CASE REPORT

Spontaneous isolated peroneal compartment syndrome of leg in a healthy young adult with good outcome

Subramanyam Naidu Maripuri*, Ashok Acharya, Clare Carpenter, Declan O’Doherty

Department of Trauma and Orthopaedics, University Hospital of Wales, Cardiff, Wales, CF14 4XW, UK

Accepted 25 October 2006

Introduction

Compartment syndrome is a surgical emergency. Long-term sequelae can be avoided by early diagnosis and timely treatment. The key to achieve this is a high index of suspicion and careful clinical examination. The diagnosis is commonly straightforward when there is a clear history of injury and classical signs. However, atypical presentations may mislead and result in delayed diagnosis. In the absence of predisposing factors it is termed spontaneous. We present a rare case of spontaneous isolated lateral compartment syndrome in a healthy young adult.

Case report

A 37-year-old man presented with acute cramp-like pain in both calves and paraesthesia on the lateral aspect of left leg, which came on after a short walk of half a mile. One day prior to the onset of symptoms he had been on a 9-h flight journey followed by a 4-h drive. He was otherwise fit and healthy with no predisposing conditions for compartment syndrome. The right calf pain settled but the left calf pain persisted. Clinical examination revealed a swollen, soft and tender left calf in an area below the fibular head, with sensory loss in the lateral aspect of left leg. Passive flexion and extension of toes did not produce pain. Both dorsalis pedis and posterior tibial pulses were normal with a capillary return of less than 2 s. The patient was unable to actively dorsiflex the ankle. Blood parameters including FBC, renal function tests, clotting screen were normal. An initial diagnosis of a spontaneous haematoma in the lateral compartment was made. A venous Doppler scan was negative for deep vein thrombosis. An ultrasound scan of the left calf showed abnormal signal in peroneus longus and brevis muscles but no evidence of collection of fluid or haematoma (Fig. 1). MRI scan confirmed oedema in the peroneus longus and brevis muscles, with the rest of the muscle groups being normal (Figs. 2 and 3). Compartment pressures were not formally evaluated.

The left calf pain became severe over the next 2–3 h. Pain on passive inversion of foot was noted and a diagnosis of peroneal compartment syndrome was
made. An emergency fasciotomy was performed revealing bulging, dusky and friable peroneal muscles, which were debrided. No haematoma or fluid collection was found. The muscles of anterior compartment were normal.

We retrospectively requested Creatinine kinase levels from the initial blood sample and this was found to be elevated at 5827 (normal range 20—175). After a re-debridement the wound was closed 4 days later without the need for a skin graft. Histological examination of excised muscle revealed ischaemic myopathy without any inflammatory changes. At follow up examination 3 months after presentation he had normal sensation and foot function, with full power in the peroneal muscles.

Discussion

Early recognition and treatment is the principle in managing compartment syndrome. It is accepted that treatment should occur within 6—8 h, and in most acute cases this is achieved. Delay may occur in unconscious patients or atypical presentations.

Pain on passive stretching remains the most important clinical sign. Stretching of all compartments is mandatory in order to elicit stretch pain. Usually dorsiflexion and plantar flexion is used in clinical practice to stretch the compartments. This elicits stretch pain in anterior, posterior superficial and posterior deep compartments, but not in the peroneal compartment. Passive inversion of foot is essential to elicit the stretch pain in the lateral compartment as shown in the present case. Clinicians need to be aware of this fact.

It is likely that in the present case the initial examining doctor did not stretch the lateral compartment, which was done in subsequent examinations by senior clinicians. The rarity of this condition, lack of predisposing factors combined with atypical presentation delayed the diagnosis. One case of isolated spontaneous lateral compartment syndrome has been reported in a diabetic following kidney and heart transplantation. To our knowledge this is the first reported case of isolated spontaneous peroneal compartment syndrome in a healthy adult.

In the absence of clinical signs elevated CK levels could indicate unsuspected compartment syndrome. Creatinine kinase can be a sensitive indicator
as elevated levels were found in the present case and most of the reported cases at their initial presentation\(^1,3,4,6,9\) (Table 1).

Compartment pressures were not recorded in this case because of lack of suspicion. However if there is any doubt we would recommend measurement of compartment pressures.

## Conclusion

Acute spontaneous isolated lateral compartment syndrome can occur in healthy young adults after mild exertion. A high index of suspicion is needed in any patient presenting with acute calf pain. Passive stretching of involved compartment is an essential part of the clinical examination.

## References