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Bilateral Subtrochanteric Stress Fractures in a Dambali Mystic Dancer-a Unique Complication of a Sufi Ritual. Case Study

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SUMMARY

Stress fractures are commonly seen among soldiers and athletes with the usual sites being the tibia, fibula or the metatarsals. Clinical examination may not be very helpful in such cases unless a high degree of suspicion is directed towards the pathology. We present a case of bilateral synchronous subtrochanteric stress fractures in a Sufi mystic dancer who presented with mild leg pain. The patient responded well to rest and conservative management.

Key words: stress fractures, bilateral, subtrochanteric, dambali

INTRODUCTION

Stress fracture is predominantly an overuse injury due to increased muscle forces together with bending and impact forces acting on the bone which has not adapted to the loading. The reliable diagnosis of stress fractures is often difficult, as the radiographs are not usually positive until 2 weeks after the onset of symptoms and further imaging is required. Tibia, fibula, and metatarsals are the usual bones found, and early plain radiographs may be inconclusive. The tibia is the commonest site (up to 64% of stress fractures), whilst the metatarsals represent 21% [1]. Femoral stress fractures are much less common and can be divided into those involving the femoral neck, condyles or shaft. The latter comprise between 2.8 and 21 percent of athlete femoral stress fractures [1-4] and occur more commonly in females [5,6]. Bilateral stress fractures have been reported in the tibia and metatarsals,[1] but have only been reported thrice in the femur - one associated with an endocrine disorder, one associated with bilateral tibia fractures and one in a female marathon runner.[7,8,9] Factors leading to this rare pathology may include improper use or overuse, cyclic overloading, malnutrition and endocrine disorders and malalignment [1,3,6,9]. We report the hitherto unreported case of bilateral subtrochanteric stress fractures in a Sufi mystic who is a proponent of the Dambali type of Sufi dance [10], where the person goes into a trance or self-induced hypnosis and dances by stomping his feet repeatedly on the ground while invoking the name of God.

CASE REPORT

Dambali is a folk dance of Kashmir. Some people consider Dambali or Zikr as a religious exercise. It serves the same purpose as the dance of a Darwesh. The mind is thrown into whirl, and the dancers go into a religious ecstasy. The typical Dambali dancer sways his head round and round to the beats of the drums while stomping his feet vigorously on the ground while a singer extols the virtues of piety and tolerance. This goes on for an hour or even more till the dancer is completely exhausted. Generally the Dambali is held at the annual fairs held at the various shrines in this state. We showcase the first case in literature of such a dancer who had bilateral subtrochanteric stress fractures. The mystic was a 37-year-old male who reported with complaints of pain in both thighs on walking and limp of 6 months duration. He had been to various fairs (Urs, as they are called in this part of the world) and was a very enthusiastic Dambali dancer. However, of late, he had been experiencing increasing pain which had now progressed to pain at rest as well. Physical exam of the lower extremities revealed no significant swelling or deformity but both thighs were found tender to deep palpation. The joints were normal and there was no joint tenderness or restriction of the range of motion. Thomas test and Ober's test were negative bilaterally. Bilateral lower limb motion, strength, sensation, flexibility, and tone were normal. However, a unilateral leg hop reproduced the pain on each side with impact. Radiographs revealed bilateral subtrochanteric stress fractures which were nearly symmetrical (Fig 1). A DEXA scan revealed normal bone

