desempenho de procedimentos e na capacidade de tomar decisões sobre o diagnóstico ou tratamento. Igualmente são imprescindíveis no treino da capacidade de comunicar com os doentes e na capacidade de trabalhar em equipa. A utilização de doentes simulados para o ensino do exame físico, veio expandir enormemente a sua utilização, com destaque para o treino do exame ginecológico ou da mama na mulher ou do exame genital e rectal no homem. A possibilidade de o aluno receber *feedback* do doente simulado durante ou após a simulação representa uma oportunidade única de o aluno se aperceber do ponto de vista do 'doente' e de poder refletir sobre as suas limitações e oportunidades de melhoria. A utilização de doentes simulados na avaliação médica permite igualmente comparações adequadas de diversos alunos. Em determinados casos é o próprio doente simulado que desempenha o papel de avaliador, com uma fiabilidade idêntica à de avaliadores clínicos, de que resulta uma maior credibilidade do processo de avaliação. O desenvolvimento de cenários híbridos permite o uso combinado de doentes simulados e simuladores com o objetivo de aumentar o realismo do cenário de simulação. Do ponto de vista administrativo, a utilização de doentes simulados no ensino médico envolve múltiplas atividades sendo o maior desafio para a sua implementação os recursos financeiros necessários. A adoção da metodologia de doentes simulados é hoje uma ferramenta fundamental e indispensável para o treino dos futuros médicos.
Palavras-chave: Competência Clínica; Doentes Simulados; Educação de Graduação em Medicina/métodos

INTRODUCTION

"For the junior student in medicine and surgery, it is a safe rule to have no teaching without a patient, and the best teaching is that taught by the patient himself."

William Osler, 1903[1]

Miller's work in the sixties was decisive in making medical teaching more efficient by redefining what is expected when assessing student's clinical competence, focusing on performance rather than the volume of knowledge.[2] As a consequence, and similarly to what occurred in other areas of knowledge, medical teaching stopped being teacher-centered to being student-centered and focused on the efficiency of the learning process and the need for alignment between the learning objectives, the teaching methodology,

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and the assessment methods.[3-5]

With the advent of patient-centered medicine, clinical performance began to be centered not on the professional but on the sick person. This meant changing roles traditionally attributed to both the doctor and the patient.[5-9] Although undergraduate medical training had always been associated with contact with patients,[1,10] this new focus led the General Medical Council in the United Kingdom and the Association of American Medical Schools to recommend early contact of medical students with patients[11,12] and the World Health Organization to choose the teaching of communication skills as one of the essential clinical skills of undergraduate medical education.[13]

This paradigm shift, centered on the patient and performance, was responsible for developing medical simulation as the preferred method for teaching and assessment. In this way, the learning curve, traditionally followed by the inexperienced student when taking advantage of training opportunities with real patients through trial and error, was no longer acceptable and was gradually replaced by teaching through simulation.[14] This was also the main reason for the appearance of simulated patients (SP) in medical education.

Simulated patients are people trained to realistically perform a specific role in which they simulate being ill.[15,16]

The first records of the use of simulated patients in medical teaching come from the neurologist Howard Barrows, who introduced this methodology (which he called "programmed patients") in 1963 to improve the efficiency of teaching physical examination in neurology.[15,17] This approach was later adopted by professionals in other fields, such as gynecologist Robert Kretzschmar[18] and pediatrician Paula Stillman.[19]

The aim of this narrative review is to explore the state of the art in using simulated patients in medical education, highlighting its benefits and advocating for its widespread adoption as a cornerstone of excellence in training.

METHODS

A literature review on the simulated patient methodology was performed in the PubMed database until October 1st, 2024. Medical Subject Headings (MeSH) terms used in the search included: 'simulated patient', 'standardized patient' and 'undergraduate medical education'. Additionally, reference books and the reference lists of the identified studies were manually reviewed to identify complementary publications.

RESULTS

Scientific evidence

The use of patients in undergraduate medical education is considered fundamental and recommended at an early stage of medical training.[10-12,20] However, the use of real patients, allowing greater realism, is accompanied by several difficulties, such as the number of patients available, the characteristics of each patient and their illness, or issues related to the privacy, safety, and comfort of these patients. Furthermore, some patients may present significant complexity or be seriously ill, making their use in teaching impossible.[10]

On the contrary, simulated patients are readily available and can be trained to perform multiple scenarios, which can be done multiple times, providing the student with multiple opportunities for training. Additionally, their performance can be adapted to the experience level of each student.[21] These simulated patients can also be used in situations where the use of real patients would be inappropriate, such as training to deliver bad news or genitourinary physical examination.[21,22] The provision of feedback by the simulated patient throughout or at the end of each scenario is an essential instrument for the student's continuous improvement in the development of their clinical skills.[15,20,21,23]

Using simulated patients allows the student to train multiple skills in a safe environment where error is permitted and repetition is encouraged.[5,14,20,21,24] Several studies show that a well-trained simulated patient is not distinguishable from a real patient[15,21,25] and that its use is identical in efficiency to that of real patients.[26]

There is robust evidence that simulation is an efficient way of training students to develop technical competence in performing procedures and in the ability to make decisions about diagnosis or treatment,[14,27-29] in the ability to communicate efficiently with patients, family members, and other professionals[9,13,20,28-30] and the ability to work as a team.[14,29] Special emphasis has been placed on training communication skills resulting in more satisfied patients[20] with a better prognosis.[30,31] Several studies have demonstrated that the use of this methodology results not only in an improvement in clinical skills but also in better efficiency and greater satisfaction with learning by the student when compared to traditional teaching methods.[20,24,27,32] This includes studies that compare this methodology with the use of other students to simulate diseases,[33] the use of virtual reality[28] or the use of simulation mannequins in scenarios where the patient is conscious and invasive procedures are unnecessary.[25,29]

The opportunity for the student to receive feedback from the simulated patient during or after the simulation represents a unique opportunity for the student to understand the 'patient's' point of view and reflect on their limitations and opportunities for improvement.[20,24,30,34] Using simulated patients in medical assessment also allows adequate comparisons between students exposed to the same clinical scenario and evaluated according to the same criteria.[23,24]

DISCUSSION

Implementation

The development of scenarios represents the first and one of the most critical aspects related to the use of simulated patients.[23,35] Scenarios must be simple, in a language understandable by simulated patients, and include the learning objectives, context, role to play, and particular aspects of the feedback that should be provided to the student.[36] Scenarios are usually created by a dedicated team, which includes professionals from the respective medical field, the person responsible for the simulation program, and the simulated patients themselves.[37] Whenever possible, real patients must also be consulted before making the final version.[37] The complexity of the tasks required of the student must increase throughout the curriculum. Complex tasks must be deconstructed into several more straightforward tasks and distributed across different scenarios, allowing gradual and progressively more complex training until the presentation of more complicated scenarios.[4,38]

Simulated patient training essentially involves two components: role play and offering feedback to students. Role-play training enables the simulated patient to play their character realistically and assumes the teaching of general representation techniques. In addition to training representation skills, it is essential to review the clinical aspects of each scenario, including the clinical context, the patient's personality and emotional state, complaints, fears, and expectations regarding the disease. Relevant aspects of personal and family clinical history must also be reviewed, as well as the social context, habits, lifestyle, and usual medications.[37] The simulated patient must also be trained about the complaints that must be present during the physical examination done by the student.

Equally important to artistic performance is the simulated patient's ability to provide structured feedback to the student. This represents the most important activity in simulation scenarios and contributes the most to learning efficiency.[34,38] The simulated patient can provide feedback on multiple aspects such as taking the clinical history, carrying out the physical examination, verbal and non-verbal communication skills, as well as aspects related to empathy, professionalism and the confidence level demonstrated by the student during the consultation as well as how the information was transmitted and perceived by the patient.[34,39,40]

The fact that this feedback relates to the patient's perspective and the way they experienced the consultation in that particular scenario and with that specific student, valuing not only the technical aspects but also, and mainly, the emotional aspects, is the main advantage of using simulated patients in medical education.[34,39,40] The main objective should be to make the students reflect on their performance during the scenario and how their attitudes impacted that particular patient. To achieve this, the simulated patient must highlight the positive aspects and identify opportunities for improvement, always from the perspective of the 'patient' and using concrete examples taken from the scenario they have just experienced.[34,39]

Feedback time is the most crucial phase in any scenario and the one to which most of the time should be devoted when preparing simulated patients.[41] This training could be with other more experienced simulated patients or the person responsible for the simulation program. It may involve observing previous videos from the same or other simulated patients.[41] A training program is essential for simulated patients to continually improve the authenticity of their role-play and the quality of feedback they provide to the student.[42]

In situations where simulated patients play a role in assessing students, specific training is essential to ensure that the simulated patient knows the assessment's nature, context, and objectives.[36,39]

In all programs, there must be someone in charge of training the simulated patients (SP educator or SP practitioner) and assessing their continuous performance of the role-play and the quality of the feedback provided to the students.[39] Providing feedback to simulated patients regarding these two aspects is essential to ensure the quality of their use in medical education.[39,42,43] This feedback can be provided by the SP educator and other simulated patients, teachers and even students, allowing the simulated patient a broad view of their performance. The Maastricht assessment of Simulated Patients (MaSP) scale, developed to evaluate the authenticity of the role play and the quality of the feedback provided by the simulated patient, has shown to have adequate validity and reliability and is currently used in different centres.[43]

From an administrative point of view, using simulated patients in medical education involves multiple activities, including recruitment, selection, training, schedule management, dissemination of support materials, and remuneration for simulation activities.[39] Recruitment can be done through an advertisement to the general public in healthcare institutions[15,22,39] or through more experienced simulated patients.[15] This role can also be played by clinicians (doctors, nurses, psychologists), students, medical education professionals, or professional actors.[15,41,44] The use of professional actors seems to have an advantage when the role played is emotionally more demanding, such as in scenarios of psychiatric illness.[44] Demographic aspects such as sex, age, race or ethnicity must be considered in the selection to ensure that simulated patients can be adapted to the different scenarios.[39] In addition to initial training, which focuses on artistic performance and the ability to provide feedback, regular training sessions must occur before performing

each particular scenario.[39] The main limiting factor of using simulated patients is the cost, as these programs involve significant human and financial resources.[10,15,22,23,32]

In recent years, several associations have been created to develop guidelines, share experiences, promote training and encourage research related to the use of simulated patients in medical education, such as the Association of Standardized Patient Educators (ASPE),[45] the Society for Simulation in Healthcare (SSH)[46] or the Society in Europe for Simulation Applied to Medicine (SESAM).[47] Other associations were created with the primary objective of training communication in healthcare, such as the European Association for Communication in Healthcare (EACH).[48]

Ethical considerations

Simulated patients must be informed about the objectives and methodology used, provide informed consent for their participation and be aware of the duty of confidentiality concerning all activities, as they cannot disclose, by any means, the content of the scenarios or aspects of the interaction developed between the simulated patient and the student.[39]

Conversely, it must be ensured that the participation in any simulation scenario respects their privacy and that any sound or image recording is only viewed and commented on by those directly involved in the teaching and learning process, whether teachers or students.[39]

It must be ensured that they receive adequate training and that their activity is monitored and evaluated regularly, receiving feedback not only on the positive aspects but also on opportunities for improvement concerning their role play and the quality of the feedback offered to the students.[42,43]

Several studies show that, from the point of view of the simulated patient, this is a rewarding activity, mainly due to the opportunity to contribute to the training of future healthcare professionals.[49]

Practical applications

Using scenarios with simulated patients allows the student to practice the different phases of a medical consultation.[15] The student must ensure that the patient understands the structure of the consultation while establishing an empathetic doctor-patient relationship and training different forms of verbal and non-verbal communication in a patient-centered environment.[15,20,23,32]

For more experienced students, these consultations can also allow training in their ability to summarize to the patient the main problems encountered during the consultation, clinical reasoning skills, the ability to communicate to the patient their diagnostic impression, and the need to carry out diagnostic tests or a therapeutic proposal.[15,23]

The ability to develop empathy, in its cognitive, affective, and behavioral components, is considered one of the essential characteristics of medical activity as it is a fundamental component of the doctor-patient relationship with an impact on patient satisfaction and prognosis.[50] Despite its importance, the degree of empathy demonstrated by students in clinical rotations, if not explicitly trained, is often not acceptable,[51] and the use of simulated patients contributes meaningfully to empathy training in undergraduate medical education.[50]

The use of scenarios with simulated patients can also help train more complex skills, for which the use of real patients would be inappropriate, such as delivering bad news, dealing with patient dissatisfaction or aggression, or addressing more sensitive topics such as sexual history or signs of domestic violence, for example.[15,23]

Simulated patients can also be used to train physical examination skills.[23,52] Although, in most cases, simulated patients are healthy individuals, physical examination techniques can be trained on the simulated patient, regardless of the findings found. Furthermore, this training must also include other aspects such as obtaining the patient's consent to be examined, an explanation of what will occur at each phase of the observation, the ability to give the patient clear and precise instructions throughout the physical examination process, and constant monitoring of any sign of discomfort expressed by the simulated patient. This way, the technical performance and the student's communication skills can be trained and tested. The same is valid for training in some procedures, such as measuring blood pressure or venipuncture for blood collection.[15,53]

The introduction of assessment through observation of student performance in several simulated clinical situations, globally known as Objective Structured Clinical Examination (OSCE), emerged in the 1970s due to the need to evaluate student performance in simulated clinical scenarios.[54] In this context, the use of simulated patients makes the scenario more real and allows its standardization and adaptation to the desired degree of difficulty while enabling the simultaneous assessment of the student's communication skills, empathy and professionalism.[23,39]

Using simulated patients to assess students led to the need for greater standardization of scenarios and the simulated patients themselves, resulting in the designation of standardized patients.[15,16,39,55,56] These are simulated patients from which greater consistency is required in their role-play, with less individual freedom in performing a certain character. Gender, age, physical characteristics, attitude, previous experience, and communication skills must be considered in their selection and training.[15,16,55]

A clinical observer or the simulated patient can evaluate the student's performance, including completing an evaluation grid and providing oral or written feedback.[55] In several

centers, postgraduate medical evaluation and access to clinical practice is carried out through OSCE with the presence of simulated patients.[57,58] In some instances, the simulated patient plays the role of performance evaluator,[59] with reliability identical to that of clinical evaluators.[60]

Recent innovations

Using simulated patients to teach physical examination (Physical Examination Teaching Associate, PETA) has dramatically expanded its use. In this modality, the presence of the tutor is not always needed, and this role is assumed by the simulated patient, who, at the end of the session, can provide the student with feedback on the mastery of different observation techniques not only from a technical point of view but also in terms of the patient's perspective. This technique is as efficient as the use of clinicians as tutors,[61] allows for greater standardization of physical examination education[62] and is associated with a reduction in costs,[61] but requires a greater complexity in the recruitment and training of simulated patients.[62,63]

Training gynecological or breast examination in women or genital and rectal examination in men raises additional difficulties. The repeated use of real patients for this purpose is neither acceptable nor efficient, and student training with peers has proven inadequate.[64] The use of simulated patients for this purpose (Genitourinary Teaching Associate, GUTA) is growing[62,63,65] both for the breast and gynecological examination (Gynecological Teaching Associate, GTA) and for the genitourinary, rectal, and prostate examination (Male Teaching Associate, MTA).

