Clinical Outcomes of COVID-19 Patients with Rheumatic and Musculoskeletal Diseases: A Single Centre Cohort Study

Resultados Clínicos em Doentes COVID-19 com Doenças Reumáticas e Musculoesqueléticas: Estudo de Coorte num Centro

Keywords: COVID-19; Hospitalization; Musculoskeletal Diseases; Rheumatic Diseases; SARS-CoV-2
Palavras-chave: COVID-19; Doenças Musculoesqueléticas; Doenças Reumáticas; Hospitalização; SARS-CoV-2

Dear Editor,

The acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which caused the coronavirus disease 2019 (COVID-19) pandemic is a self-limiting viral disease with a good prognosis in the majority of the population.[1] Severe disease is more likely to occur in patients with risk factors such as advanced age, male gender and/or underlying conditions.[2] A number of large population-based or healthcare-based studies have found an increased risk of hospitalization or death in patients with rheumatic and musculoskeletal diseases (RMDs).[3] However, and according to the European Alliance of Associations for Rheumatology (EULAR), patients with RMDs do not usually face worse outcomes and increased mortality than the general population.[4] The aim of our study was to understand the clinical outcomes of patients with COVID-19 and RMDs. We performed a retrospective study that included adult patients' with a diagnosis of both COVID-19 and inflammatory or noninflammatory RMDs observed in a secondary hospital, between the 2nd of March 2020 and the 31st of December 2021. A COVID-19 diagnosis was identified through the 10th International Classification of Diseases and RMDs were identified after review of the electronic health records. A COVID-19 diagnosis was based on the polymerase chain reaction test. Data collected included demographic and clinical data. Descriptive, univariate analysis and multivariate logistic regression analysis were conducted using SPSS® version 25.

Among 2169 patients with a COVID-19 diagnosis, 213 (9.8%) had RMDs. Most of the patients included were women (59.2%) with a median age of 79.0 ± 17.50 years. Patient demographic and clinical characteristics are listed in Table 1. One hundred and sixty (75.1%) patients with RMDs required hospitalization with 149 (70%) requiring oxygen support, six (2.8%) non-invasive ventilation and nine (4.2%) mechanical ventilation. A total of 53 (24.9%) patients died. As for the management of COVID-19, corticosteroids were administered to 105 patients (49.3%) and nonspecific antivirals (remdesivir) to four patients (1.9%). In line with other studies, we found an association between patients with COVID-19 requiring hospitalization and arterial hypertension (p = 0.01)[2] and age (p = 0.013).[5] Gout (p = 0.01) and vaccination status (p = 0.05) were also associated with a worse prognosis. In the multivariate analysis, only older patients [OR 1.07 (95% CI 1.04, 1.10)], gout [OR 1.16

Table 1 - Patient demographic and clinical characteristics

	RMDs
Age, years (median ± IQR)	79.0 ± 17.50
Sex (F/M), n	126/87
Rheumatic disease by subgroup, n (%)	
Non-inflammatory diseases	124 (58.2)
Inflammatory systemic diseases	89 (41.8)
Non-inflammatory diseases, n (%)	
Osteoarthritis	94 (44.1)
Osteoporosis	30 (14.1)
Inflammatory systemic diseases, n (%)	
Gout	36 (16.9)
Rheumatoid arthritis	27 (12.7)
Polymyalgia rheumatica	8 (3.8)
Spondyloarthritis	4 (1.9)
Systemic sclerosis	3 (1.4)
Vasculitis	3 (1.4)
Myositis	2 (0.9)
Systemic lupus erythematosus	2 (0.9)
Undifferentiated connective tissue disease	2 (0.9)
Sjögren's syndrome	1 (0.5)
Psoriatic arthritis	1 (0.5)
Disease duration, years (median ± IQR)	8.0 ± 12.0
Disease activity, n (%)	
Remission/Low	20 (9.4)
Moderate	18 (8.5)
High	1 (0.5)
Not applicable	174 (81.7)
Immunomodulatory or immunosuppressive treatments, n (%)	
None	174 (81.7)
Glucocorticoids	44 (20.7)
csDMARDs	30 (14.1)
TNF inhibitors	1 (0.5)
Rituximab	2 (0.9)
Other b/tsDMARDs	2 (0.9)
Smoking status (%)	
Current smoker	4.7
Ex-smoker	1.4
Comorbidities, n (%)	
Arterial hypertension	146 (68.5)
Dyslipidemia	102 (47.9)
Diabetes mellitus	58 (27.2)
Obesity	52 (24.4)
Atrial fibrillation	41 (19.2)
Obstructive lung disease	14 (6.6)
Interstitial lung disease	5 (2.3)
Vaccination status (%)	
Yes	64.8
No	35.2

IQR: interquartile range; RMDs: rheumatic and musculoskeletal diseases; M: male; F: female; n: number; cs: conventional synthetic; DMARDs: disease-modifying anti-rheumatic drugs; TNFi: tumour necrosis factor inhibitors; ts: targeted synthetic; b: biological

(95% CI 1.01, 1.34)] and no vaccination [OR 2.63 (95% CI 1.23, 5.62)] were associated with an increased risk of hospitalization. The rates of hospitalization, oxygen support and mortality found in our study were higher compared to other European countries.[4]

In our study, male patients and those receiving certain immunosuppressive treatments were not at significant risk for hospitalization. Larger studies are needed to identify groups with greater vulnerability as well as several other knowledge gaps, such as the effects of rheumatic diseases on vaccine effectiveness or the utility of additional doses.

AUTHOR CONTRIBUTIONS

CM: Study design, data collection and analysis, writing of the manuscript.

AB: Study design, critical review of the manuscript.

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 2013.

DATA CONFIDENTIALITY

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

COMPETING INTERESTS

AB has received payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Novartis, Amgen and Janssen, as well as support for attending meetings and/or travel from Novartis, Abbvie, Nordimet, Janssen and Amgen.

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Carolina MAZEDA✉[1,2], Anabela BARCELOS[1,2,3]
1. Rheumatology Department. Centro Hospitalar do Baixo Vouga. Aveiro. Portugal.
2. Centro Académico Clínico Egas Moniz. Health Alliance. Aveiro. Portugal.
3. Comprehensive Health Research Center. Universidade NOVA de Lisboa. Lisboa. Portugal.
✉ **Autor correspondente:** Carolina Mazeda. carolina_m43@hotmail.com
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