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Osteochondral lesions of Talus in unexplained chronic ankle pain

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Abstract
Osteochondral lesions of the talus can present as a late complication of ankle injuries. Early and accurate diagnosis is important as talar integrity is required for optimal function of the ankle. Osteochondral lesions of the talus (OTL) are among those injuries that we should not fail to recognize, especially following any type of hind foot injury. In our study Forty patients with unexplained post traumatic chronic ankle pain were included and after thorough clinical evaluation and radiography were advised MRI Ankle to look for the possible causes of the pain. Three (7.5%) of the patients were reported as Osteochondral lesions of the talus which were initially missed as being normal on ankle radiographs. This study reveals that a high index of suspicion has to be kept for OCTs in patients with ankle pain following any hind-foot trauma.

Keywords: Talus, osteochondral lesion, osteochondral graft, chondrocyte

Introduction
Osteochondral lesions of the talus are a known cause of chronic ankle pain. They are frequently found in the active population after ankle sprains. The terminology has its origins in 1856, when Monro [1] first described the presence of cartilaginous loose bodies in the ankle joint. In 1888, Konig [2] coined the term "osteochondritis dissecans" to describe spontaneous necrosis of subchondral bone and articular cartilage with loose body formation in the knee. In 1922, Kappis [3] applied this term to describe similar lesions in the ankle joint. However, such a term implied an inflammatory disease process, leading to confusion. The term was revised in 1959 by Berndt and Harty [4] who used the term "transchondral fractures of the talus". Several other terms have been used, including "osteochondral fracture", and "talar dome fracture", but currently, "osteochondral lesion of the talus" remains the most inclusive term to describe the problem. The average age of occurrence of talar osteochondral lesions usually lies between 20 and 30 years of age. They are bilateral in 10% of cases, with a slight preponderance in males. These lesions are seen in 6.5% of ankle sprains [5]. However, this incidence may be underestimated as many of these lesions may be subclinical, masked by other more obvious associated injuries of the foot and ankle or missed because of limitations in conventional radiological investigations [6].

Diagnosis: Differential diagnosis of ankle pain include

1. **Soft tissue**
   - Ligament injury.
   - Ankle sprain.
   - Syndesmosis Injury.
   - Sinus tarsi syndrome.
   - Bassett's ligament.
   - Anterior tibiotalar impingement syndrome.

2. **Tendon injury**
   - Achilles tendon.

- Peroneal tendon.
- Posterior tibial tendon.
- Flexor hallucis longus.

3. Nerve entrapment syndromes.
4. Accessory musculature anomalies.
5. Cartilage/bone
   - Osteochondral lesions of the talus
   - Stress fractures
   - Acute fractures
   - Fracture non-unions
   - Osteoarthritis
6. Tumors

Aetiology

The exact cause of osteochondral lesions of the talus remains unclear. Although few studies report an atraumatic cause, most studies report a history of trauma as a likely pathogenesis of talar osteochondral lesions [7]. Flick and Gould [8] reviewed the literature in reports of more than 500 patients with these lesions and found that 98% of lateral dome lesions and 70% of medial dome lesions were associated with a history of trauma. The trauma may be a single episode of injury or repetitive microtrauma [7]. There are 2 common patterns of talar osteochondral lesions, as anterolateral talar dome lesions result from inversion and dorsiflexion injuries of the ankle where the area impacts against the fibula. These lesions are usually wafer-shaped and shallow due to tangential or shearing forces created by the fibula on the anterolateral talar dome [9]. Posteromedial lesions result from inversion, plantar flexion and external rotation injuries of the ankle where the area impacts against the tibial ceiling of the ankle joint. These lesions are cup-shaped and deeper due to the posteromedial aspect of the talus impacting perpendicular to the tibial ceiling [9].

Treatment

There exists a wide variety of management strategies for osteochondral lesions of the talus. These range from non-surgical to biological repair and regeneration of cartilage. Authors have suggested that management decisions should be based on the grade of the lesion [16]. Others based treatment decisions on the size of the lesion: lesions >1.5 cm require surgery [17]. Non-surgical Opinions vary from treating all lesions to only Berndt and Harty stage 1 lesions non-surgically [18].

- **Non-surgical:** Non-surgical treatment involves a combination of rest or restriction from strenuous activity, an initial period of non-weight-bearing with cast immobilisation, and subsequently protected weight bearing with gradual mobilisation thereafter. It has been suggested that Berndt and Harty stage 1 and 2 lesions should be managed non-surgically for up to 1 year to allow for resolution before surgical decisions are made.
- **Surgical:** Surgical treatment is considered with failed conservative management, or Berndt and Harty stage 2 to 5 lesions. Surgical management strategies for osteochondral lesions of the talus include excision with or without techniques for stimulation of fibrocartilage growth such as microfracture, curettage, abrasion, or transarticular drilling. If the fragment is large enough, it may be secured to the talar dome through retrograde drilling, bone grafting, or internal fixation. Other surgical strategies include cancellous bone grafting and osteochondral transplantation through osteochondral autografts, allografts, or cell cultures.