Hybrid scenarios refer to the combined use of simulated patients and simulators to increase the realism of the simulation scenario. In these scenarios, the student can train skills in executing procedures integrated with communication skills and professionalism.[66] An area that is growing in the use of these scenarios is obstetrics.[67] A recent development in the use of hybrid scenarios consists of the physical transformation of the simulated patient with special suits or physical characterization, making possible the simulation of more complex patients such as elderly patients, obese patients, and victims of stroke, among others.[68]

In some scenarios, simulated patients can play the role of other family members, laboratory technicians, paramedics, medical students, or doctors.[21,53,69]

Alternatively, real patients who receive training in simulation and feedback can be used. This is especially useful in scenarios involving chronic diseases where knowledge of the disease and previous experiences of contact with healthcare professionals can be presented to the student more realistically.[5,53,70-72]

A recent development is the use of simulated patients in sequential consultations, allowing the evolution of chronic disorders such as Alzheimer's disease to be simulated. In these scenarios, arranged to simulate consultations years apart and always using the same simulated patient, the student can witness the evolution of the disease and be confronted with new difficulties in each session.[15,73] The main difficulty in implementing these scenarios is the logistical aspects associated with them.[15]

New areas of development include the use of adolescents, older adults or transgender people as simulated patients.[7] The need for undergraduate training in adolescent medicine has led to the recruitment of adolescents for training and subsequent use in teaching and assessing students. The results show that adolescents can be trained to perform some roles realistically and provide quality feedback.[74]

Future perspectives

Simulated patients are now a part of the medical school faculty and should be considered some of their most valuable collaborators.[53] Its use is growing, and currently, they are used not only in medical education but also in other related areas such as nursing, dietetics, pharmacy, or physiotherapy.[15,42,74]

As its spectrum of activity has been progressively expanding, taking on new challenges and responsibilities, this increase in functions must be accompanied by a growing involvement of the rest of the teaching staff in their training and development without forgetting the ethical aspects in which their collaboration must be framed.

To maximize the potential of these collaborators, it will be essential to carry out multicenter studies that identify ways to improve their efficiency.[7] An effort to standardize their use among different medical schools will be desirable, while the possibility of sharing resources must be explored.

Undoubtedly, the lack of creativity and not the lack of resources will be the fundamental limitation to developing new functionalities for simulated patients.

COMPETING INTERESTS

The author has declared that no competing interests exist.

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ACTA MÉDICA PORTUGUESA
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Acute Aortic Dissection in the Third Trimester of Pregnancy as an Initial Presentation of Marfan Syndrome

Disseção Aguda da Aorta no Terceiro Trimestre de Gravidez Como Apresentação Inicial de Síndrome de Marfan

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ABSTRACT

Aortic dissection is rare and more common in men. In women, it is more frequent during pregnancy, especially in the third trimester. We present the case of a 30-year-old pregnant woman diagnosed with type B aortic dissection at 29 weeks of gestation. Following the diagnosis, fetal maturation was initiated, and the patient was transferred to a tertiary care center. Due to uncontrolled hypertension and persistent pain, and after evaluating the maternal and fetal risk-benefit, a cesarean section was performed at 29 weeks and six days. During the postoperative period, a multi-drug regimen was required for blood pressure control, but the patient recovered and was discharged. Genetic testing, prompted by a family history of sudden death (brother) and aortic dissection (father), identified a mutation in the *FBN1* gene, confirming Marfan syndrome. This case highlights the importance of comprehensive patient history, the challenges of aortic dissection during pregnancy, and the need for a multidisciplinary approach in these cases.
Keywords: Aortic Aneurysm; Aortic Dissection; Marfan Syndrome; Pregnancy Complications, Cardiovascular; Pregnancy Trimester, Third

RESUMO

A dissecção aórtica é rara e mais comum em homens. Em mulheres é mais frequente na gravidez, especialmente no terceiro trimestre. Apresentamos o caso de uma grávida de 30 anos, com 29 semanas de gestação aquando do diagnóstico de uma disseção aórtica tipo B. Perante o diagnóstico, iniciou-se maturação fetal e a paciente foi transferida para um centro terciário. Face à hipertensão de difícil controlo e dor persistente, após avaliação do risco-benefício materno e fetal, foi realizada uma cesariana às 29 semanas e seis dias. No pós-operatório, foi necessário um regime terapêutico com múltiplos fármacos para controlo da tensão arterial, mas a paciente recuperou favoravelmente e teve alta. Testes genéticos, motivados pela história familiar de morte súbita (irmão) e dissecção aórtica (pai), revelaram uma mutação no gene *FBN1*, confirmando síndrome de Marfan. Este caso destaca a importância da história clínica, os desafios da dissecção aórtica na gravidez e a necessidade de uma abordagem multidisciplinar nestes casos.
Palavras-chave: Aneurisma da Aorta; Complicações Cardiovasculares da Gravidez; Disseção Aórtica; Terceiro Trimestre de Gravidez; Síndrome de Marfan

INTRODUCTION

Aortic dissection is rare, being more common in the male population.[1] In women, it becomes more prevalent during pregnancy, ranging from 5.5 to 14.5 per million *versus* 1.2 per million in non-pregnant women, with estimated rates of maternal and fetal mortality of 12% and 28%, respectively.[2-4] In pregnancy, the incidence is higher in the third trimester (50% of cases), followed by the post-partum period (33% of cases).[5,6]

Inherited connective tissue disorders further elevate the risk of dissection to 3% - 8%.[5,7] In these patients, pre-pregnancy risk stratification using the modified World Health Organization (WHO) classification[8] and close echocardiographic surveillance during pregnancy[9] are essential (Fig. 1), although dissection can sometimes be the first manifestation of the condition.

CASE REPORT

We present the case of a 30-year-old pregnant woman, originally from another country and living in Portugal for two years, with an obstetric history of two prior first-trimester miscarriages and a family history of sudden cardiac death (her brother, in his forties, who died in their home country with limited details available) and aortic dissection (her father, in his sixties, who survived after surgical treatment).

An echocardiogram performed a year prior to pregnancy revealed mitral valve prolapse and aortic root dilation (38.5 mm), but she was otherwise healthy and was not taking any regular medication. This echocardiogram was conducted during a consultation with her primary care physician. However, no further investigations were pursued, and her pregnancy was being monitored in a primary care setting. No genetic testing for this family had been performed.

The woman had been consistently normotensive before and during pregnancy, which had progressed uneventfully until the described events. At 29 weeks gestation, she experienced sudden chest pain radiating to her back. The evaluation revealed a normal electrocardiogram, cardiac enzymes, and chest X-ray, but a transthoracic echocardiogram raised suspicions of an aortic dissection. Considering the need to confirm the diagnosis and better characterize the condition, as well as the relatively low risk to the fetus, a computed tomography angiography (CTA) was promptly performed. The scan confirmed an uncomplicated acute type B aortic dissection (Fig. 2).

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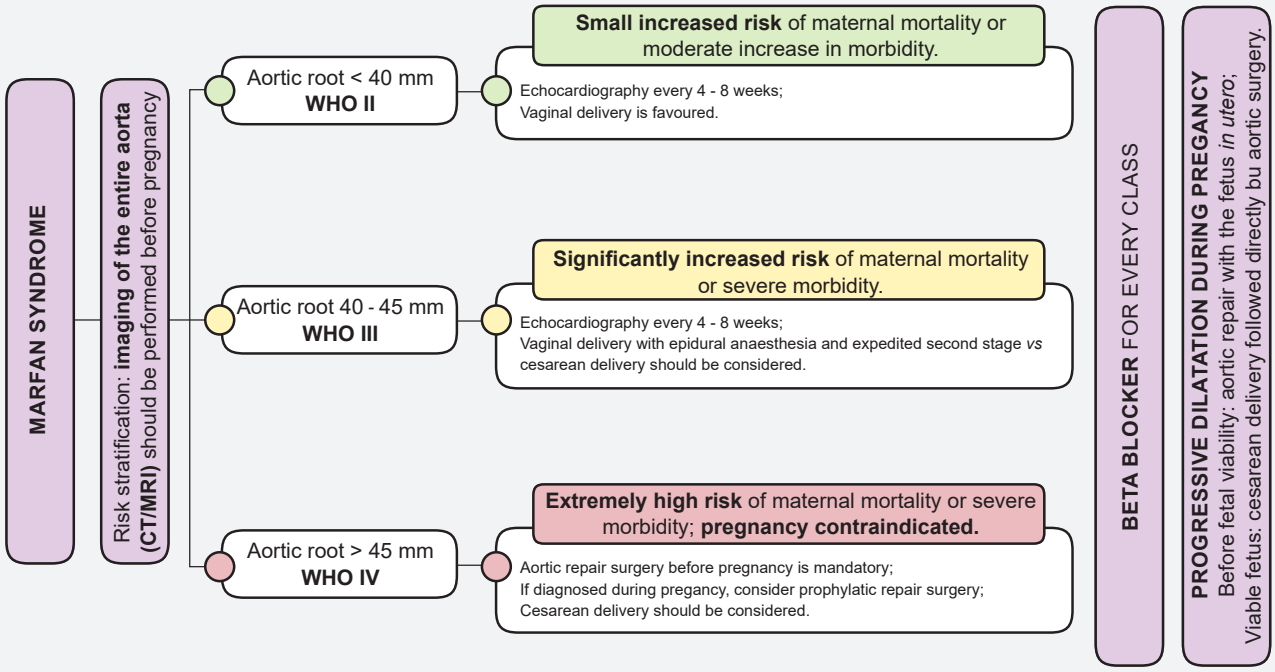

Figure 1 – Risk stratification based on the modified WHO classification of maternal cardiovascular risk and management strategies

The patient was transferred to a tertiary center, where fetal maturation was induced. She developed severe hypertension, requiring intravenous blood pressure control with labetalol and isosorbide dinitrate. Given the family history and current presentation, genetic testing was performed and revealed a mutation in the *FBN1* gene, confirming Marfan syndrome.

On the third day of hospitalization, due to persistent pain and hypertension — signs raising concern for impending hypoperfusion or aortic rupture — a multidisciplinary team comprising obstetrics, intensive care, vascular surgery, anesthesiology, and neonatology recommended a cesarean section at 29 weeks and six days, which the patient accepted.

Postpartum, the patient experienced worsening blood pressure control requiring combined intravenous therapy

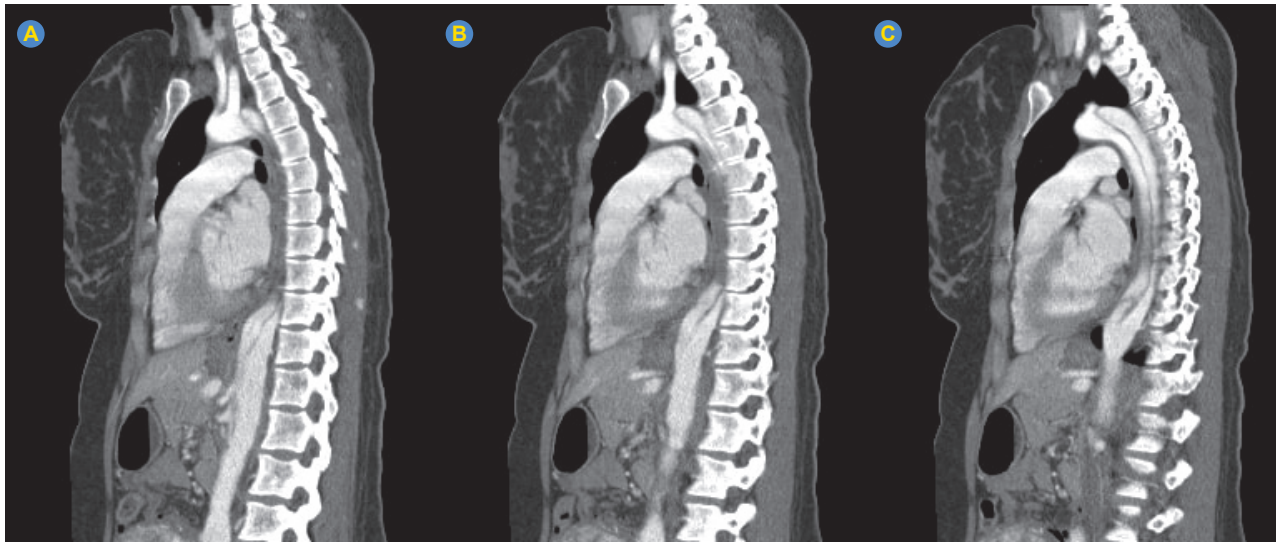

Figure 2 – Angio-CT scan of the patient at admission showing type B aortic dissection

with labetalol and isosorbide dinitrate and oral therapy with methyldopa, captopril, amiloride, hydrochlorothiazide, carvedilol and nifedipine. There were concerns that renal hypoperfusion could be causing such severe hypertension, but the reevaluation CTA did not confirm this hypothesis. Therefore, treatment was conservative, with no need for surgical intervention. Gradually, it became possible to titrate the antihypertensive medication and discontinue the intravenous treatment. She was discharged on day 20 postpartum on losartan 50 mg id, carvedilol 25 mg bid and acetylsalicylic acid 100 mg id.

However, the patient presented again on day 27 postpartum with new onset neck pain. The diagnostic tests revealed a progression of the dissection to the left carotid artery. The patient acknowledged poor adherence to antihypertensive therapy, which may have contributed to this complication. Following admission for conservative treatment and surveillance, she was discharged on day 40 postpartum, with the addition of spironolactone 12.5 mg once daily to her previously prescribed medicines.

The newborn required non-invasive ventilation and surfactant therapy but improved steadily, transitioning to ambient air by day 26. The neonate was discharged on day 55 postpartum. At this time, the patient had fully recovered obstetrically and was successfully breastfeeding.

