CASE REPORT

DELAYED PRESENTATION OF COMPARTMENT SYNDROME FOLLOWING GASTROCNEMIUS TEAR

M. D. A. FLETCHER, D. SPICER, P. J. WARREN

The authors describe a case of acute compartment syndrome occurring twenty days following a tear of gastrocnemius. To their knowledge, this is the only such case reported where the onset of compartment syndrome was so long since the index injury.

Keywords : compartment syndrome ; gastrocnemius tear ; delayed presentation.
Mots-clés : syndrome de loge ; rupture du jumeau ; apparition tardive.

INTRODUCTION

Acute compartment syndrome is a well recognized complication of lower limb trauma. It has been recognized following partial tears of the gastrocnemius. Presentation usually occurs within 24 hours of such an injury. No case has yet been described of a compartment syndrome occurring weeks following a gastrocnemius tear. We describe such a case presenting 20 days after a partial tear of the medial head of gastrocnemius.

CASE REPORT

A 51-year-old engineer presented to the Accident and Emergency department with a sudden onset of pain in his right calf. Three weeks previously he had been walking across a road, when he felt a sudden sharp pain, “like being shot” in the same calf. He was able to continue walking, the pain had subsided to an ache shortly after, and the calf became only transiently swollen. During the following three weeks, he continued his usual activities, and noted only persisting minor discomfort. Twenty days following the initial episode, he awoke with severe pain in the same leg and presented to the Accident and Emergency department immediately.

Examination revealed a grossly swollen and tense right calf, which was tender to the touch over the anterior, lateral and posterior aspects, and acutely painful on passive ankle dorsiflexion. Peripheral pulses were present, but he was noted to have paraesthesiae over the lateral aspect of his foot in the distribution of the sural nerve, and objective loss of power in ankle dorsiflexion and plantarflexion.

Ultrasound of the leg revealed a haematoma of the superficial posterior compartment (fig. 1). A clinical diagnosis of compartment syndrome was made, and while waiting for operative fasciotomy he was noted to have an increasing sensory deficit, with loss of sensation over the dorsal and lateral aspects of the foot, and an ascending pattern of loss over the anterolateral leg.

At surgery, a single longitudinal lateral incision was made, and a four compartment perifibular fasciotomy was performed without resecting the fibula (3). The anterior and peroneal compartments were tense, and were released throughout their

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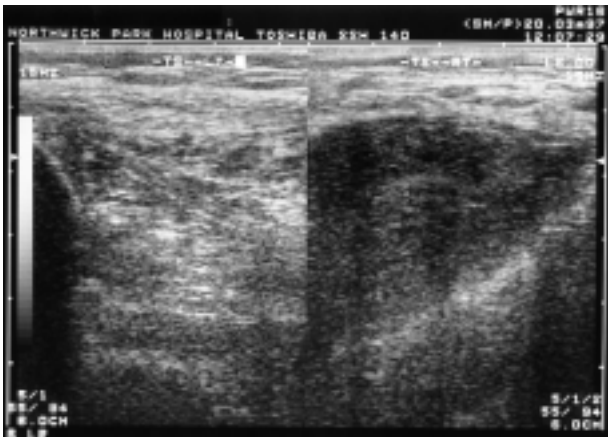

Fig. 1. — Ultrasound examination of both lower legs. The scan on the left shows the normal echodense appearance of gastrocnemius and soleus. The scan on the right shows a hypoechogenic region consistent with a large haematoma in the superficial posterior compartment.

length, revealing grossly oedematous musculature. The fascia of the superficial posterior compartment was incised, digital examination revealed an old haematoma and a palpable tear at the medial gastrocnemius myotendinous junction. The musculature of the deep posterior compartment was similarly decompressed. The wound was dressed, and left open.

Post-operatively he reported immediate relief of pain and regained complete sensation to the lower limb, with good motor power within 12 hours. The wound was re-inspected at 48 hours and the musculature of all compartments was deemed viable. The wound was formally closed 5 days after presentation. The patient subsequently made a full recovery, with no neurovascular deficit.

DISCUSSION

Acute compartment syndromes are most commonly associated with severe muscle trauma and closed fractures of long bones. Less common associations include tight casts and non-traumatic soft-tissue injuries ; such as exertional damage and minor sporting injuries (5). The mechanisms involved are those of bleeding into muscular compartments, oedema and tissue necrosis. When haematoma is present, water enters the compartment by osmosis, and increases the intrinsic compartment pressure. Once this reaches a critical level, venous return is obstructed, and pressure rises steeply, with concomitant muscle ischaemia, oedema and necrosis. Increase of single compartment pressures can cause concomitant pressure rises in neighbouring compartments (4, 7). This would account for the findings in this case, and explain the involvement of the superficial and deep peroneal nerves. Liquefaction of a haematoma may lead to a delayed response, as in this case.

Partial tear of the medial head of the gastrocnemius is a common injury, due to overstretching of the muscle during ankle dorsiflexion (4). It occurs more commonly in middle-aged individuals, due to degenerative changes in muscle, and is not restricted to athletes (8). The injury is usually mild, and complications are rare (1). Acute compartment syndrome is a rare complication (7).

One case has been described where onset of the compartment syndrome was delayed over a period of 48 hours (2). Our case shows that a compartment syndrome may occur with a longer interval between the index injury and onset. Search of the literature has revealed no other case of an acute compartment syndrome presenting three weeks following lower limb trauma. Prompt recognition and early fasciotomy led to complete recovery in this case. It is well documented that delay in treatment of compartment syndromes is associated with a high amount of subsequent morbidity and disability (9). Compartmental pressure monitoring may be helpful in assessment of the patient with unclear pathology, and to document objective findings, but surgical intervention should be largely based on clinical grounds (6). Pressure monitoring was not performed in this case due to lack of available resources, and therefore all four compartments were decompressed due to the clinical findings of progressive nerve involvement.

We hope by presenting this case to iterate that compartment syndromes may present following minor trauma, and that rarely, this may be weeks following the index injury. A careful history will alert the clinician to the possibility of a compartment syndrome despite no immediately preceding trauma.

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SAMENVATTING

M. D. A. FLETCHER, D. SPICER, P. J. WARREN. Laattijdig optreden van een compartiment-syndroom na afscheuren van de mediale gastrocnemiuskop.

De auteurs beschrijven een compartiment-syndroom dat plots opkwam, 20 dagen na het afscheuren van de mediale gastrocnemiuskop. Voor zover ze weten is dit het enige geval met een zo lang interval tussen oorzaak en gevolg.

RÉSUMÉ

M. D. A. FLETCHER, D. SPICER, P. J. WARREN. Présentation retardée d'un syndrôme des loges après désinsertion d'un jumeau.

Les auteurs rapportent un cas de syndrôme des loges qui s'est développé brutalement 20 jours après une désinsertion du jumeau interne. A leur connaissance, c'est le seul cas rapporté à ce jour avec un délai aussi long par rapport à la lésion initiale.