Fig. 1. Radiograph of pelvis showing bilateral subtrochanteric stress fractures

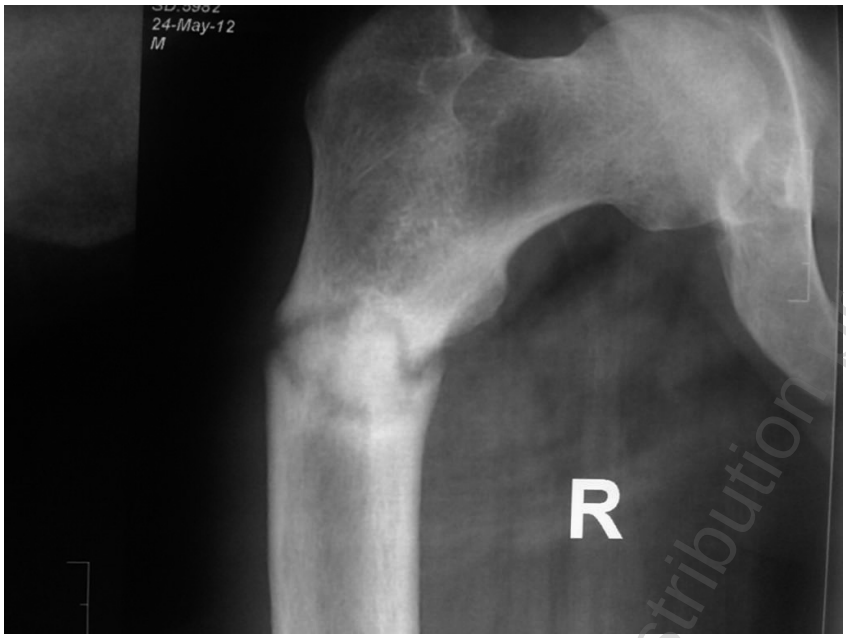

Fig. 2. Radiograph of right hip with femur at 1 year

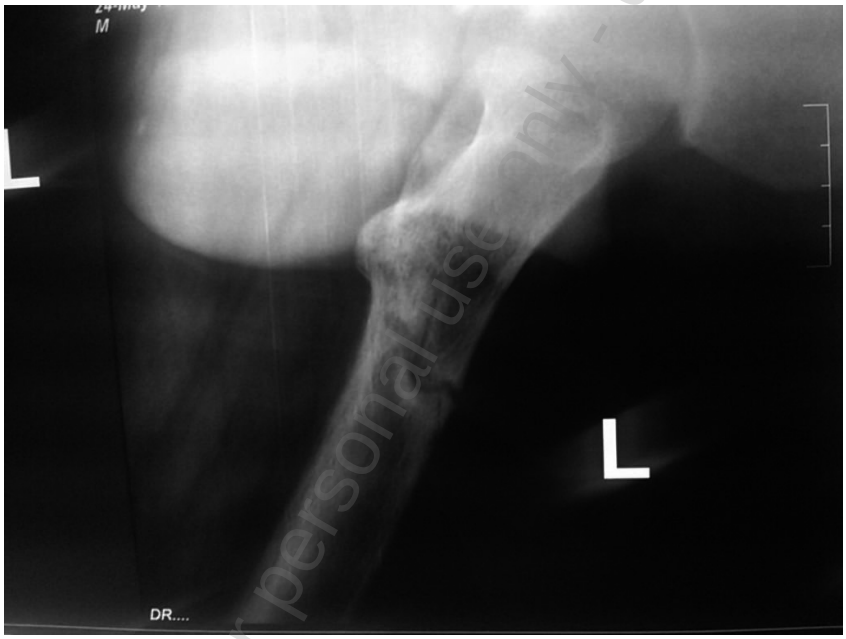

Fig. 3. Radiograph of left hip with femur at 1 year

density. All biochemical and laboratory tests including urea and electrolytes, creatinine, full blood count, calcium, phosphorus and alkaline phosphatase, and complete endocrinological tests (PTH, TSH, ACTH, prolactin, LH) were normal. Vitamin D levels were also normal. The patient, who simply refused any sort of surgical intervention, was put on analgesics, bed rest for three weeks followed by assisted touch-down weight bearing and physiotherapy, and dissuaded from participating in further Dambalis till he had recovered fully. One year later, the fractures had healed (Fig 2,3) but the family of the patient has not allowed him to participate in any more Dambalis.

DISCUSSION

Stress fracture is an overuse injury caused by muscle forces together with bending and impact forces acting on the bone which has not adapted to the loading. They are a result of repetitive, cyclic loading of bone which overwhelms the reparative ability

of the skeletal system. Mechanically, three events may lead to stress fractures. First, the applied load can be increased; secondly, the number of applied stresses can increase and finally, the surface area over which the load is applied can be decreased [11]. Many predisposing factors related to bone dimensions and the characteristics of the force applied can be implicated in causation. Bending is the most important force involved in the development of stress fractures as compared to torsion, tensile, and compressive forces. Bending forces are influenced by the properties and type of collagen, and the geometrical distribution of bone mass, rather than its absolute value. Hence, measurements of bone mineral content (BMC) and density (BMD) may not identify individuals at risk of stress fractures [2].