DISCUSSION

Aortic dissection in pregnancy

In pregnant women, aortic dissection accounts for high rates of maternal and fetal mortality (12% and 28%, respectively). However, the rarity of this condition (14.5 per million pregnant women) creates considerable gaps in understanding how to prevent, manage, and monitor patients at risk for pregnancy-associated aortic dissection or those of childbearing age who have experienced an aortic dissection.[4]

Pregnancy itself is a risk factor for aortic dissection, with studies reporting a 23-fold increased risk during pregnancy.[4] This is mostly due to hormonal (elevated estrogen and progesterone levels disrupt elastic fibers, increase MMP-2 activity, and reduce elastin deposition, weakening the aortic wall) and hemodynamic changes (increased circulating volume and cardiac output leading to increased hemodynamic stress on the aortic wall).[4,9] Inherited connective tissue disorders such as Marfan syndrome and Loeys-Dietz syndrome are significant risk factors. Additional risk factors include smoking, hypertension, cocaine use, and autoimmune diseases like Takayasu's arteritis.[6,10]

Diagnosing or excluding aortic dissection relies heavily on clinical suspicion, as it is a rare condition and may not be an immediate consideration in the differential diagnosis of chest pain during pregnancy, where more common causes are often prioritized.[4] The initial risk assessment can be categorized using the Aortic Dissection Detection Risk Score.[6,8,11] Beyond the clinical risk score, a series of initial simple tests are usually conducted, including an electrocardiogram, chest X-ray, transthoracic echocardiogram (TTE), and cardiac biomarkers.[12] They help rule out other conditions such as pulmonary embolism, myocardial infarction or pericarditis, and TTE can potentially identify aortic dissection by revealing an aortic intimal flap, aortic wall thickening or dilation, significant aortic valve regurgitation with or without cusp prolapse, and pericardial effusion. However, a CTA scan of the entire aorta is the primary imaging method for confirming aortic dissection.[12] This test should not be delayed when clinically indicated based on concerns for fetal harm, as their risks are minimal and much lesser compared to maternal risk in this setting.[13] Also, the CTA is important for accurate classification of the type of aortic dissection, as management strategies differ significantly based on whether the ascending aorta is involved.

Managing aortic dissection during pregnancy requires a multidisciplinary team and specialized care. Initial treatment focuses on reducing pulse pressure and heart rate to minimize aortic wall stress and prevent complications like rupture or malperfusion. Intravenous beta-blockers, particularly labetalol, are the preferred choice. For type A dissections, where surgical treatment is always required, cesarean delivery is performed before aortic repair if the fetus is viable; otherwise, surgery proceeds with the fetus *in utero*. In uncomplicated type B dissections, conservative medical management with close monitoring of both mother and fetus is advised.[6]

Marfan syndrome and pregnancy

Marfan syndrome, caused by *FBN1* mutations, increases susceptibility to aortic aneurysm and dissection. In this case, there was no prior diagnosis of Marfan syndrome. The fact that the patient and her family were originally from another country may have hindered the suspicion of Marfan syndrome, as details regarding the clinical history of her family members – particularly her brother – were not readily accessible.

When the diagnosis is known, women with Marfan syndrome require pre-pregnancy risk stratification using the modified WHO classification,[8] with close monitoring during pregnancy. Beta-blocker therapy, although controversial in the past,[14] may slow aortic dilation, with recent studies showing reduced aortic root growth in pregnant women with Marfan syndrome.[15] Though evidence is not conclusive, the European Society of Cardiology (ESC) recommends beta-blockers to prevent dissection in pregnancy.[8] Highlights of the surveillance of pregnancy in Marfan syndrome are summarized in Fig. 1.

Multidisciplinary management

This case highlights the importance of a multidisciplinary approach involving obstetrics, intensive care, vascular surgery, anesthesiology, neonatology, and genetics. Timely blood pressure control and fetal monitoring allowed for successful delivery at 29 weeks + six days, balancing maternal risks and fetal maturity. Postpartum, coordinated care was critical to managing the patient's hypertension and preventing further complications.

Challenges in blood pressure control

Postpartum hypertension presented considerable challenges. The immediate postpartum period is characterized by significant physiological changes, including uterine contraction, relief of aortocaval compression, and catecholamine release, leading to a 60% - 80% increase in cardiac output.[16] Additionally, the reabsorption of third-space fluid during this phase may have further contributed to elevated blood pressure.[17] In a later stage, the patient's confirmed poor adherence to outpatient antihypertensive therapy may have contributed to the progression of the dissection into the left carotid artery. This highlights the critical importance of strict adherence to therapy and patient education in preventing complications in individuals with Marfan syndrome.

Neonatal outcomes

The premature neonate required initial ventilatory support and surfactant therapy but steadily improved, being discharged without significant complications. The infant's progression reflects advances in neonatal care for preterm infants born to high-risk mothers. At the time of this report, the child was healthy and attending follow-up pediatric appointments at the hospital. Genetic testing for Marfan syndrome was planned within the first year of life to determine the need for further evaluations.

Implications for future pregnancies

Patients with a history of aortic dissection, especially with Marfan syndrome, face a high risk of recurrence in future pregnancies. According to ESC guidelines, women with type B dissection should be advised against pregnancy.[8] If pregnancy occurs, it should be managed in a specialized center with strict blood pressure control and regular cardiovascular imaging.

CONCLUSION

This case underscores the critical importance of early diagnosis, multidisciplinary care, and strict adherence to therapy in managing aortic dissection during pregnancy, especially in women with Marfan syndrome. The positive outcomes for both mother and child highlight the effectiveness of coordinated care, and the necessity of vigilant monitoring for future pregnancies. Strict outpatient follow-up and patient education are vital to prevent recurrence and manage complications.

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We express our sincere gratitude to the Intensive Care Department, the Vascular Surgery Department, the Anesthesiology Department, the Genetics Department, and the Neonatology Department of ULS Santa Maria for their critical contributions to the management of this case. Their expertise and commitment were pivotal in addressing the challenges presented, and their clinical and scientific support was of the highest standard.

AUTHOR CONTRIBUTIONS

MRS: Data acquisition, analysis and interpretation, writing and critical review of the manuscript.

AVL, MPV: Data analysis and interpretation, critical review of the manuscript.

All authors approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in October 2024.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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ACTA MÉDICA PORTUGUESA
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Subdural Hematoma in an Infant with Glutaric Aciduria Type 1: A Case Report on Conservative Management

Hematoma Subdural em Lactente com Acidúria Glutárica Tipo 1: Caso Clínico com Abordagem Conservadora

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ABSTRACT

Glutaric aciduria type 1 is an inherited metabolic disorder associated with subdural hematomas, possibly due to the widening of external cerebrospinal fluid spaces. We present the case of an infant with macrocephaly since birth, diagnosed with glutaric aciduria type 1 through newborn screening, who exhibited accelerated cephalic growth during follow-up. At eight months of age, cranial magnetic resonance imaging revealed bilateral subdural hematomas with intracranial mass effect. The infant displayed no signs of intracranial hypertension, history of trauma, or signs of abuse. Although surgical treatment was considered, a multidisciplinary discussion led to the decision to manage conservatively with close monitoring. The patient remained clinically stable, and imaging showed a clear reduction in the dimensions of the hematomas. This case highlights that conservative management can be an effective approach for large subdural hematomas with mass effect in glutaric aciduria type 1, provided there is no associated symptomatology, thereby avoiding the risk of metabolic decompensation.
Keywords: Amino Acid Metabolism, Inborn Errors; Brain Diseases, Metabolic; Glutaryl-CoA Dehydrogenase; Infant; Hematoma, Subdural/therapy

RESUMO

A acidúria glutárica tipo 1 é uma doença hereditária do metabolismo associada a hematomas subdurais, possivelmente devido ao aumento dos espaços subdurais. Apresentamos o caso de um lactente com macrocefalia desde o nascimento, com o diagnóstico de acidúria glutárica tipo 1 através do rastreio neonatal, que exibiu um crescimento acelerado do perímetro cefálico durante o seguimento. Realizou ressonância crânio-encefálica aos oito meses que revelou hematomas subdurais bilaterais com efeito de massa, sem sinais de hipertensão intracraniana, história de trauma ou sinais de maus-tratos. Embora se tenha considerado o tratamento cirúrgico, após discussão multidisciplinar optou-se pelo tratamento conservador com vigilância periódica. A criança manteve-se clinicamente estável e radiologicamente observou-se uma redução das dimensões dos hematomas. Este caso pretende salientar que o tratamento conservador pode ser uma opção eficaz nesta patologia na ausência de sintomatologia, mesmo na abordagem de hematomas subdurais de grandes dimensões com efeito de massa, evitando o risco de descompensação metabólica.
Palavras-chave: Encefalopatias Metabólicas; Erros Inatos do Metabolismo dos Aminoácidos; Glutaril-CoA Desidrogenase; Hematoma Subdural/tratamento; Lactente

INTRODUCTION

Glutaric aciduria type 1 (GA1, OMIM#231670) is an autosomal recessive inherited metabolic disorder caused by a deficiency of glutaryl-CoA dehydrogenase, leading to toxic levels of glutaryl-CoA, glutaric acid, and 3-hydroxyglutaric acid.[1,2] In Portugal, this disease has been identified through newborn screening (NBS) since 2006. Early diagnosis allows for the timely implementation of dietary management, particularly a low-lysine diet and a lysine-free, tryptophan-reduced and arginine-enriched amino acid mixtures along with carnitine supplementation to prevent and manage catabolic states, such as febrile illness and surgery, which can trigger acute encephalopathic crises (AEC) and result in irreversible striatal damage.[1-3] Thus, dietary management has significantly improved clinical outcomes for these patients.[1,3,4]

Studies have shown that subdural hematoma (SDH) is more common in GA1 (around 15% - 30%), either spontaneously or following trauma.[5-9] The association of this sign with this disease is so strong that some studies have suggested diagnostic testing for GA1 in the presence of SDH in combination with other changes on imaging, such as bilateral enlargement of the Sylvian fissures and widened cerebrospinal fluid (CSF) spaces, particularly in the frontotemporal region.[2,5,6,8] This case describes the presentation of bilateral SDH in an infant previously diagnosed with GA1. It highlights the importance and need for a multidisciplinary approach to assess the risks and benefits of surgical *versus* conservative management. It also aims to provide evidence of the potential spontaneous regression of SDH in such cases.

CASE REPORT

We present the case of an infant diagnosed with glutaric aciduria type 1 on the 14th day of life through NBS. He was started on a low-lysine diet and lysine-free, tryptophan-reduced, and arginine-enriched amino acid mixtures

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and carnitine supplementation, with good compliance. Macrocephaly was present since birth and transfontanellar ultrasound at three weeks of age showed enlargement of the subdural space (~5 mm) and bilateral subependymal cysts. Head circumference consistently remained above the 97th percentile; however, between three and six months of age, there was a marked acceleration of head growth, which led to even further deviation from the growth curve, as illustrated in Fig. 1. A transfontanellar ultrasound was repeated at three months of age, revealing a large enlargement of the bifrontal subdural spaces and wide Sylvian fissures. The case was discussed with the neurosurgery team and the patient was evaluated at that time. Since during the follow-up there were no abnormalities in psychomotor development or symptoms of intracranial hypertension, no history of trauma or signs of abuse, and the transfontanellar ultrasound repeated at four months of age was similar, a cranial magnetic resonance imaging (MRI) was requested. An eight-month cranial MRI (Fig. 2) showed bilateral SDH with significant intracranial mass effect and wide CSF spaces anterior to the temporal horns and in the Sylvian fissures.

Surgical treatment was considered; however, due to the absence of symptoms of cranial hypertension, the risks associated with surgery (a potential precipitant of AEC), the metabolic diseases team recommended conservative management with close monitoring. One month later, cranial CT showed a significant reduction of the SDH, particularly on the right side (Fig. 3). Head circumference remained above the 97th percentile for age but followed a curve more parallel to the percentile and even approached it.

By the age of three, the child demonstrated normal acquisition of motor and language skills, with head circumference stabilizing around the 97th percentile for age and no abnormalities detected on neurological examination. No AEC occurred during the first six years of life. Subsequent imaging studies showed significant improvement (Figs. 4 and 5). In addition to SDH, the images revealed GA1-specific findings such as frontotemporal hypoplasia ('batwing' sign).

He continues to be followed and, at the age of 11, has no neurological signs or symptoms.

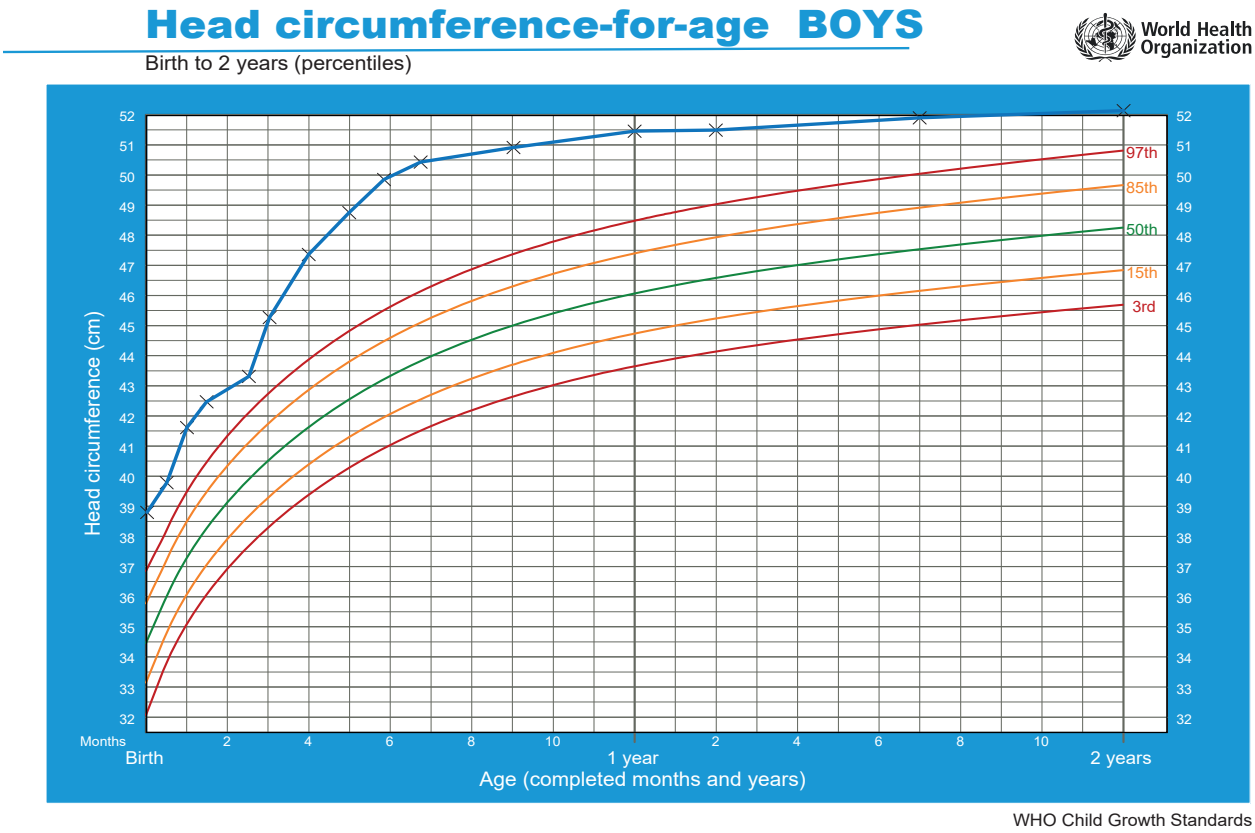

Figure 1 – Head circumference progression during the first two years of life, above 97th percentile for age

Source: Head circumference-for-age BOYS - Birth to 2 years (percentiles) © World Health Organization - This material was published for non-commercial purposes under the CC BY-NC-SA 3.0 IGO licence and is available at https://cdn.who.int/media/docs/default-source/child-growth/child-growth-standards/indicators/head-circumference-for-age/cht_hcfa_boys_p_0_2.pdf?sfvrsn=3829cc5_9.

