

Sacral Stress Fracture: A Diagnosis to Remember

Fratura Sacral de Stress: Um Diagnóstico a Considerar

Keywords: Adolescent; Athletic Injuries; Fractures, Stress/diagnosis; Sacrum/injuries

Palavras-chave: Adolescente; Fraturas de Stress/diagnóstico; Lesões Desportivas; Sacro/lesões

Sacral stress fractures (SSF) in adolescence are rare, and their incidence in the pediatric age is unknown. Despite their scarcity, lumbar-sacral lesions are one of the most common causes of sports-related low back pain in the pediatric age.¹ These fractures result from a mechanical overload applied to healthy bone.²

This is a challenging diagnosis and requires a high index of suspicion. It usually occurs at an early age resulting from repetitive exercises or recent abnormal escalation in the training schedule.³ The standard clinical finding of sacral stress fractures' is insidious pain, which can be nonspecific, or localized in the lower back, pelvis, or gluteal region.¹

We present the case of a fourteen-year-old female who presented to the emergency department with a two-week history of right posterior sacroiliac pain. She used to play basketball regularly but had stopped for two years. A few weeks before the start of the complaints she had returned to practice and trained for two hours, two to three times a week. She had no systemic complaints; denied having a history of eating disorders or menstrual abnormalities – eating disorders, amenorrhea and osteopenia comprise the female athlete's triad.¹

There was no history of previous acute trauma, infection, pelvic disease, or neurologic dysfunction.

The pain was described as a mechanical low back pain, which radiated to the right lower limb, and worsened with right leg weight-bearing.

On physical examination, sacrum compression trig-

gered diffuse marked tenderness over the right sacroiliac joint. The pain worsened in the right sacroiliac region with lumbar flexion and extension, weight-bearing on right leg and right sided flexion, abduction and external rotation (FABER) sign.

Plain radiography revealed no abnormalities. However, a magnetic resonance imaging (MRI) test (gold-standard) of the sacroiliac joints revealed a vertical fracture line along the anterior cortex of the right wing of the sacrum, with marked bone marrow edema (Fig. 1A). Imaging studies must include cuts of lumbar pedicles and sacral ala, as most SSF injuries occur there.⁴

The patient was treated conservatively with analgesia (non-steroidal anti-inflammatory drugs should be avoided for at least three to four weeks because of its potentially deleterious effect on bone healing, rest and non-weight-bearing physical activities).

She was reassessed after two weeks and was asymptomatic. Computerized tomography (CT) after four weeks revealed right sacral wing sclerosis (Fig. 1B). The patient resumed normal daily-life activities and physical activity four months after the injury.

In conclusion, with the increasing number of children/adolescents engaging in sports, it is essential for physicians to be aware of this condition. It is important to avoid unwarranted, and often invasive, tests, since the clinical presentation of these injuries may mimic malignancies and infections which require an immediate approach,⁵ and therefore highlights the importance of a thorough investigation in order to reach a correct diagnosis.

ACKNOWLEDGMENTS

The authors are grateful to the patient and her family, as well as to all the health professionals involved in this case.

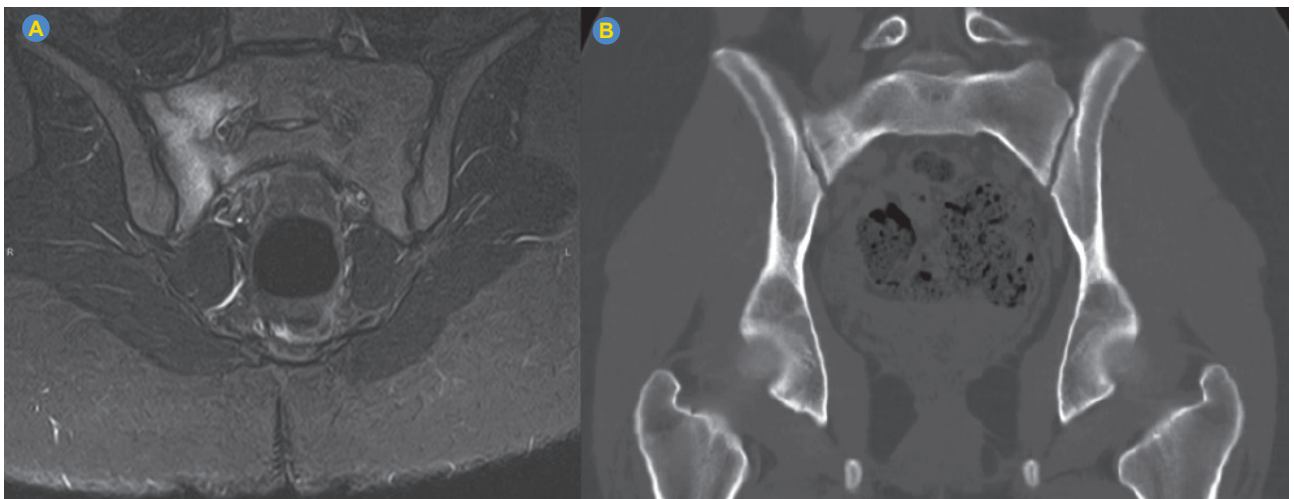


Figure 1 – Coronal section of MRI (at diagnosis) where a trace of vertical fracture (parallel to the sacroiliac joint) is observed along the anterior cortical of the right wing of the sacrum, associated with bone marrow edema, without reaching the posterior surface of the sacrum (A). Coronal section of CT that revealed mild sclerosis of the right wing of the sacrum (exam performed four weeks after symptom onset) (B).

PREVIOUS AWARDS AND PRESENTATIONS

Poster Presentation at 10.º Congresso Nacional de Ortopedia Infantil which took place in Aveiro from May 12th to 14th, 2022.

AUTHOR CONTRIBUTIONS

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

PATIENT CONSENT

Obtained.

REFERENCES

1. Zaman FM, Frey M, Slipman CW. Sacral stress fractures. *Curr Sports Med Rep.* 2006;5:37-43.
2. Grier D, Wardell S, Sarwark J, Poznanski AK. Fatigue fractures of the sacrum in children: two case reports and a review of the literature. *Skeletal Radiol.* 1993;22:515-8.
3. Kaneko H, Murakami M, Nishizawa K. Prevalence and clinical features of sports-related lumbosacral stress injuries in the young. *Arch Orthop Trauma Surg.* 2017;137:685-91.
4. Martin J, Brandser EA, Shin MJ, Buckwalter JA. Fatigue fracture of the sacrum in a child. *Can Assoc Radiol J.* 1995;46:468-70.
5. Tatsumura M, Eto F, Nagashima K, Okuwaki S, Gamada H, Iwabuchi S, et al. Features of sacral alar fatigue fractures in adolescent athletes with overuse. *Sci Rep.* 2021;11:8420.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

FUNDING SOURCES

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ana FRAGA¹, Andreia MOREIRA², Patrícia A. MARTINS², Joana CARDOSO²

1. Serviço de Pediatria. Hospital de Santo André. Unidade Local de Saúde da Região de Leiria. Leiria. Portugal.

2. Serviço de Ortopedia e Traumatologia. Hospital Pedro Hispano. Unidade Local de Saúde de Matosinhos. Matosinhos. Portugal.

✉ **Autor correspondente:** Ana Fraga. ana.fraga.oliveira@chleiria.min-saude.pt

Recebido/Received: 19/09/2023 - **Aceite/Accepted:** 05/02/2024 - **Publicado/Published:** 03/06/2024

Copyright © Ordem dos Médicos 2024

<https://doi.org/10.20344/amp.20577>