Materials and Methods

A prospective study was conducted in the out-patient department of Govt. Bone and Joint hospital Srinagar from June 2021 to July 2023 in 40 patients who presented with chronic, unexplained ankle pain with apparently normal radiographs. Patients with obvious neurological, vascular causes were excluded after detailed history and physical examination. The patients were thoroughly evaluated clinically as explained below. MRI of the ankle joint was done in the hospital MRI centre and reported by the radiologist.

Clinical evaluation

A typical presentation is of chronic ankle pain persisting after a prior history of an inversion injury of the ankle. Pain is usually experienced at the specific locations of the lesions. Recurrent swelling, weakness, stiffness and catching of the ankle joint is often described. Patients with a history of recurrent ankle sprains often complain of ankle instability. Point tenderness can usually be elicited and should be sought over the common sites of the lesions. Anterolateral lesions can be palpated at the anterolateral talar dome with the ankle in plantarflexion. Posteromedial lesions can often be palpated behind the medial malleolus with the ankle in dorsiflexion. Tests for instability should be performed, including the anterior drawer test as well as the inversion and eversion stress tests. Range of motion of the ankle should be documented and compared with the contralateral side. Examinations to exclude neurological as well as vascular causes of ankle pain should be carried out. In the acute setting, coexisting ligamentous injuries, fractures of the fibula or tibial plafond should also be excluded.

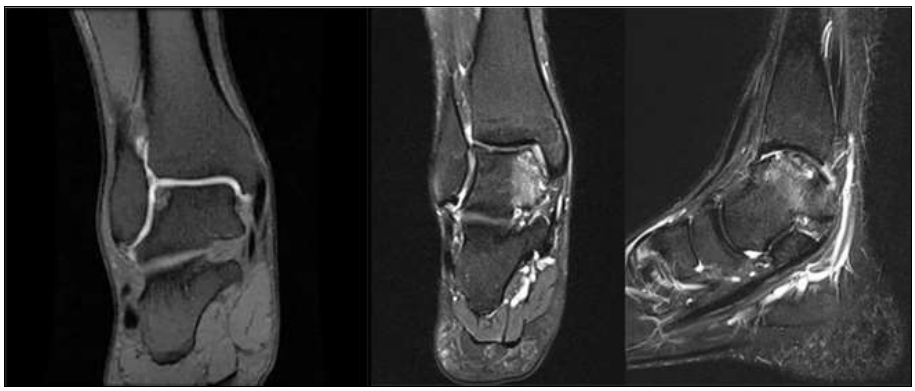

Fig 1: A (T-2W coronal section of MRI of right ankle joint depicting osteochondral lesion in the lateral talar dome in a 38 year old female who presented with post traumatic persistent ankle pain for 8 months) AND B (MRI T-2 coronal and saggital sections showing osteochondral lesion over medial talus in a 38 year old male patient with chronic, unexplained ankle pain)

Results

A total of 48 patients were enrolled in the study out of which 31 were females and 17 were males. 8 patients were lost to follow-up. 37 patients had some kind of ankle trauma preceding the ankle pain while 3 patients did not remember any traumatic event to the ankle. Pain was localised to the anterolateral aspect of ankle in 18 of the patients, posteromedial aspect of ankle in 12 patients and 10 patients had a somewhat vague localisation of pain all around the ankle. Range of motion was painful over terminal dorsiflexion and plantarflexion. Inversion-eversion movements were painful as well In the 40 patients, 3 (7.5%) patients had MRI documented osteochondral lesions around the ankle joint, 7 (17.5%) patients had peroneal tendon pathologies, 5 (12.5%) patients had injuries to the ATFL varying from fraying to complete tear of the ligament

Discussion

Osteochondral lesions of the talus occur in a significant number of patients of acute ankle sprains and fractures. Chronic ankle pain and functional impairment may result from injuries of the subchondral bone and subsequent degeneration of the articular surface. These fractures tend to be misdiagnosed or diagnosed late as an incidental finding in most of the cases. A high index of suspicion is required for early diagnosis of osteochondral lesions of the talus as the misdiagnosis or delayed diagnosis of osteochondral (OCD) lesions of the talus occurs in up 81% of patients presenting with chronic ankle pain. Radiographically obscure lesions often tend to reveal on more advanced diagnostic modality such MRI or most definitively on arthroscopy.

The aetiology is still unclear but most subscribe to the theory that the lesions arise secondary to ankle trauma. Forceful inversion injuries of the ankle in dorsiflexion are associated with lateral dome lesions, and inversion injuries of the ankle in plantarflexion are associated with medial lesions. Early and stable lesions (stage I or II) may be treated conservatively, while more severe lesions (stage III to V) may require surgical intervention.

Traditionally, treatment of symptomatic OLT has included either reparative or replacement surgical procedures. Typically, the decision to repair or replace is based primarily on lesion size. Reparative procedures, including bone marrow stimulation (BMS), are generally indicated for OLT < 15 mm in a diameter or 150 mm^2 in area. Replacement strategies, such as osteochondral autologous transplantation (AOT), are used for large lesions or failed primary repair procedures. In our study a significant number of patients which were initially missed on radiographs were diagnosed correctly on MRI scans.

Conclusion

This hence leads to the conclusion that a high index of suspicion has to be kept for OCTs in patients with ankle pain following any hindfoot trauma. If not diagnosed early, it may progress to involve the entire ankle joint and may lead to debilitating arthritis.

Conflict of Interest

Not available

Financial Support

Not available

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