No modifications were made to the image, aside from marking the evaluation of this child's growth (blue line with crosshairs).

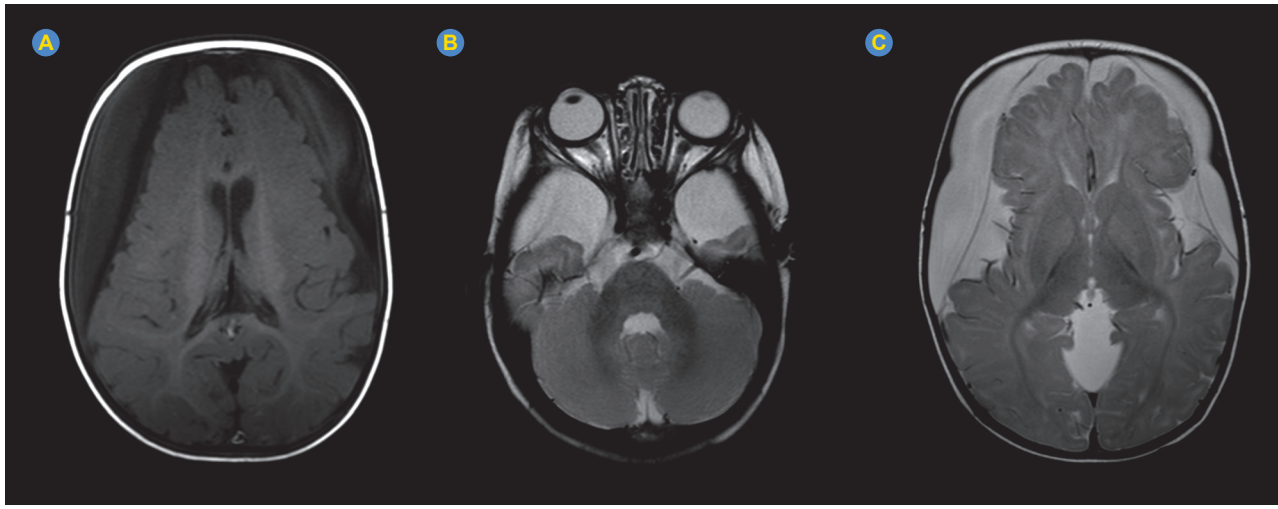

Figure 2 – Cranial MRI at 8 months of age. (A) T1-weighted spin echo axial image showing bilateral subdural hematomas, measuring 22 mm and 21 mm of width on the right and left convexities, respectively, causing significant mass effect over the adjacent cerebral parenchyma. (B) and (C) T2-weighted spin echo axial images showing wide cerebrospinal fluid (CSF) spaces anterior to the temporal horns (B) and in the Sylvian fissures (C). No significant signal or morphodimentional abnormalities can be noted in the basal ganglia (C), *dentate nuclei* or *substantia nigra* (not seen).

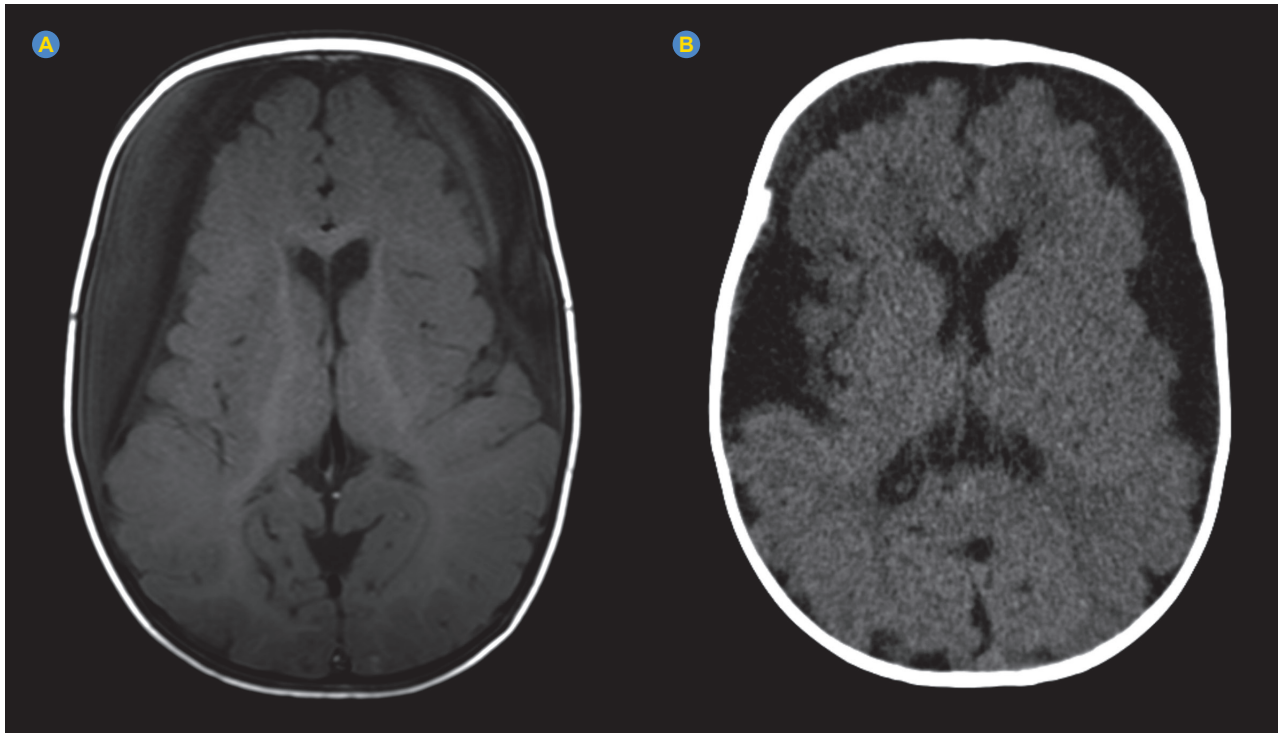

Figure 3 – T1-weighted sequence from the MRI examination performed at 8 months of age (A) side-by-side with a cranial CT-scan at 9 months of age (B), reformatted to be in the same plane. Image (B) shows a marked reduction in size of the bilateral subdural hematomas and of their mass effect compared to image (A), now measuring 10 mm on the right convexity and 20 mm on the left.

DISCUSSION

Although macrocephaly is a common feature in GA1, presented in 75% of the cases,[2] one study found an association between both macrocephaly and SDH in GA1,[6] while others suggested an association of SDH with wide external CSF spaces,[5,7] which can predispose to stretching of the bridging cortical veins. Both macrocephaly and wide CSF spaces were present in our case. Subdural hematoma can occur in the absence of trauma and can be bilateral,[6,8] as demonstrated in this case. Regarding age, SDH is more

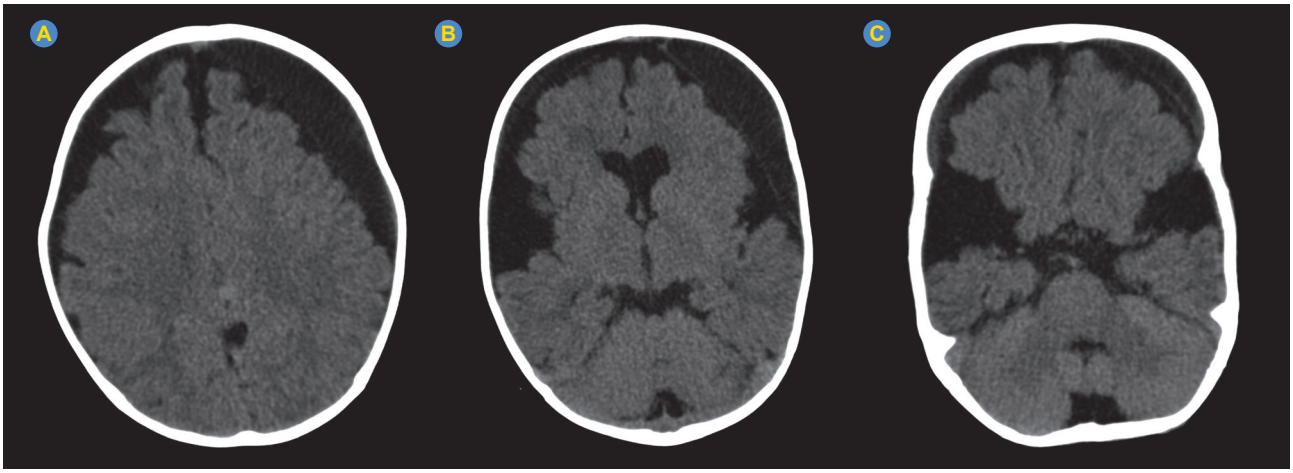

Figure 4 – Cranial CT-scan at 11 months of age (A - C) showing further reduction in size of the subdural hematoma on the right frontotemporal convexity, without any signs of re-bleeding.

common between the vulnerable period of three months and two to three years,[6] which aligns with the age of our patient. Despite the association between GA1 and SDH, it is important to look for signs of abuse that can mimic these lesions, as abuse can occur at the same time as any illness and children with chronic illnesses may be more vulnerable.[8] Cranial MRI also showed GA1-specific findings, consistent with other cases of GA1.[6,8]

In GA1, in addition to ongoing treatment, emergency management (high-energy intake, transient cessation of natural protein and support of endogenous detoxification by increased carnitine supplementation) should be done in catabolic episodes such as febrile illness or perioperative fasting, being vital to prevent AEC and subsequent irreversible damage.[1,2] Surgical intervention in children with undiagnosed GA1 presenting with SDH could lead to dangerous outcomes.[5] Even in cases of established diagnosis, surgery is a known precipitator of AEC, despite measures to avoid a catabolic state,[2] and carries inherent risks like any surgical procedure. Therefore, if there is a higher incidence of SDH in GA1 patients and reports of spontaneous resolution, as some studies suggest,[6-8] and this case as well, conservative treatment should be considered after a multidisciplinary discussion weighing the risks and benefits of both approaches.

This case report highlights the potential for spontaneous regression of SDH in GA1 and supports a conservative approach when there are no signs of intracranial hypertension and the neurological examination is normal, even with large dimensions and associated intracranial mass effect. However, being a single case report, it has limitations. Also, due to the rarity of GA1 and the possibility of asymptomatic cases of SDH, there is insufficient data to provide definitive guidance on treatment approaches.

To the best of our knowledge, this is the first report in Portugal of the complete evolution of an infant with SDH in the context of GA1, showing regression even with large dimensions and a significant intracranial mass effect.

PATIENT PERSPECTIVE

As parents, we were anxious about the possibility of surgery, knowing the risks involved given our son's condition. However, we felt much more reassured by the medical team, who carefully studied the literature and case descriptions to guide their approach. Their decision to follow a conservative treatment plan proved to be the right one, bringing us great relief. We hope that our experience can support other doctors in helping families facing GA1 with greater confidence and peace of mind.

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AUTHOR CONTRIBUTIONS

LM: Data acquisition, literature search, writing of the manuscript.

PLP: Data acquisition, writing of the manuscript.

HLC: Writing of the manuscript.

AG, PJ: Writing and critical review of the manuscript.

All authors approved the final version to be published.

