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CASE REPORT

Calcaneal osteoid osteoma hidden by confusing symptoms in an 18-year-old basketball player: A case report

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Abstract *Background:* Osteoid osteoma is a small common benign osteoblastic tumor. Osteoid osteomas of the foot only account for a small number of cases. The typical patient is usually male children and young adults within the third decade.
Objectives: By this case report we aim to: 1) analyze the reasons for initial misdiagnosis due to misleading previous sporting injury, and potential mimickers; and, 2) discuss different conservative and surgical therapeutic options.
Clinical features: In our case report we describe an osteoid osteoma of the calcaneus in a young adult, semi-professional basketball player.
Intervention and outcomes: A non-successful symptomatic intervention of joint mobilization and the presence of a nocturnal pain responsive to acetylsalicylic acid lead to a diagnosis of osteoid osteoma. The patient was successfully treated by percutaneous CT-guided radiofrequency thermoablation.
Conclusions: The case suggests that close collaboration between general practitioner and physical therapist could have led to more efficient management of this rare disease. Osteoid osteoma should be considered in differential diagnosis when chronic foot pain, in children or in young adults, does not improve with conservative treatment.

Implications for practice

- In young patients presenting with non-specific symptoms and an atypical pain presentation (nocturnal pain), osteoid osteoma should be considered as a differential diagnosis.

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- CT imaging is the gold standard for the definitive diagnosis of osteoid osteoma, while MRI can show only diffuse oedema localized to a single bone associated with soft tissue oedema.
- CT-guided percutaneous radiofrequency thermoablation is a successful and less invasive treatment than surgical intervention, with more rapid weight-bearing recovery.

Introduction

Osteoid osteoma is a small common benign osteoblastic tumor accounting for approximately 10—15% of all benign bone tumors.[1—3] This bone-forming lesion mostly appears in the lower extremities (65% of cases) where the femur and the tibia are the most frequent sites. Foot osteoid osteomas represent a minority of cases (4%—16% prevalence), mainly localized in the talus.[2—5] This pathology usually affects children and young adults within the third decade, and males are from 2 to 3 times more affected than females.[1,3,6]

Usually local pain worse at night and improved by NSAIDs, especially salicylates, are the main clinical presentation.[1,3,6,7] However, when the site of presentation of the tumor is intra or juxta-articular (lesions surrounded by or very close to the joint capsule and synovium), it can mimic a more widespread disorder, due to chronic articular pain. Less commonly, the pain is associated with symptoms like swelling, joint stiffness, contracture and limping.[1,2,6] Osteoid osteomas may heal spontaneously, but this process may take several years. The available therapeutic options are the conservative management of pain by NSAIDs or operative intervention.[1,5] This case report analyses the reasons for initial misdiagnosis (misleading previous sport injury and potential mimickers) and discusses the different conservative and operative therapeutic options.

Case report

The patient is a Caucasian 18-year-old male, student and basketball player, who consulted a physical therapist at a private outpatient clinic for pain in the right ankle that prevented him training.

During the history taking the patient reported a grade I inversion sprain of the right ankle[8] six months earlier. Pain and disability related to the ankle sprain were managed through PRICE protocol (Protection, Rest, Ice, Compression and Elevation), taking non-steroidal antiinflammatory drugs (NSAIDs) for three days and a short program of proprioception exercises, with a complete resolution of symptoms in three weeks.

Two months before consulting, in absence of trauma, after an intense pre-season training session, a slight pain in the midfoot reappeared. The pain gradually increased and in the last four weeks before consulting it was so intense (NRS 8 out of 10) it lead the patient to suspend his training. There were no other associated symptoms; family history and psychosocial conditions did not show anything to note. The X-rays of the right foot, ordered by the general practitioner were negative for stress fractures. The patient privately sought a magnetic resonance of the right foot that described oedema of the third and fourth metatarsal bone.

Physical assessment

Physical examination did not reveal signs of inflammation and palpation suggested no ligamentous involvement. Active range of motion was full and pain free, both in non-weight-bearing and weight-bearing positions. Manual strength tests of flexion, extension, eversion and inversion of the foot were also painless and negative. The passive range of motion examination demonstrated a slight diffused end-feel stiffness in the hindfoot and the midfoot, without a specific direction of restriction. Repetitive strain injury, related to stiffness caused by a previous ankle sprain was the most probable diagnostic hypothesis that emerged after the clinical evaluation.

Treatment

Passive ankle and midfoot joints mobilisations were performed for three times a week for 15 days with the aim of reducing pain by improving the only evident sign (mild stiffness). There was no improvement with this approach. Therefore, the physical therapist decided to take a more in-depth history, which revealed sleep difficulties due to pain, that occurred several times in the second week of treatment, unrelated to the manual intervention.

The nocturnal non-mechanical pain was discussed with the patient's general practitioner and it was decided to administer NSAIDs therapy to support or refute the hypothesis of inflammatory disease.

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