Case 16100

Eurorad

Stieda process

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Section: Musculoskeletal system
Area of Interest: Musculoskeletal bone
Procedure: Normal variants
Imaging Technique: Conventional radiography
Imaging Technique: MR
Special Focus: Inflammation Case Type: Clinical Cases
Authors: Ana Luísa Lourenço1, Cristina Roque Ferreira2, Daniel Ramos Andrade2, Ângela Marques1
Patient: 35 years, male

Clinical History:

A 35 years-old male patient presented with posterior pain in the right ankle for at least six months with no recent history of trauma. On physical examination, there was pain anterior to the Achilles tendon with worsening by plantar flexion.

Imaging Findings:

A conventional radiography was performed, which showed an elongated posterior process of the talus representing a Stieda process (SP). The patient underwent Magnetic Resonance Imaging for further evaluation, which confirmed the presence of SP and showed bony inflammatory changes involving the SP, posterior aspect of the talus, calcaneus and distal tibia, with high signal intensity on STIR sequences and low signal intensity on T1-weighted images. Additionally, MR demonstrated signal changes compatible with inflammatory process involving soft tissues near SP, anteriorly to the Achilles tendon and joint effusion.

Discussion:

A. Background
Stieda process (SP) is related to an elongated lateral tubercle of the posterior process of the talus. It is considered an anatomical variant and results from the fusion of a secondary ossification center at the postero-lateral aspect of the talus with rest of the bone (which typically occurs between 11 to 13 years of age in boys and 8 to 10 years in girls). When this process results in a separate ossicle, it is called os trigonum, which is the main differential diagnosis. SP per se is not pathological, however, it increases the risk of posterior ankle impingement syndrome. [1, 2]

B.Clinical Perspective
On clinical examination, posterior ankle impingement typically induces posterior ankle pain exacerbated by plantar flexion or dorsiflexion, posterior tenderness anterior to the Achilles tendon and, occasionally, a palpable soft-tissue thickening. [2]

C.Imaging Prospective
Conventional radiography may show a prominent lateral talar (Stieda) process, still it is not sufficient to confirm the diagnosis of posterior ankle impingement related to SP. Computed Tomography can assess the posterior aspect of talus more accurately and may show a fracture not obvious on conventional radiography. However, the best imaging modality to study posterior ankle impingement is Magnetic Resonance Imaging (MRI). It usually shows abnormal

signal intensity in SP, such as, high signal intensity on fat suppressed T2-weighted images/STIR sequences and low signal intensity on T1-weighted images. These signal abnormalities are related to bone marrow edema, bone contusions or hidden fractures, which result from repeated bone trauma. MRI can also detect inflammatory abnormalities in the soft tissues of the posterior ankle, such as, the posterior synovial recess of the subtalar and tibiotalar joints and the flexor hallucis longus tendon sheath. The occurrence of these two findings (bone marrow edema and posterior ankle synovitis) suggests the diagnosis of posterior ankle impingement syndrome. Furthermore, MRI is also very good to reveal associated flexor hallucis longus abnormality or other internal deformities which can modify surgical attitude. [1, 2]

D.Outcome
Conservative treatment comprises local corticosteroid injection and 4 to 6 weeks of immobilization. Arthroscopic excision can be used in refractory cases and complete recovery is attained in a shorter time than with open excision. [3]

E.Take home message
SP is a rare cause of posterior ankle impingement syndrome and radiologists must be aware of this differential diagnosis.

Written informed patient consent for publication has been obtained.
Differential Diagnosis List: Stieda process with posterior ankle impingement syndrome, Os trigonum syndrome, Acute fracture of the Stieda process

Final Diagnosis: Stieda process with posterior ankle impingement syndrome

References:

Cerezal L, Abascal F (2003) MR Imaging of Ankle Impingement Syndromes. AJR 181:551–559 (PMID:12876046)
Robinson F, White L (2002) Soft-Tissue and Osseous Impingement Syndromes of the Ankle: Role of Imaging in Diagnosis and Management. RadioGraphics 22:1457–1471 (PMID:12432115)
Yilmaz C, Eskandari M (2006) Case Report Arthroscopic Excision of the Talar Stieda's Process. Arthroscopy: The Journal of Arthroscopic and Related Surgery 22, No 2, 225.e1-225.e3 (PMID:16458810)

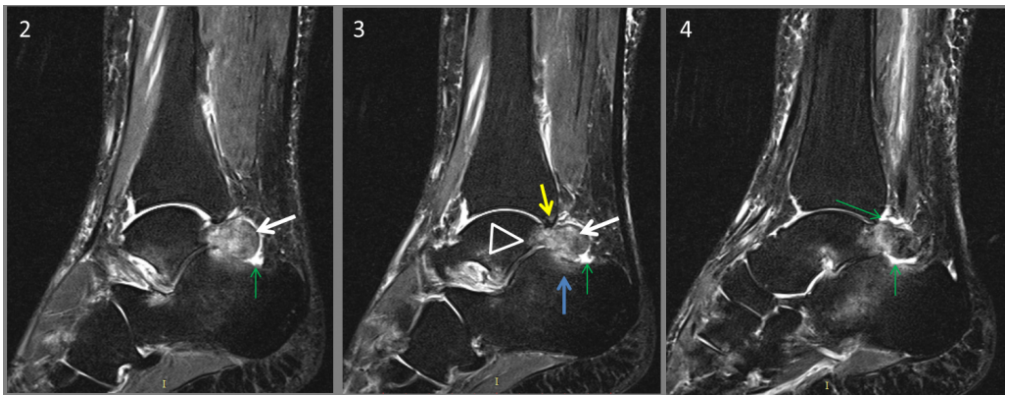
Figure 1

a

Description: Lateral view conventional radiography of the ankle shows an elongated posterior process of the talus representing a Stieda process (blue circle). **Origin:** Department of Radiology, Centro Hospitalar e Universitário de Coimbra, Portugal

Figure 2

a



Description: Sagittal STIR images show bone marrow high signal intensity in SP (white arrows), talus (arrowhead), calcaneus (blue arrow) and tibia (yellow arrow). Inflammation of soft tissues and joint effusion (green arrows) are present. **Origin:** Department of Radiology, Centro Hospitalar e Universitário de Coimbra, Portugal

b

Description: Sagittal T1-weighted image shows low signal intensity of the lateral tubercle of talus (Stieda process) (circle). **Origin:** Department of Radiology, Centro Hospitalar e Universitário de Coimbra, Portugal