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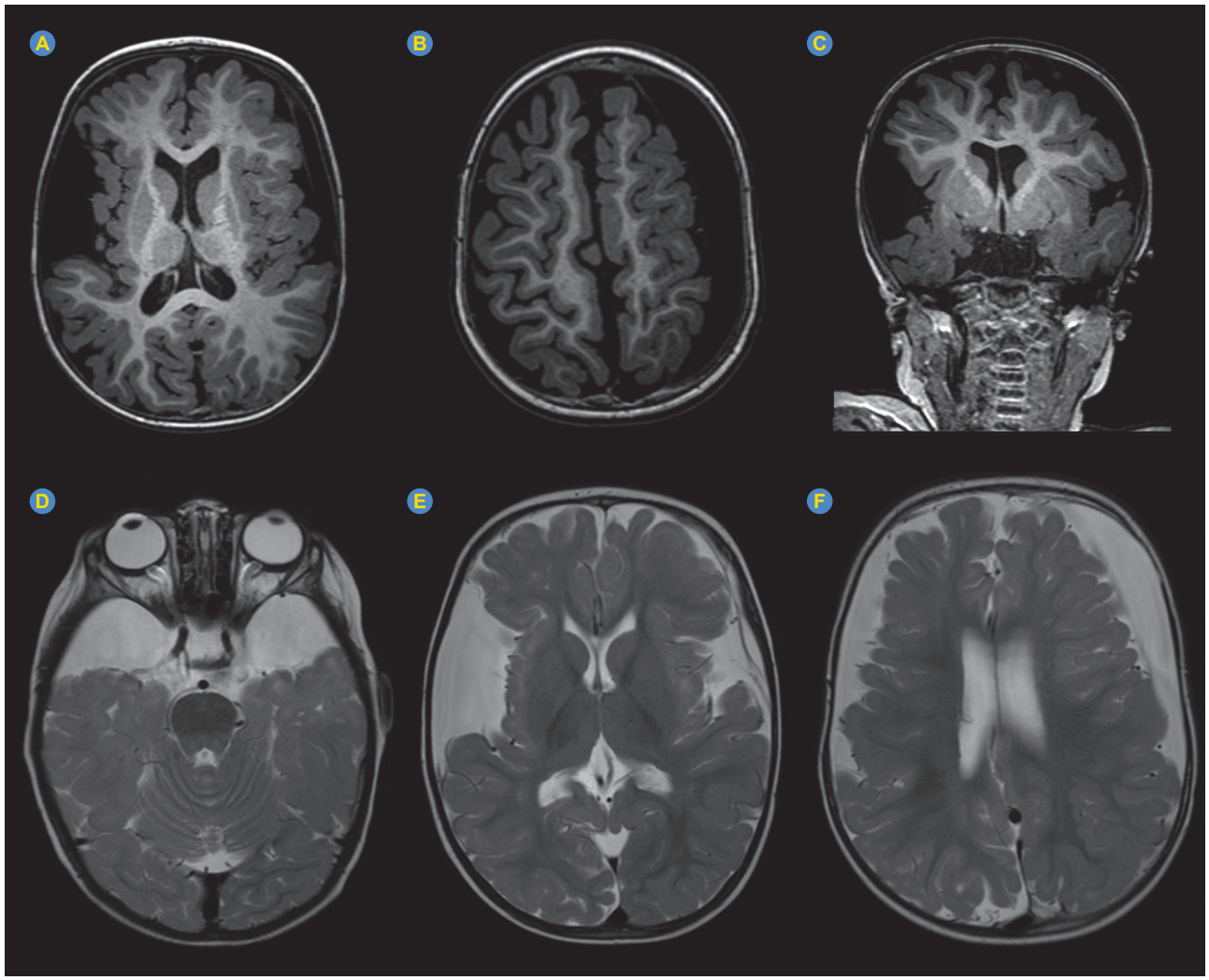

Figure 5 – Cranial MRI at 13 months of age. (A - C) T1-weighted spin echo images in the axial (A, B) and coronal (C) planes, showing complete reabsorption of the subdural hematoma (SDH) on the right, and a reduction in size of the SDH on the left to 12 mm, associated with a reduction of their mass effect. (D - F) T2-weighted spin echo images in the axial plane showing stability of widened CSF spaces, particularly in the frontotemporal region and Sylvian fissures ('batwing' appearance, best depicted on image (E). No myelination changes can be noted, nor signal abnormalities in the basal ganglia, thalami or *dentate nuclei*.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PARENTAL CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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Alopécia Isolada dos Membros Superiores: Uma Apresentação Incomum de Lúpus Cutâneo

Isolated Alopecia of the Upper Limbs: An Uncommon Presentation of Cutaneous Lupus

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Acta Med Port 2025 Aug;38(8):502-503 ▪ https://doi.org/10.20344/amp.23047

Palavras-chave: Alopécia; Extremidades Superiores; Lúpus Eritematoso Cutâneo
Keywords: Alopecia; Lupus Erythematosus, Cutaneous; Upper Extremity

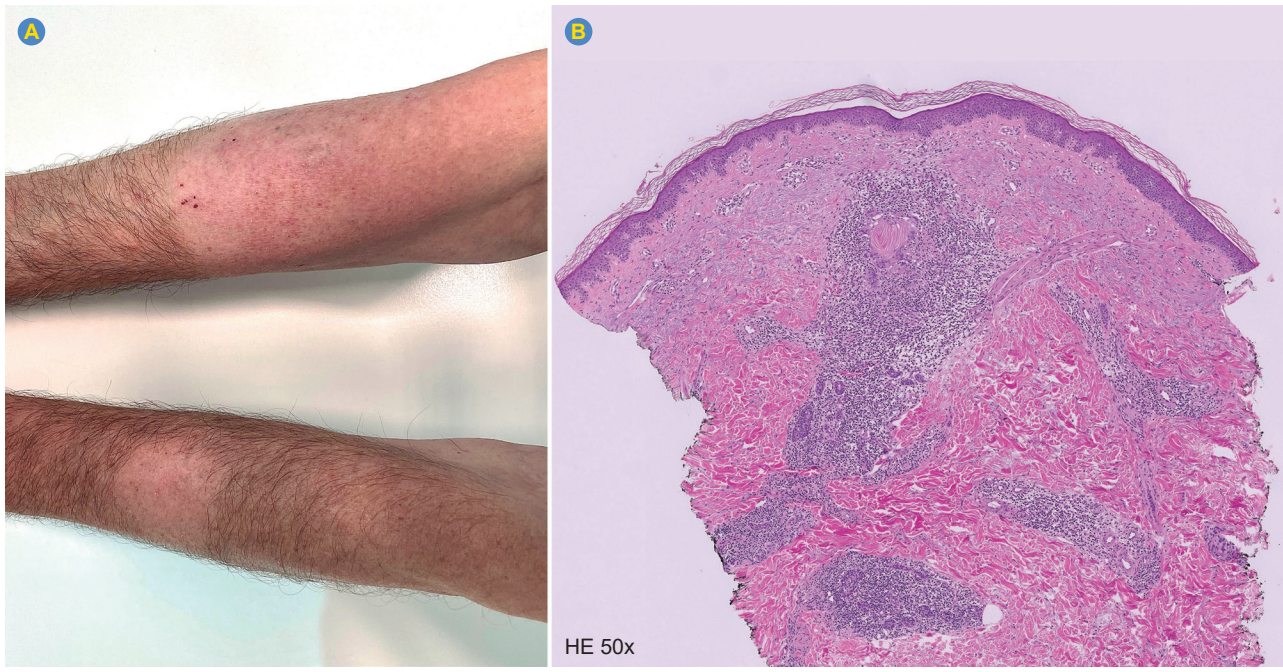

Figura 1 – A biópsia cutânea revela um moderado infiltrado inflamatório linfóide que oblitera o folículo piloso, com escassa reação de corpo estranho à queratina folicular exposta. É acompanhado de inflamação dérmica perivascular superficial e profunda, e de inflamação peri-écrina. Observa-se também uma discreta atividade no *interface* da junção dermo-epidérmica, traduzida pela presença de focal e ligeira vacuolização da basal epidérmica.

Um doente do sexo masculino, com 63 anos, foi avaliado em consulta de Dermatologia por áreas de alopécia bem delimitadas dos antebraços, de aparecimento súbito, com prurido e eritema perifolicular. A biópsia cutânea mostrou ausência de folículos pilosos viáveis, com infiltrado linfoide perianexial de células T e degenerescência hidrópica da camada basal. Os achados clínicos e histológicos permitiram o diagnóstico de lúpus cutâneo, com achados sugestivos de lúpus cutâneo discoide. A restante avaliação clínica e analítica permitiu a exclusão de doença sistémica associada. O doente foi medicado com um curso breve de prednisolona oral em baixa dose e betametasona e tacrolimus tópicos, com melhoria das queixas e resolução do eritema, embora sem recrescimento do pelo. Estas imagens ilustram uma apresentação extremamente incomum de lúpus cutâneo, com lesões isoladas ao nível dos membros e ausência de outros achados clínicos.[1] O doente mantém seguimento, com necessidade de vigilância regular para exclusão de lúpus eritematoso sistémico.[2]

CONTRIBUTO DOS AUTORES

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SL: Revisão crítica do manuscrito.

Todos os autores aprovaram a versão final a ser publicada.

PROTEÇÃO DE PESSOAS E ANIMAIS

Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia da Associação Médica Mundial atualizada em outubro de 2024.

CONFIDENCIALIDADE DOS DADOS

Os autores declaram ter seguido os protocolos do seu centro de trabalho acerca da publicação de dados.

CONSENTIMENTO DO DOENTE

Obtido.

CONFLITOS DE INTERESSE

Os autores declaram não ter conflitos de interesse relacionados com o presente trabalho.

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Protocolo de Avaliação e Abordagem de Adolescentes com Ideação Suicida nos Cuidados de Saúde Primários

Guideline for Assessment and Management of Adolescents with Suicidal Ideation in Primary Health Care

Joana COELHO SANTOS✉[1], Mariana MEDEIROS NEVES[1], Inês BARROCA[1], Graciete CARVALHO[1]
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RESUMO

O suicídio é uma das principais causas de morte na adolescência a nível global, sendo a depressão, que é a perturbação psiquiátrica que mais frequentemente cursa com ideação suicida, uma das principais causas de doença e incapacidade nesta população. A deteção, abordagem e encaminhamento de situações de risco por parte dos médicos de Medicina Geral e Familiar permite reduzir o risco de suicídio na adolescência. Este protocolo foi criado no âmbito da articulação entre o Serviço de Psiquiatria e Saúde Mental da Infância e da Adolescência e os Cuidados de Saúde Primários da Unidade Local de Saúde de Lisboa Ocidental e tem como objetivo sistematizar e operacionalizar a abordagem de adolescentes com ideação suicida nos cuidados de saúde primários, potencializando a deteção precoce e a intervenção adequada ao nível de risco. Este protocolo apresenta definições de conceitos necessários à correta caracterização de ideação suicida e propõe uma abordagem ao risco de suicídio que engloba a avaliação e caracterização da ideação suicida e a avaliação do risco de passagem ao ato. A avaliação do risco de suicídio culmina com a tomada de decisão sobre o encaminhamento e o tratamento do adolescente, que pode consistir no encaminhamento imediato para o serviço de urgência, num pedido de consulta de Psiquiatria da Infância e da Adolescência ou na marcação de consultas de Medicina Geral e Familiar mais frequentes para reavaliação e encaminhamento para consulta de Psicologia, de acordo com o risco observado. São apresentadas recomendações relativas à intervenção em crise e tratamento de comorbilidades identificadas. A deteção e tratamento precoce de doenças psiquiátricas, a intervenção nos fatores de risco e a restrição de acesso de métodos de suicídio, destacando-se o acesso a medicação, destacam-se como eficazes medidas de prevenção do suicídio na adolescência.
Palavras-chave: Adolescente; Cuidados de Saúde Primários; Ideação Suicida; Portugal; Prevenção do Suicídio; Tentativa de Suicídio

ABSTRACT

Suicide is one of the main causes of death in adolescence globally, and depression, the psychiatric disorder that most often accompanies suicidal ideation, is one of the biggest causes of illness and disability in this population. The detection, approach and referral of high-risk situations by family physicians helps to reduce the risk of suicide in this age group. This guideline was created as part of the coordination between the Department of Child and Adolescent Psychiatry and the primary health care units of the Unidade Local de Saúde de Lisboa Ocidental and aims to systematize and operationalize the approach to adolescents with suicidal ideation seen in primary health care, enhancing early detection and appropriate intervention at the level of risk. This guideline presents definitions of the concepts needed to correctly characterize suicidal ideation and proposes a suicide risk assessment approach, which includes assessing and characterizing suicidal ideation and assessing the risk of committing suicide. Suicide risk assessment culminates in a decision on the referral and treatment of the adolescent, which may consist of immediate referral to the emergency department, a request for a Child and Adolescent Psychiatry consultation or more frequent Family Medicine appointments for reassessment and referral to a Psychology clinic, depending on the level of risk observed. Recommendations for crisis intervention and treatment of identified comorbidities are presented. Early detection and treatment of psychiatric illnesses, intervention in risk factors and restricting access to suicide methods, especially access to medication, stand out as effective measures to prevent suicide in adolescence.
Keywords: Adolescent; Portugal; Primary Health Care; Suicidal Ideation; Suicide, Attempted; Suicide Prevention

INTRODUCÃO

A adolescência é um período crítico de aprendizagem, crescimento e descobrimento, mas também de grande vulnerabilidade psicológica. A depressão é uma das maiores causas de doença e incapacidade entre os adolescentes, sendo também a patologia que mais frequentemente cursa com pensamentos de morte e ideação suicida (IS).[1]

O suicídio, extremamente raro antes da puberdade, torna-se progressivamente mais frequente ao longo da adolescência,[1,2] sendo a quarta causa de morte em adolescentes com idades compreendidas entre os 15 e os 19 anos a nível global.[3] Os rapazes morrem mais por suicídio e as raparigas apresentam mais IS e tentativas de suicídio.[1,4]

Assim, a identificação de adolescentes em risco e a sua adequada abordagem são foco central nas políticas de saúde mental.[5] Dada a sua posição privilegiada na prestação de cuidados próximos à população, os médicos de Medicina Geral e Familiar são agentes indispensáveis no reconhecimento de situações de risco para suicídio e no seu correto encaminhamento.[2]

O objetivo deste protocolo é sistematizar e operacionalizar a abordagem de adolescentes com IS nos cuidados de saúde primários, potencializando a deteção precoce e a intervenção adequada ao nível de risco. É proposta uma abordagem de avaliação do risco de suicídio que estratifica os doentes em três níveis de risco, cada um correspondendo a um diferente tipo de encaminhamento. Esta abordagem é também apresentada em fluxograma para uma fácil interpretação e consulta em contexto clínico.

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Apesar de ter sido criado no âmbito da articulação entre o Serviço de Psiquiatria e Saúde Mental da Infância e da Adolescência e os Cuidados de Saúde Primários da Unidade Local de Saúde de Lisboa Ocidental, este documento apresenta aplicabilidade extensível a outras unidades locais de saúde.

MÉTODOS

Revisão bibliográfica

Este protocolo tem como principal referência o "Manual para Profissionais de Saúde" da Campanha Nacional de Prevenção de Suicídio, tendo a informação sido complementada com revisão narrativa de literatura considerada relevante, com recurso a pesquisa na plataforma PubMed com os termos «"Suicide"[Mesh]» e «"Adolescent"[Mesh]». O processo de seleção baseou-se na análise dos títulos, resumos e, quando necessário, do texto completo para assegurar a relevância dos estudos incluídos. Foram considerados artigos de revisão em português e inglês, independentemente da sua data de publicação, em que o principal foco fosse a caracterização, avaliação ou abordagem de suicídio, ideação suicida ou comportamentos autolesivos. Também foram consultados manuais de referência de Psiquiatria da Infância e da Adolescência e dados estatísticos da Organização Mundial da Saúde.