The lower limb is the commonest site for stress fractures, particularly of the tibia, fibula, calcaneum, and metatarsals. The tibia is reported to be the most common site, representing up to 64% of stress fractures, while the metatarsals represent 21% [1]. Femoral stress fractures are less common and can be subdivided into those involving the femoral neck, condyles, or shaft. Those of the femoral shaft are reported to comprise between 2.8 and 21 percent of femoral stress fractures in athletes [1,2,4]. The posteromedial area of the femoral shaft has been shown to have the greatest strain in the sagittal plane; it is also susceptible to stress fracture due to the origin of the vastus medialis and the insertion of the adductor brevis. In cases of overuse and elevated bone stress, either muscle fatigue leads to a decrease in the ability of the muscle to absorb shock, and/or highly concentrated forces act through small areas of tendinous insertion to overload bone [9].

Specific risk factors for stress fractures may exist in certain individuals and for specific fracture sites. Anatomical features including short and/or narrow long bones or external rotation of the hip and general factors, including gender, race, and age as predisposing factors have been identified. Stress fractures occur more frequently in female athletes in relation to their male counterparts. There is a well demonstrated relationship to eating disorders, amenorrhea, and osteoporosis, or the female athlete triad. Sequential but asynchronous bilateral femoral fatigue fractures have been associated with the long term use of bisphosphonates [12]. There is limited evidence for factors such as body habitus, training surfaces, and footwear to increase the risk for stress fractures. In these patients, the symptoms are stress pain and aching at rest after exertion. Typical findings are local palpation pain and edema. Sometimes tender resistance is felt. Overall the symptoms are vague, particularly in femoral stress fractures. Specific physical examination techniques can assist in diagnosis but require a very high index of suspicion. Initial plain radiological evaluation may be normal, especially early in the course of a stress fracture. Delayed radiographs may reveal the presence of a periosteal reaction which often mimics neoplastic lesions. Further radiological evaluation may be necessary to make a definitive diagnosis. Repeating plain radiographs, bone scans, MRI and CT are all viable diagnostic options.

The cornerstones of the treatment are: early identification of the symptoms, early diagnosis, a sufficiently long rest, and medication. Treatment options begin with rest and cessation of the precipitating activity. Treatment consists of decreased activity to pain-free levels and painkillers. Femoral stress fractures represent a small subset of lower extremity stress fractures but can have grave consequences if undetected, resulting in a displaced fracture. If detected prior to displacement, conservative treatment of these fractures is highly successful. However, displacement frequently makes surgical treatment necessary. In case of bilateral symptoms resulting in inability to mobilize without weight bearing or inability to refrain from weight bearing for any other reason, preventive nailing should be considered [13]. Bisphosphonates should not be used to treat stress fractures. Rather, these are implicated in proximal femoral insufficiency fractures in patients on long-term bisphosphonate therapy [13,14]. In high risk occupations like military trainees, examining the activities, especially any changes in running/walking distance, running surface, and type of shoe are important red flags for stress fractures [15]. High suspicion to further imaging should be considered in individuals with endocrine disorders, malalignment, nutritional deficiencies, and endocrine disorders [1,3,6,9, 16]. In our case, the repeated overuse and trauma to the femora by repetitive stomping of the ground by the feet probably contributed to the injury caused by muscle forces acting in concert with bending and impact forces.

CONCLUSIONS

In conclusion, diagnosis requires thorough clinical evaluation with a high index of suspicion for stress fractures. In our case, this was the first time that we encountered such an injury in a folk dancer and our review of literature did not reveal any previously reported similar case. The diagnosis and treatment of stress fractures is a challenge for the physician. It requires a high index of suspicion combined

with a strong knowledge of the at-risk stress fractures and their complications. In this context, we believe that such dancers or mystics complaining of leg pain ought to be screened for stress fractures as accurate and timely diagnosis is required to prevent possible costly and disabling complications. Early referral for MRI or bone scan in the absence of clear radiological findings is recommended, to aid prompt diagnosis and treatment and to prevent more serious sequelae.

ETHICAL STANDARDS

This study has been approved by the ethics committee of our institution and has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. Valid and informed consent was obtained from the patient prior to his inclusion in the study.

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