Introduction

Stress fracture is an overuse injury. The term stress fracture is used to describe a fracture that occurs in a normal bone after repetitive stress, none of which is individually capable of causing a fracture. During intense exercise, bone resorption exceeds bone formation although the exact mechanism remains unclear [1]. Patients usually present with worsening pain with a history of minimal or no trauma. In the weight bearing lower limb, there is often a history of a recent increase of physical activity or significant alteration in the type or duration of normal athletic activity. Athletes and military men are subjected to change in types of training and training intensities and thus are at increased risk of developing a stress fracture. The most common sites of stress fractures are femoral neck, anterior tibial cortex, metatarsals, talar neck. A discomfort during physical activity can be the initial manifestation, evolving to constant pain at rest.

Case Report

A 40 year-old military male was referred to our radiology department with a two month history of atraumatic bilateral knee pain. He reported knee pain after first week of vigorous exercise consisting of jumping and running. As the intensity of pain was more on right side, he was referred for MRI of the right knee joint. On examination, he had tenderness over the medial aspects of bilateral tibia.

MRI of the right knee revealed low signal intensity fracture line in the medial tibial condyle on T1WI and T2WI. The fracture line was surrounded by extensive bone marrow edema appearing hyperintense on STIR and PDFS sequences consistent with stress fracture. As patient had similar pain in the left knee also, MRI of the other knee was also done for academic purpose. Both the knees showed similar findings on MRI sequences [Fig.1,2] confirming the diagnosis of synchronous...
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symmetrical stress fractures of bilateral medial tibial condyles.

Complementary CT [Fig.3] and X-ray [Fig.4] of the both knees revealed horizontally oriented sclerotic lines parallel to the medial growth plates in keeping with synchronous stress fractures of both proximal tibiae.

Discussion

Stress fractures are usually unilateral, however our patient presented with bilateral stress fractures. Synchronous stress fractures are very rare [2]. A study by McCormick F et al. showed the incidence of bilateral injury in a patient presenting with a stress fracture was 16% [3]. Our case was a military man who presented with stress fractures after intense physical activity. Hence, stress fractures occur in a bone due to a mismatch of bone strength and chronic mechanical stress placed upon the bone. In India, two studies by Agrawal PK and Dash N et al., have reported high incidence of stress fractures of 11.4% and 7.04% in two different military training centers [4,5].

The activities involved in the diverse types of military training may put personnel at different injury risks. The most frequently reported cause of these fractures is repetitive weight-bearing activities such as running and marching, a recent increase in physical activity, beginning of a new activity or some other change in their routine can also result in increase of these fractures [6]. Plain radiographs have poor sensitivity (15-35%) in early-stage injuries, which increases in late-stage injuries (30-70%). MRI is the modality of choice with a sensitivity reported to reach close to 100% [7].

The treatment of bilateral stress fractures of the proximal tibia is the same as unilateral stress fractures of the tibia. It consists of rest and protected weight bearing of the limbs, followed by modified activity and the graded return to a training schedule commensurate with bone healing.
Conclusion

In the case presented, bilateral proximal medial epiphyseal tibia stress fractures were noted on X-ray, CT and MRI. Hence, in a case of unilateral stress fracture, contralateral side should also be assessed to diagnose bilateral injury as this could help guide treatment decisions as well as inform the patient of the need for lifestyle modifications and continued rest to prevent further injury.

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