Articulação multidisciplinar

A primeira versão do protocolo, resultante deste processo de revisão, foi discutida internamente pelos elementos da equipa do Serviço de Psiquiatria e Saúde Mental da Infância e da Adolescência. Posteriormente, foi apresentada na reunião da equipa, tendo sido obtida a sua versão final. Esta versão do protocolo foi apresentada às equipas de vários centros de saúde da área, para validar a sua aplicabilidade prática nos cuidados de saúde primários. Foi aprovada pelo diretor clínico para os Cuidados de Saúde Primários da Unidade Local de Saúde de Lisboa Ocidental, que procedeu à sua disseminação a todos os centros de saúde, com o objetivo de que se torne procedimento. Adicionalmente, o protocolo foi apresentado nas I Jornadas de Pedopsiquiatria de Urgência no Hospital de Dona Estefânia, com aprovação da coordenação da Urgência Metropolitana de Lisboa.

Limitações

Destaca-se como limitação metodológica o facto de ter sido realizada uma revisão narrativa da literatura, com seleção de artigos com base em julgamento clínico, a que se associa um viés de seleção. Adicionalmente, este protocolo foi desenvolvido especificamente para a Unidade Local de Saúde de Lisboa Ocidental, cujas particularidades demográficas, socioeconómicas e institucionais podem não ser representativas de outras áreas, limitando a generalização dos resultados.

Estrutura do protocolo

O protocolo final divide-se em: definições; avaliação e caracterização da ideação suicida; o risco de passagem ao ato (com discriminação de fatores de risco e fatores protetores); encaminhamento; intervenção e medidas preventivas.

A versão completa deste protocolo, com secções adicionais, pode ser encontrada no Apêndice 1 (Apendice_01: https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/22367/15644).

DEFINIÇÕES

A aplicação deste protocolo pressupõe a uniformização dos conceitos considerados na caracterização da IS.

- **Ideação suicida**: Pensamentos e cognições sobre acabar com a própria vida, que podem ser vistos como precursores de atos suicidas.[4-7]
- **Ideação suicida ativa**: Pensamentos de agir para se matar. Por exemplo, "Eu quero matar-me" ou "Estou a pensar em suicídio".[8-10]
- **Ideação suicida passiva**: O desejo ou a esperança de que a morte se sobreponha a si mesmo. Por exemplo, "Eu estaria melhor morto" ou "Espero dormir e não acordar." É sinónimo de pensamentos de morte passivos.[8-10]
- **Tentativa de suicídio**: Qualquer comportamento com intencionalidade suicida, independentemente da sua real letalidade.[5,6]
- **Comportamento autolesivo**: Comportamento sem intencionalidade suicida, mas envolvendo atos autolesivos intencionais e que pode ou não associar-se a ideação suicida. É sinónimo de 'autolesão não suicida' e de 'parassuicídio'.[1,6]

É importante ressalvar que alguns comportamentos autolesivos podem resultar em morte, apesar de não existir essa intenção.[5] Um exemplo seria uma toma excessiva de medicação num momento de ataque de pânico/sintomatologia ansiosa contínua de elevada intensidade, em que a medicação seria ingerida com intuito de melhoria sintomática da ansiedade, mas que inadvertidamente fosse tomada numa dose superior à recomendada, acabando por se tornar letal. Nesse caso, ainda que o desfecho fosse fatal, não existia intencionalidade suicida.

AVALIAÇÃO E CARACTERIZAÇÃO DA IDEAÇÃO SUICIDA

A avaliação do risco de suicídio[1,10] engloba, em primeiro lugar, uma avaliação e caracterização da IS, seguida de uma avaliação do risco de passagem ao ato. Esta avaliação

baseia-se no questionamento direto sobre ideação, intenção e plano suicidas e fatores de risco. Sempre que possível, deve ser recolhida informação de várias fontes, incluindo o adolescente, família ou outros cuidadores, escola e outros adultos de referência.[2] Ao abordar esta temática, é importante garantir tempo a sós com o adolescente, proporcionar um ambiente confortável, manter uma atitude empática, mostrar interesse e vontade de ajudar, não julgar, e falar abertamente sobre suicídio. Não há evidência de que falar ou perguntar sobre suicídio cause ideação suicida em adolescentes.[1,11] Não deverá ser prometida confidencialidade ao adolescente, dado esta não poder ser garantida caso exista risco de suicídio, tal como disposto no Código Deontológico da Ordem dos Médicos.

Caracterização da ideação suicida

Para caracterizar a IS, deverão ser feitas questões como "Costumas ter pensamentos sobre a morte? Com que frequência?", "O que achas que acontece quando se morre?", "Alguma vez desejaste estar morto?", "Alguma vez pensaste que o mundo seria melhor se tu morresses? Que a vida da tua família e amigos seria mais fácil se morresses?", "Já tiveste pensamentos sobre te magoares a ti próprio? Sobre te matares? Já tiveste intenção de colocar esses pensamentos em prática? Quão forte é a tua intenção de o fazer?", "Já pensaste em formas de acabar com a tua vida? Já começaste a elaborar os detalhes de como o fazer?", "Alguma vez te tentaste matar? Como?". Estas questões permitem averiguar se existe IS e, caso exista, caracterizá-la como passiva ou ativa e, nesse caso, se associada ou não a um plano estruturado e intenção de o cumprir. O plano deverá também ser caracterizado, nomeadamente no que toca ao seu detalhe, exequibilidade e letalidade.

RISCO DE PASSAGEM AO ATO

Ao ser apurada IS é necessário averiguar o acompanhante risco de passagem ao ato. Este risco resulta da avaliação de múltiplos fatores, sendo reflexo de um balanço de fatores de risco e fatores protetores. As características da IS, previamente avaliada, podem imediatamente conferir alto risco suicidário: a frequência e gravidade da IS, a existência de um plano detalhado, o acesso aos meios letais descritos no plano e a intenção expressa de o concretizar. A existência de uma tentativa de suicídio prévia é o mais forte fator preditivo de suicídio,[1,2,9,10] destacando-se, na Tabela 1, outros fatores de risco que se encontram fortemente associados ao aumento do risco suicidário.[1,2]

Encontrar-se-ão em maior risco de suicídio adolescentes com doença psiquiátrica, comportamentos autolesivos, impulsividade, desesperança, problemas de autoestima ou confusão identitária, consumo de substâncias, inseridos em estruturas familiares disfuncionais, doença psiquiátrica nos pais ou cuidadores, expostos a abuso/negligência, experiências negativas na escola (ex.: dificuldades académicas, isolamento, conflitos com os pares e *bullying*) ou eventos adversos de vida (ex.: perdas, ruturas afetivas, envolvimento com as autoridades, etc.).[1,2]

Por outro lado, adolescentes com bom suporte sociofamiliar, acesso a cuidados de saúde e estratégias internas de *coping*, terão uma grande dimensão protetora.[1]

É apresentada, na versão completa do protocolo, uma lista exaustiva de fatores de risco e protetores a considerar [Apêndice 1, Anexos 1 e 2, respetivamente (Apendice_01: https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/22367/15644)].

ENCAMINHAMENTO

A avaliação do risco de suicídio culmina com a tomada de decisão sobre o encaminhamento e o tratamento do doente, garantindo a sua segurança e a resposta às necessidades identificadas, tendo em conta o risco presumido e os recursos disponíveis. A decisão pode consistir no encaminhamento imediato para o serviço de urgência, num pedido de consulta de Psiquiatria da Infância e da Adolescência ou na marcação de consultas de Medicina Geral e Familiar mais frequentes para reavaliação, com encaminhamento para consulta de Psicologia. Esta decisão depende do risco observado, tendo em conta a avaliação de ideação suicida e o risco de passagem ao ato.

Definem-se três níveis de risco:

- **Alto risco**: Adolescente com IS ativa com plano de suicídio e acesso ao método letal E/OU fatores de risco *major*. Estes adolescentes deverão ser

Tabela 1 – Fatores de risco *major* para suicídio

Fatores de risco *major*
Tentativa de suicídio prévia (o mais importante fator de risco para suicídio)
Alteração aguda do estado mental (alucinações, delírios, humor maníaco ou deprimido com desesperança, irritável, agitado ou agressivo)
Uso de substâncias
Impulsividade
Sexo masculino
Ausência de suporte social/familiar

encaminhados (com garantia da sua segurança) à urgência de Pedopsiquiatria do Hospital de Dona Estefânia com carta de informação clínica.

- **Risco moderado**: Adolescente com IS passiva ou ativa sem risco de passagem imediata ao ato (por prevalência de fatores protetores). Estes adolescentes deverão ser encaminhados para consulta de Psiquiatria da Infância e da Adolescência e deverão manter consultas de vigilância/intervenção com o médico assistente até à primeira consulta hospitalar.
- **Baixo risco**: Adolescente com IS passiva, sem intenção nem plano de suicídio, sem fatores de risco *major*, com presença de fatores protetores. Verificando-se suporte familiar adequado, estes adolescentes devem manter acompanhamento em ambulatório no médico assistente e em consulta de Psicologia.

Em caso de dúvida no momento da decisão do encaminhamento, existe possibilidade de contacto telefónico para discussão de caso com a equipa de urgência de Pedopsiquiatria do Hospital de Dona Estefânia.

A Fig. 1 sistematiza, em fluxograma, as recomendações presentes neste protocolo, para uma fácil interpretação e consulta em contexto clínico.

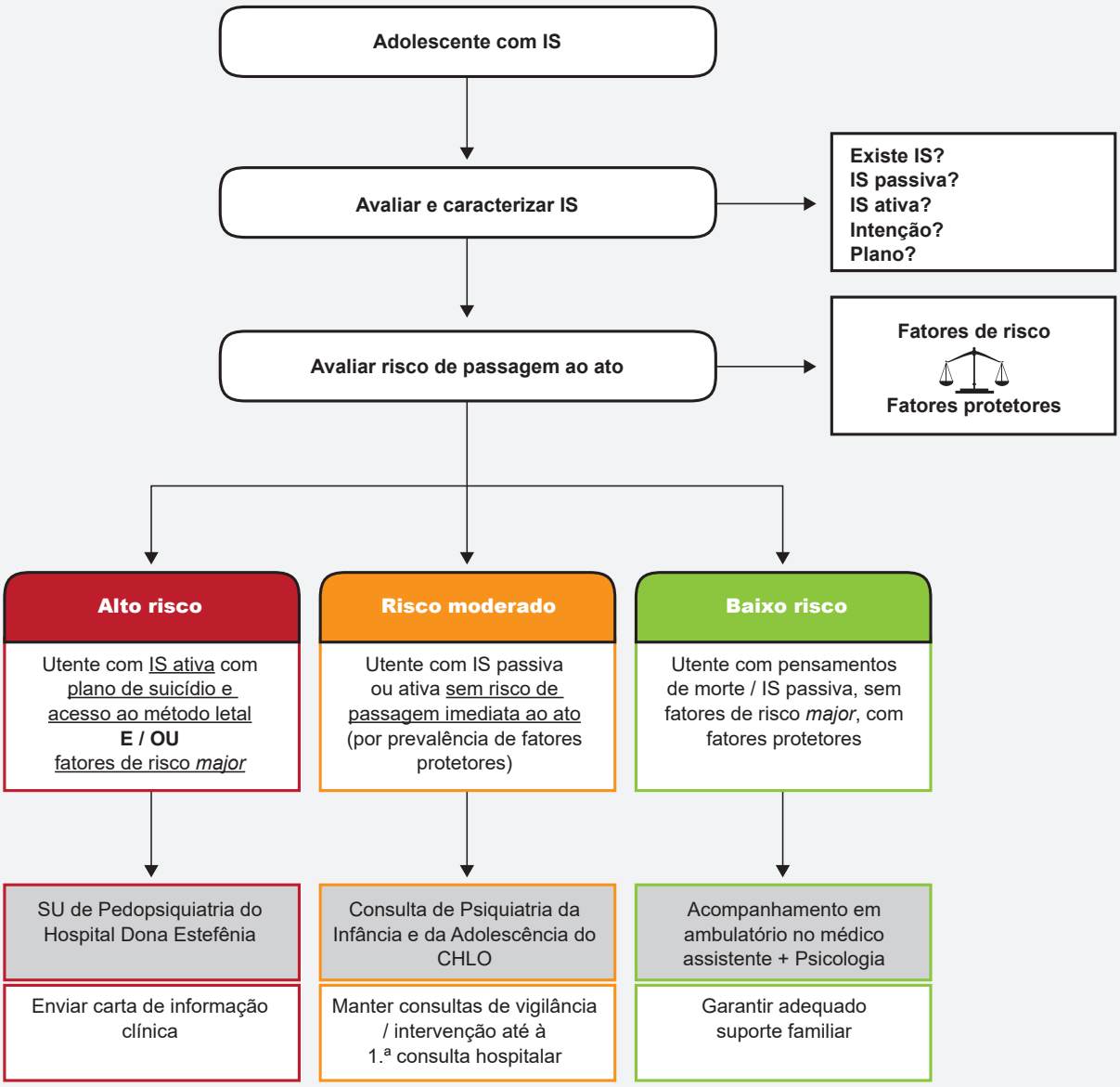

Figura 1 – Fluxograma de abordagem ao adolescente com ideação suicida

INTERVENÇÃO

A abordagem deverá englobar a intervenção em crise da ideação suicida e o tratamento de qualquer comorbilidade identificada (ex.: depressão, ansiedade).[1,2]

Intervenção em crise

A intervenção em crise deverá incluir, em primeiro lugar, o estabelecimento de relação de confiança e colaboração, que permita explorar com o adolescente o problema atual/desencadeante e também elaborar um plano de segurança. Realça-se que um plano de segurança não é um contrato de não suicídio. Não existe evidência a favor da eficácia dos contratos de não suicídio, podendo estes, pelo contrário, prejudicar a relação terapêutica e criar falsa confiança nos técnicos e nas famílias.[1,2,12] Assim, um plano de segurança passa por ajudar o adolescente a reconhecer quais os sinais de alarme em momentos de exacerbação de ideação suicida e quais as estratégias ao seu dispor para reduzir esses pensamentos. Estas incluem estratégias internas de *coping*, formas de distração, pessoas de confiança a quem pedir ajuda e profissionais ou serviços que podem ser contactados durante uma crise.[1,2] É apresentada em anexo, na versão completa do protocolo, um exemplo de plano de segurança [Apêndice 1, Anexo 3 (Apendice_01: https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/22367/15644)].

A intervenção em crise implica também envolver a família/os cuidadores e a restante rede de suporte informal do adolescente, alertando para o risco e garantindo a supervisão e o apoio de um adulto nos dias seguintes, bem como a restrição de acesso a meios letais (*vide* secção "MEDIDAS PREVENTIVAS").

