

Cuboid stress fracture : A case Report

Monsef. Boufettal*, Rida.A. Bassir, Mustapha. Mahfoud, Ahmed. El Bardouni, Mohamed.S. Berrada, Moradh.El Yaacoubi.

Orthopedic surgery department of Ibn Sina hospital, University Mohamed V, Rabat, Morocco

*Corresponding Author:

Name: Dr Monsef Boufettal

Email: moncef.bof@gmail.com

Abstract: A stress fracture is the result of the application of abnormal constraint on a bone of which elastic resistance is normal. It is an overstrain injury. The repeated application of this constraint will be responsible for the fracture. Repetitive Weight bearing activities such as dancing, jumping or running are the most frequently reported causes of stress fracture. The cuboid remains a rare location of stress fractures. We report a rare case of cuboid stress fracture initially diagnosed as peroneal tendinopathy

Keywords: Fracture; stress; cuboid

INTRODUCTION

The stress fractures are the result of significant effort during walking or running and manifested by mechanical and progressive pain with sometimes functional impotence. The ankle's and foot's bones are the most exposed to stress fractures for obvious reasons related to the constraint of walking and running [1]. Cuboid stress fractures remain very rare and can be mistaken with a false sprain or peroneal tendinopathy.

CASE REPORT

A 29-year-old Football player has presented with a three-month history of pain in the right foot which is present at rest but exacerbated by running. Although the patient is able to walk without a limp, any training has led to severe midfoot pain. On examination, we found pain facing the peroneal tendons, without edema or ecchymosis. Plain radiography of the foot and ankle failed to reveal a fracture. The diagnosis of peroneal tendinopathy was retained and the patient has undergone a period of 15 days of rest with analgesics and anti-inflammatory. The persistence of pain led the patient to consult one month later. Another plain radiography was performed and objectified a cuboid stress fracture (Figure A, B arrows) which required a plaster immobilization for three weeks.

DISCUSSION

Stress fractures of the foot rarely concern the cuboid or cuneiform. Greaney et al. indicate in military recruitment a frequency of 1.3% of the cuboid fracture, in 839 fractures of the lower limbs [2]. One case of cuboid stress fracture is reported in a series of 1338 fractures of the foot and lower third of the leg concerning military recruits [3]. Stress fractures account for 0.7% to 20% of all sports medicine clinic

injuries. Track-and-field athletes have the highest incidence of stress fractures compared with other athletes. Stress fractures of the tibia, metatarsals, and fibula are the most frequently reported sites [4]. Previously, these fractures were exclusively a military problem, now they are being recognized more and more frequently in civilian practice and sports. Although almost any athlete or exerciser who engages in frequent, repetitive activity may develop a stress fracture[5].

Repetitive weight bearing activities such as dancing, jumping or running are the most frequently reported causes of stress fracture [5]. When cuboid stress fractures do occur, they most likely occur as a result of the intimate relationship between the cuboid and the peroneus longus tendon. The cuboid serves as a fulcrum for which the peroneus longus plantarflexes and stabilizes the first ray. The excessive and compressive forces forwarded by the tendon, particularly in the running, can contribute to fracture [6]. Foot pain is a common presenting symptom in many athletes. Most have a recognizable pathology demonstrated either on examination or radiographically. There are a proportion of patients, however, in whom routine investigations are negative. The fracture is often missed leading to a delay in diagnosis. Pain tends to be poorly localised and there is often no swelling. Radiological diagnosis is difficult. In more than 50% of cases the fracture is not visible on plain radiography [7]. In the case of fracture of the short bone, rich in trabecular bone, early radiographs rarely show a solution of continuity or periosteal reaction; condensation lines, are tardy and inconstant, and are the translation of the repair process, which can lead to delayed or erroneous diagnoses [8]. CT (computed tomography) or MRI (magnetic resonance imaging)

provides an early diagnosis and clarify the situation and the path of the fracture. MRI is sometimes less efficient than CT to visualize the fracture which can be masked by a medullary edema [9]. Treating cuboid stress

fractures involves an initial period of relative immobilization and activity modification followed by a gradual return to full activities [10].



Fig-1: A) cuboid stress fracture, B) fracture at the posterior and inferior angle of the cuboid

CONCLUSION

In the literature, there have been only a few case reports of cuboid stress fracture. We conclude that, although this is an unusual location, stress fracture should be considered as a differential diagnosis of foot pain, especially vague pain that does not seem to have an obvious cause

REFERENCES

1. Chevrot A; Fracture de fatigue, autres conditions assimilées du pied. Imagerie clinique du pied. Collection d'imagerie radiologique. Paris : Masson, 1997 ;193-208.
2. Greaney RB, Gerber FH, Laughlin RL, Kmet JP, Metz CD, Kicheski TS, et al; Distribution and natural history of stress fractures in US marine recruits. Radiology, 1983; 146(2):339-346.
3. Pester S, Smith PC; Stress fractures in the lower extremities of soldiers in basic training. Orthop Rev, 1992; 21(3):297-303.
4. Fredericson M, Jennings F, Beaulieu C, Matheson GO; Stress fractures in athletes. Topics in Magnetic Resonance Imaging, 2006; 17(5):309-325.
5. Jones BH, Thacker SB, Gilchrist J, Kimsey CD, Sosin DM; Prevention of lower extremity stress fractures in athletes and soldiers: a systematic review. Epidemiologic reviews, 2002; 24(2):228-247.
6. Dodson NB, Dodson EE, Shromoff PJ; Imaging strategies for diagnosing calcaneal and cuboid stress fractures. Clinics in podiatric medicine and surgery, 2008; 25(2):183-201.
7. Moran CG, Fairclough JA, Evans RC; Stress fracture of the tarsal navicular. British journal of sports medicine, 1987; 21(1): 51-51.
8. Doury P, Pattin S, Granier R, Eulry F, Metges PJ, Gaillard F, Flageat J, Marcelli C; «Données nouvelles sur les« fractures de fatigue»: à propos d'une observation de fracture de fatigue bilatérale de l'astragale. Intérêt de la scintigraphie osseuse dans le diagnostic des fractures de fatigue. " Revue du rhumatisme et des maladies ostéo-articulaires, 1984 ; 51(9): 483-486.
9. Franco M, Albano L, Kacso I, Gaïd H, Jaeger P; An uncommon cause of foot pain: the cuboid insufficiency stress fracture. Joint bone spine, 2005; 72(1): 76-78.
10. Pinney SJ, Sangeorzan BJ; "Fractures of the tarsal bones." Orthopedic Clinics of North America, 2001; 32(1): 21-33.