A CASE EN POINTE

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ABSTRACT

Septic arthritis of the first metatarsal-phalangeal joint (MTPJ) is rare. Such a case is reported in a 14-year-old female ballerina who presented with a one-week history of big toe pain and being systematically unwell. Radioisotope bone scan showed increased activity localised to the first MTPJ. The patient was treated with urgent incision and drainage and intravenous antibiotics. She was able to return to full training eight weeks later. This case highlights the difficulty in diagnosis and management.

INTRODUCTION

Dance is a vigorous activity in which the foot and ankle are imperative tools to the dancer. The emphasis on overuse syndrome and degenerative conditions may potentially divert clinicians from infective conditions which present with similar symptoms but more devastating consequences, specifically septic arthritis. Whilst there has been some past literature on the biomechanics of the subject, there seems to be no recognition of the condition of septic arthritis that dancers may encounter. We highlight this condition, which should be considered in dancers, as we report a case of septic arthritis of the first MTPJ in a 14-year-old ballerina. To our knowledge, this has not been reported previously.

CASE REPORT

A 14-year-old ballerina was admitted to the paediatric unit with a one-week history of pain, swelling and erythema around the right first MTPJ in the absence of any trauma. These symptoms were associated with a decrease in the range of movement of the joint but normal movements of the ankle. She was noted to have spiking pyrexia of 38°C. The paediatricians had made initial differential diagnoses of cellulitis or gout, and had organised blood investigations including FBC, ESR, CRP, blood culture, serum calcium and urate levels. Plain radiographs (Figures 1a and 1b) of the foot showed no abnormality. She was empirically treated with intravenous benzylpenicillin and flucloxacillin.

By the third day of treatment, the warmth, erythema and swelling of the joint had shown little sign of improvement and the spiking pyrexia persisted. ESR was recorded at 72mm/hr, CRP was 62.1 mg/L but the WCC was within normal range. Blood cultures and rheumatoid latex screen were negative. The joint was also noted to have developed some fluctuance over the planter aspect with suspicion of an abscess originating from the first MTPJ. Further to these clinical and biochemical findings, a technetium bone scan (Figures 2a and 2b) was organised which showed increased uptake around the afflicted right first MTPJ. A diagnosis of septic arthritis was established. The patient was then referred to our unit.

The patient was listed for emergency incision and drainage of the joint on the fifth day after admission. A subcutaneous abscess communicating with the right first MTPJ was decompressed. The cartilage was in good condition and there was no evidence of chondral destruction. The joint was irrigated

Figure 1a

Figures 1a & 1b Plain radiographs (AP and lateral views) of the right foot

with normal saline and the wound packed with gauze. Bacterial culture was taken and subsequently revealed the presence of *Staphylococcus aureus*. Post-operatively, the foot was maintained in elevation and intravenous antibiotic therapy was continued for one week. A two-week course of oral antibiotics was commenced after a second look at the wound in theatre revealed it to be clean and healthy. Inflammatory markers gradually resumed to normal. At discharge, the wound remained clean and the patient's temperature settled.

The wound healed by secondary intention at two weeks (Figure 3). The patient received intensive physiotherapy to prevent joint stiffness. After eight weeks, the patient was able to return to her dancing, including work in the *en pointe* stance. At six-month follow-up, the patient remained asymptomatic and carried out regular ballet training and performances.

Figure 2a

Figures 2a & 2b Technetium bone scan showing increased uptake of first MTPJ

ballet dancers may play an important role in the aetiology of septic arthritis of the first MTPJ in ballet dancers, where the first and second rays transmit high vertical load and significant higher digital floor contact⁽²⁾. Clinicians who encounter performing artists may naturally concentrate on biomechanical aetiology rather than infection. Ballet dancers are goal-orientated and highly motivated and, as a whole, are unique patients who often ignore symptoms of a serious problem thus making both diagnosis and treatment difficult. Minor symptoms in this case represented a potentially career-ending pathology.

Figure 3 Well-healed scar on lateral aspect of first MTPJ

DISCUSSION

Whilst ballet is an art to the eye, it places great stresses onto the body of the dancer, especially on the foot and ankle. Not surprisingly, there has been extensive research and clinical interest in the forefoot conditions in dancers^(1,2,3).

Ballet dancers frequently stand on the tips of their toes ('*en pointe*' position) during training and performances. Assuming positions *en pointe* increases pressure on the distal part of the foot, necessitating increased stress on the weight-bearing structures⁽²⁾. Jahss⁽⁴⁾ concluded that dancers in the *en pointe* position transmit vertical support primarily through the first and second rays.

Ambre and Nilsson⁽⁵⁾ reported significant decreased range of motion and minor degenerative changes of the first MTPJ in classical ballet dancers. Despite severe stress placed on the first MTPJ, the ability to perform was largely unaffected. Anderson et al⁽⁶⁾ also found arthritis of the MTPJ in more than 50% of retired dancers in one study.

Septic arthritis commonly involves the weight-bearing joints with no evidence of joint contamination. Weight-bearing stresses of dancing *sur les pointes* (on the tips of the toes) in

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