O agendamento de um próximo contacto, além de garantir uma reavaliação, reforça o estabelecimento de uma relação securizante com o adolescente e potencia a sua adesão.

Tratamento de comorbilidades

O tratamento de comorbilidades deverá ser iniciado atempadamente e ser assegurado no nível de cuidados correspondente ao risco identificado. Deverá ser mantida a articulação entre os vários prestadores de cuidados de saúde, primários e hospitalares.[1,2] As perturbações depressivas são muito frequentes na adolescência e são o grupo de patologias que mais frequentemente cursa com pensamentos de morte e ideação suicida. O seu tratamento, psicológico e/ou farmacológico, é eficaz na redução do risco de suicídio e deve ser considerado desde logo.[1,2,4]

MEDIDAS PREVENTIVAS

A evidência mostra que a maioria dos adolescentes com depressão não é identificada nem recebe tratamento,[2] que mais de 90% dos adolescentes que cometem suicídio sofrem de doença psiquiátrica no momento da sua morte e que mais de 50% destes teriam a doença há pelo menos dois anos.[2] Assim, a deteção e o tratamento precoces de doenças psiquiátricas são determinantes na prevenção do suicídio.

Consequentemente, também a intervenção precoce noutros potenciais fatores de risco, nomeadamente sociofamiliares (ex.: negligência, abuso, *bullying*), pode prevenir a evolução para risco suicidário.[1,2]

A restrição de acesso a meios de suicídio (ex.: substâncias tóxicas, armas) é uma medida de saúde pública amplamente utilizada e é eficaz na prevenção de suicídio.[4] Dada a habitual ambivalência associada à IS, a dificuldade de acesso a métodos de suicídio é um fator determinante de proteção, particularmente devido à impulsividade característica dos adolescentes.[1]

Destaca-se a importância da restrição no acesso a medicação, dado que a ingestão medicamentosa voluntária é o método mais comum de tentativa de suicídio entre adolescentes.[2] O armazenamento da medicação e a vigilância da sua administração devem ser responsabilidade dos adultos.

CONSIDERAÇÕES FINAIS

Existe uma evidente discrepância entre a prevalência de perturbações depressivas e IS na adolescência e a atual capacidade de resposta dos serviços de saúde mental da infância e adolescência, tornando-se prioritária a capacitação das equipas dos cuidados de saúde primários na avaliação e orientação destas situações clínicas. O protocolo aqui apresentado procura responder a essa necessidade, tendo como objetivo ser uma ferramenta prática que otimize a abordagem de adolescentes com IS nos cuidados de saúde primários.

Este protocolo foi criado no âmbito da articulação entre o Serviço de Psiquiatria e Saúde Mental da Infância e da Adolescência e os Cuidados de Saúde Primários da Unidade Local de Saúde de Lisboa Ocidental, refletindo as características sociodemográficas da população abrangida e os recursos dos serviços envolvidos. Esta limitação geográfica permitiu uma elaboração do protocolo em proximidade das equipas dos cuidados de saúde primários, facilitando a sua implementação e futura monitorização. Por outro lado, existe o potencial de expandir este protocolo a outras unidades locais de saúde, com as devidas considerações locais.

Consideramos que a criação e implementação de um mecanismo de avaliação dos resultados da aplicação deste protocolo serão cruciais para medir a sua eficácia e impacto, permitindo também melhorias futuras.

Por fim, a adoção de uma metodologia mais estruturada em estudos futuros, como a realização de uma revisão

sistemática, garantiria uma análise da literatura existente com resultados mais robustos.

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CONTRIBUTO DOS AUTORES

JCS, MMN, IB: Desenho e elaboração do artigo, redação e revisão crítica do manuscrito, aprovação da versão final.

GC: Revisão crítica do manuscrito, aprovação da versão final.

CONFLITOS DE INTERESSE

As autoras declaram não ter conflitos de interesse relacionados com o presente trabalho.

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Commentary on the Article "Anxiety and Generalized Anxiety Disorder in Elite Athletes"

Comentário ao Artigo "Ansiedade e Transtorno de Ansiedade Generalizada em Atletas de Elite"

Keywords: Anxiety; Anxiety Disorders; Athletes; Sports
Palavras-chave: Ansiedade; Atletas; Desporto; Perturbação de Ansiedade

Dear Editor,

We commend the authors on their article "Anxiety and Generalized Anxiety Disorder in Elite Athletes", published in Acta Médica Portuguesa.[1] Given the growing concerns surrounding the mental health of high-performance athletes, this study makes a valuable contribution to understanding the psychological challenges within this domain. However, we would like to offer some constructive reflections that may enhance future research on this topic.

The chosen methodology, a narrative review, facilitates a broad synthesis of the literature but presents inherent limitations. The lack of systematic criteria for study selection and evaluation may affect the objectivity of the conclusions. A systematic review or meta-analysis could enhance methodological rigor, offering a more robust and comparative perspective on the prevalence of generalized anxiety disorder (GAD) in elite athletes.

Another key consideration is the definition of an 'elite athlete'. The criterion adopted – the participation in national or international competitions – is broad, encompassing athletes with varying levels of preparation and exposure to competitive stress. Given that different sports impose distinct psychological demands, a more precise classification could help identify specific risk factors. Swann *et al* introduced a four-tier athlete classification – semi-elite, competitive-elite, successful-elite, and world-class elite – evaluating athletes based on performance, success, experience, and the competitiveness of their sport both nationally and globally.[2]

Regarding the comparison between GAD prevalence in athletes and the general population, the study concludes that no significant differences exist. However, methodological inconsistencies among the reviewed studies may influence this conclusion. Self-assessment questionnaires tend to overestimate the prevalence rate of psychiatric disorders, whereas clinical interviews provide greater specificity. Discussing these methodological discrepancies would enhance data interpretation and prevent premature generalizations.

Additionally, while the article provides valuable insights into risk and protective factors for anxiety in elite athletes, further exploration of sociocultural and economic influences would be beneficial. Anxiety perception and access to psychological support vary across countries and sports disciplines, directly affecting therapeutic and preventive strategies. A more detailed analysis of these aspects would contribute to a more comprehensive understanding of the issue.[3]

The discussion on therapeutic strategies effectively highlights the roles of psychotherapy and pharmacotherapy in treating GAD in athletes. However, further exploration of complementary approaches – such as mindfulness, biofeedback, and emotional education programs – would be valuable, as these have shown promise in anxiety management within high-performance sports. Additionally, a greater emphasis on preventive strategies would strengthen the study's impact, given the significant role anxiety plays in both performance and career longevity.[4]

Finally, the study rightly emphasizes the need for more epidemiological research on the relationship between anxiety and elite sports. Future studies would benefit from larger, more representative samples, as well as longitudinal methodologies to assess how anxiety evolves throughout an athlete's career and its relationship with different stages of athletic life.

In light of these observations, we reaffirm the importance of this study in advancing knowledge in sports psychiatry and the mental health of high-performance athletes. We hope these suggestions may contribute to refine future research in this field.

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From Sertoli-Leydig Cell Tumor to Uterine Inversion and Premature Ovarian Insufficiency

Do Tumor de Células de Sertoli-Leydig à Inversão Uterina e à Insuficiência Ovariana Prematura

Keywords: Leydig Cell Tumor; Ovarian Neoplasms; Uterine Inversion
Palavras-chave: Inversão Uterina; Neoplasias dos Ovários; Tumor de Células de Sertoli-Leydig

Dear Editor,

We report a rare clinical case of Sertoli-Leydig cell tumor (SLCT) culminating in uterine inversion. These tumors represent less than 0.2% of primary ovarian tumors and present diagnostic and therapeutic challenges due to their rarity, heterogeneous clinical presentation, and risk of malignancy.[1-3] The definitive diagnosis is histopathological. First-line treatment is surgical. Adjuvant chemotherapy and radiotherapy may be indicated.[1-4] The prognosis depends on the histological subtype and disease stage.[1-3] Non-puerperal uterine inversion, with multifactorial pathophysiology and morbidity, is a rare gynecological complication.[5] Aggressive behavior and size of the SLCT may contribute to uterine inversion.

A 14-year-old female patient had a history of moderately differentiated SLCT (retiform pattern, FIGO 2021 stage IIB, DICER-1 variant), that was treated three years earlier with right adnexectomy, cytoreductive surgery followed by two courses of adjuvant chemotherapy (bleomycin, etoposide, cisplatin; carboplatin, paclitaxel). She was monitored with MRI and tumor markers biannually for two years, with no recurrence. After this period, she presented abnormal uterine bleeding (AUB) with prolonged and heavy menstruation. The diagnostic tests revealed:

- CA125: 39.2 U/mL (normal < 35 U/mL, suggesting recurrence).
- Transvaginal ultrasound: heterogeneous endometrial thickening, prolapsed into the cervical canal (50 x 46 x 60 mm). Below LO, a cystic formation with solid vegetation (20 x 16 mm).
- Pelvic magnetic resonance imaging: uterus within the vaginal canal with eccentrically located tumor tissue in a horseshoe shape (29 x 65 mm), causing uterine traction. In the mesorectum, there is a solid lesion with 21 mm in diameter. Anterosuperior to the LO, there is another lesion with a diameter of 35 mm.

Given the diagnosis of uterine inversion and persistent AUB with hemodynamic instability, an exploratory laparotomy was performed, with total hysterectomy, left adnexectomy, and excision of a Douglas pouch implant, leaving no macroscopic residual disease (Fig. 1).

The histological diagnosis revealed SLCT with a sarcomatoid component, infiltrating endometrium, myometrium,

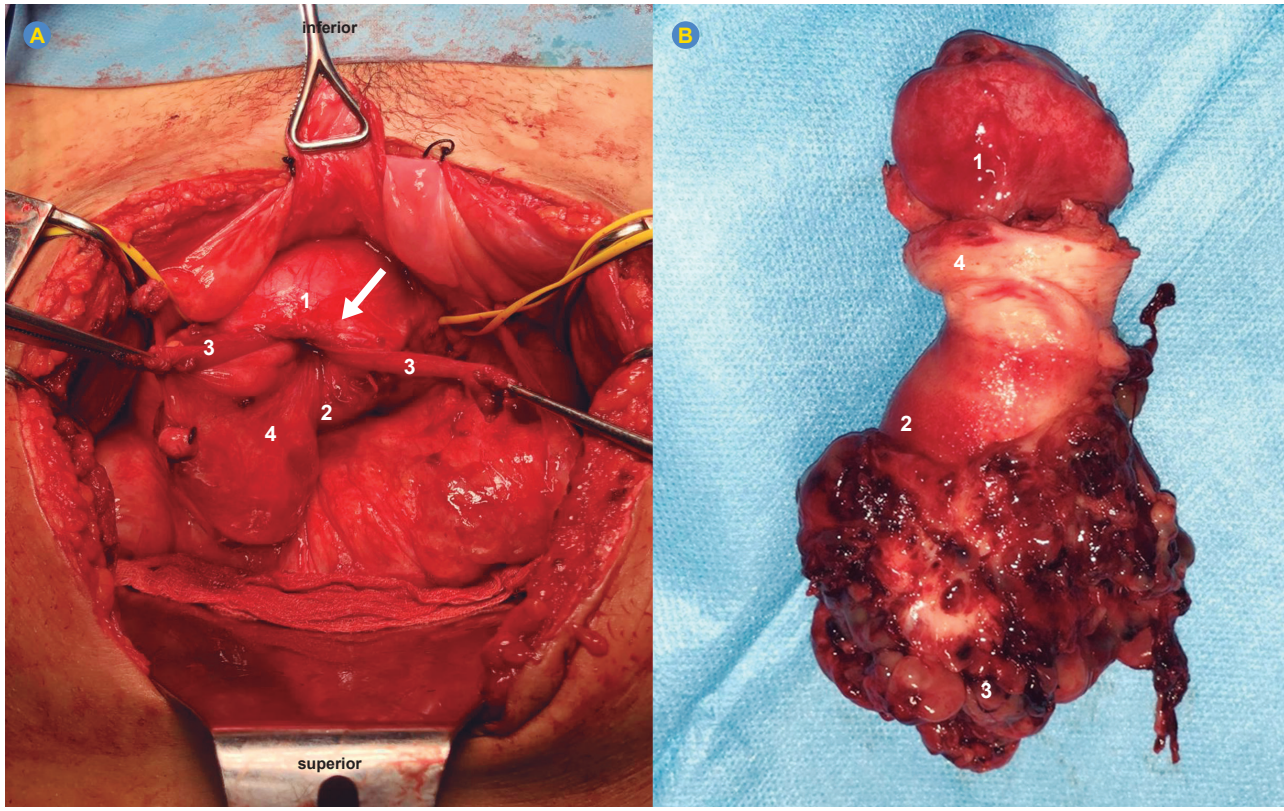

Figure 1 – (A) Surgical findings from an exploratory laparotomy, consistent with uterine inversion, with prolapsed uterus, following prior ureteral marking and bilateral round ligament ligation [(1) anterior uterine wall; (2) posterior uterine wall; (3) bilaterally ligated round ligament; (4) left fallopian tube and ovary; arrow: constriction ring]; (B) Surgical specimen of hysterectomy and left adnexectomy [(1) left adnexa; (2) endometrial epithelium of the uterine body; (3) metastatic endometrial tumor causing inversion of the uterine fundus; (4) cervix].

uterine serosa, endocervix, and left ovarian serosa, without lymphovascular invasion. Following bilateral oophorectomy, the patient met clinical criteria for premature ovarian insufficiency and started hormone replacement therapy. Six months post-surgery, the imaging tests revealed peritoneal recurrence in the pouch of Douglas (two lesions, both 10 mm). Pelvic adjuvant radiotherapy was administered. At sixteen months post-surgery (nine after adjuvant radiotherapy), there were no signs of disease progression.

This case reinforces the importance of early diagnosis and treatment of SLCT, and of referring all patients with SLCT and non-puerperal uterine inversion to specialized multidisciplinary centers.

AUTHOR CONTRIBUTIONS

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CSo, CSa: Data collection, critical review of the manuscript.

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Sporotrichosis with Bone and Joint Manifestations: A Diagnostic Challenge

Esporotricose com Manifestações Ósseas e Articulares: Um Desafio Diagnóstico

Keywords: Arthritis, Infectious/diagnostic imaging; Magnetic Resonance Imaging; Sporothrix; Sporotrichosis/diagnostic imaging
Palavras-chave: Artrite Infecciosa/diagnóstico por imagem; Esporotricose/diagnóstico por imagem; Ressonância Magnética; Sporothrix

Dear Editor,

Sporotrichosis is a chronic infectious disease caused by fungi of the *Sporothrix schenckii* complex, which includes four clinically relevant species: *S. schenckii* sensu stricto, *S. brasiliensis*, *S. globosa*, and *S. luriei*. These fungi thrive in decomposing plants and soil, thriving in tropical and subtropical climates. Between 1998 and 2015, the Oswaldo Cruz Foundation (Fiocruz) reported about 5000 human and 5100 feline cases of sporotrichosis in Brazil. Transmission typically occurs through bites or scratches from infected cats, particularly those carrying the *S. brasiliensis* strain.[1]

We report the case of a 41-year-old man from Belo Horizonte, Brazil, who experienced severe pain in his right ankle and foot for six months. Before that, he had been working as a painter on a farm and developed wounds on his right foot. He reported having diabetes *mellitus* and denied other comorbidities or previous surgeries. Physical examination revealed swelling in the right ankle and foot, with limited movement involving the tibiotalar joint. His C-reactive protein (CRP) level was 124 mg/dL. Magnetic resonance imaging (MRI) of the ankle revealed bone deformities, edema, and signs of joint infection (Fig. 1). Percutaneous aspiration and fungal culture confirmed infection with *Sporothrix schenckii*, verified by CRP. The treatment involved draining the subcutaneous collections, administering amphotericin B (5 mg/kg daily administered intermittently over a total period of four weeks as induction therapy). This was followed by oral itraconazole (100 mg twice daily for two years). During treatment, the patient underwent two surgeries – one for joint debridement and antifungal cement placement, and another one 45 days later for joint arthrodesis and cement removal. The patient now experiences lasting joint swelling and pain when placing weight on his foot.

Globally, sporotrichosis primarily affects children, women, and the elderly, who often have increased contact with infected cats.[2] Osteoarticular sporotrichosis, although rare, accounts for 3% - 4% of cases and is the third most commonly affected area, following skin and mucosal involvement.[3] Immunosuppressed patients are at higher risk for severe forms, including hematogenous dissemination and multifocal bone lesions.[4] Severe infections can progress to sepsis and death. The differential diagnosis includes other synovial proliferation disorders that may present with similar symptoms and lesions, such as other atypical infections (including tuberculosis), rheumatoid arthritis, pigmented villonodular synovitis, hemophilia, and synovial chondromatosis.[5] Early and accurate diagnosis is crucial. Magnetic resonance imaging is considered the gold standard for assessing soft tissue and joint changes, while computed tomography is useful for evaluating bone and joint lesions.[3]

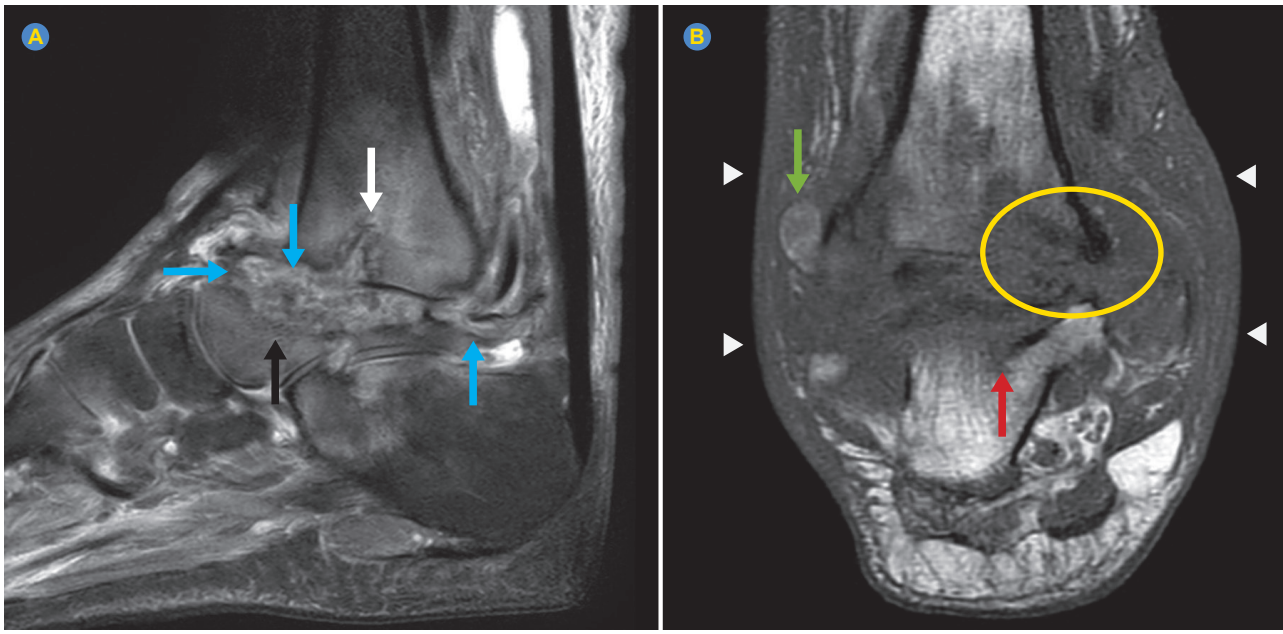

Figure 1 – Magnetic resonance imaging DP SPAIR in sagittal section (A) and T1-weighted image in coronal section (B) of the right ankle demonstrating marked deformity with erosions and significant edema of the dorsal portion of the talus bone (black arrow). Erosions with significant edema in the distal and articular portion of the tibia with communication with the medullary collection (white arrow). Marked deformity and volumetric reduction of the medial malleolus (yellow circle). Deformity with erosions and significant edema of the dorsal portion of the calcaneus bone (red arrow). Fluid effusion with significant synovial thickening in the tibio-talar joint space and in the anterior and posterior tibio-talar recesses (blue arrows). Significant edema of the subcutaneous tissue (arrowheads) with associated abscess (green arrow).

Treatment generally involves itraconazole, with alternatives such as terbinafine, potassium iodide, and amphotericin B for severe cases.[5]

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AUTHOR CONTRIBUTIONS

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Gender Incongruence in Adolescents: Experience of a Tertiary Care Center in Portugal

Incongruência de Género em Adolescentes: Experiência de um Centro Terciário em Portugal

Keywords: Adolescent; Gender Dysphoria; Gender Identity
Palavras-chave: Adolescente; Disforia de Género; Identidade de Género

Dear Editors,

We have read with great interest the article "Coping with Gender Dysphoria in a Rural Environment during Adolescence" published in May 2024.[1] In this article, the authors reported a case of an adolescent with gender dysphoria, emphasizing the importance of a multidisciplinary, patient-centered approach to improve outcomes in this population.

Gender incongruence (GI) is defined as a discrepancy between an individual's gender identity and their assigned sex at birth and it is classified as gender dysphoria when it is associated with clinically significant distress.[2]

We would like to contribute with findings from our recent study of 68 adolescents with gender incongruence followed in an endocrinology pediatric outpatient clinic of a tertiary hospital in Portugal. Given the retrospective nature of the work, in which data were collected anonymously, exclusively by consulting clinical files, without conducting face-to-face interviews, this study did not meet the criteria for submission to our institution's Ethics Committee. Our study demonstrated an almost eight-fold increase in referrals for gender incongruence over recent years (eight referrals between 2017 and 2020; 60 referrals between 2021 and 2024), underscoring heightened social awareness and healthcare engagement. We observed that the median age at the first consultation in pediatric endocrinology was 16 years, although the majority of these individuals reported symptoms in childhood and 73.5% of the patients had been referred to us by the outpatient child psychiatry consultation, having already established a diagnosis of gender incongruence. A key finding was the high prevalence of psychiatric comorbidities, with 47.1% of adolescents requiring pharmacological treatment. This aligns with the literature indicating that stigma, social pressures, and lack of family acceptance significantly contribute to poor mental health outcomes.[3] Integrating mental health support with gender-affirming care is critical, particularly given the potential for improved psychological well-being with timely interventions.[4] Earlier recognition, particularly in primary care and community settings, is crucial to mitigate the psychological distress associated with delayed interventions.[1]

Our study also provided insights into the management trajectory. Nearly 78% of patients initiated medical treatment, including puberty blockers and gender-affirming

Table 1 – Characterization of pediatric patients with gender incongruence

	Total n = 68	Male transgender n = 43	Female transgender n = 25	*p*
Age at first appointment – median (IQR) in years	16 (14 - 16)	16 (14 - 16)	15 (12.5 - 15)	0.324
Childhood onset of gender incongruence – n (%)	47 (69.1%)	27 (62.8%)	20 (80.0%)	0.139
Adolescence onset of gender incongruence – n (%)	21 (30.9%)	16 (37.2%)	5 (20.0%)	0.139
Psychopathology requiring pharmacotherapy – n (%)	32 (47.1%)	19 (44.2%)	17 (68.0%)	0,058
Medical treatment – n (%)	53 (77.9%)	37 (86.0%)	16 (64.0%)	0.035
Time to medical treatment following first consultation – median (IQR) in months	4 (3 - 12)	6 (3 - 12)	4 (3 - 6.75)	0.266
Age at medical treatment onset – median (IQR); min/max in years	16 (14 - 16.5); min 12/max 18	16 (14 - 16.5); min 12/max 18	16 (13.5 - 16.8); min 12/max 18	0.805
Oral progestagens – n (%)	-	30 (81.0%)	-	-
Puberty blocker isolated – n (%)	10 (18.9%)	3 (8.1%)	7 (43.8%)	0.005
Gender-affirming hormone therapy – n (%)	11 (20.8%)	10 (27%)	1 (6.3%)	0.141
Puberty blocker plus gender-affirming hormone therapy – n (%)	18 (34.0%)	10 (27%)	8 (50.0%)	0.105
Surgical procedures – n (%)	6 (11.3%)	5 (13.5%) (mastectomy)	1 (6.3%) (chondrolaryngoplasty)	0.402
Fertility preservation – n (%)	9 (13.2%)	3 (6.9%)	6 (24.0%)	0.066
Duration of follow-up – median (IQR) in months	11 (3.3 - 21)	12 (3 - 21)	9 (4 - 22.5)	0.682

hormonal therapy. These interventions were well-tolerated, with only one reported case of transient hyperprolactinemia.

Fertility preservation was discussed with all patients but only 13.2% (n = 9) decided to undergo the procedure, probably due to the emotional and logistical complexities involved during a critical period of self-discovery. Furthermore, our clinic reported no cases of detransition (i.e., reverting to the sex assigned at birth or stopping transition-related care), consistent with literature suggesting that regret rates are low when interventions follow thorough multidisciplinary assessments.[5]

Our findings echo Ribeiro *et al* call to action: comprehensive training for healthcare providers, enhanced access to specialized care, and culturally sensitive approaches are essential to improve outcomes for transgender youth. Expanding research to include multi-center and longitudinal studies will further refine care strategies, ensuring holistic support for this vulnerable population.

AUTHOR CONTRIBUTIONS

JG, JVM: Data collection, analysis, and interpretation, draft and critical review of the manuscript.

ARH, CP, MLS: Data analysis and interpretation, draft and critical review of the manuscript.

All authors approved the final version to be published.

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Inteligência Artificial na Prova Nacional de Acesso em Portugal: O Olhar da Psiquiatria

Artificial Intelligence in Portugal's National Medical Residency Exam: A Psychiatric Perspective

Palavras-chave: Avaliação Educacional; Competência Clínica; Inteligência Artificial; Internato e Residência; Portugal
Keywords: Artificial Intelligence; Clinical Competence; Educational Measurement; Internship and Residency; Portugal

Caro Editor,

Gostaríamos de destacar a pertinência atual do artigo "Desempenho do ChatGPT na Prova Nacional de Acesso", publicado na Acta Médica Portuguesa.[1] O estudo constitui um contributo relevante para a compreensão do potencial da inteligência artificial (IA) na educação médica, ao comparar o desempenho das versões 3.5 e 4o do ChatGPT no exame de acesso à especialidade médica em Portugal.[2]

Os resultados demonstram que o ChatGPT-4o superou a mediana dos candidatos humanos em todas as edições analisadas, atingindo o top 1% em dois anos.[1] Estes achados levantam questões pertinentes sobre a natureza da avaliação médica: em que medida a prova nacional de acesso (PNA) mede raciocínio clínico *versus* conhecimento factual? A IA pode ser treinada para responder corretamente a perguntas de escolha múltipla, mas o seu desempenho em contextos clínicos reais permanece incerto.[3]

A metodologia adotada é robusta e a comparação entre versões do ChatGPT evidencia a evolução da IA na resolução de problemas médicos.[1,3] Contudo, seria interessante aprofundar a análise qualitativa das respostas incorretas, com o objetivo de identificar padrões de erro e potenciais limitações do modelo. Acresce que a possibilidade de exposição prévia do ChatGPT a questões da PNA levanta preocupações quanto à imparcialidade dos resultados.[1]

Do ponto de vista da saúde mental, a crescente integração da IA na prática médica impõe reflexões adicionais. A prática clínica em psiquiatria baseia-se fortemente na escuta ativa, na empatia e na relação terapêutica – aspetos que escapam à lógica algorítmica.[4] Embora a IA possa ser útil em tarefas como a triagem de risco ou o apoio ao diagnóstico, a sua capacidade de captar *nuances* emocionais e contextuais é limitada.[4,5] Em áreas como a psiquiatria, onde o sofrimento humano é muitas vezes subjetivo, o julgamento clínico e a sensibilidade relacional são insubstituíveis.

O uso da IA em saúde levanta ainda preocupações éticas. A delegação excessiva de decisões clínicas pode comprometer a autonomia profissional, despersonalizar o cuidado e diluir a responsabilidade médica.[5] É essencial garantir que estas ferramentas funcionem como suporte à decisão, e não como substitutos do raciocínio clínico. A supervisão humana, a transparência dos algoritmos e a validação rigorosa das recomendações geradas são indispensáveis para assegurar a segurança do doente e a integridade da prática médica.[4,5]

O ChatGPT pode ser um recurso valioso para a aprendizagem e preparação para exames. No entanto, a sua integração na prática clínica deve ser feita com prudência, assegurando que a IA complemente – e não substitua – a relação humana que está no centro da medicina, particularmente em contextos de sofrimento psíquico.[4]

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CS: Pesquisa e análise e dados. Revisão crítica do manuscrito.

IC: Revisão crítica do manuscrito.

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