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Acute atraumatic compartment syndrome in the leg

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Abstract The compartment syndrome is well recognised as occurring after trauma, but atraumatic acute compartment syndrome is less widely known. We report 3 cases in whom an acute compartment syndrome developed without major injury. Early diagnosis and prompt treatment by decompressive fasciotomy is of vital importance if limb function is to be preserved and complications avoided.

Résumé Le syndrome de loge est facilement reconnu après un traumatisme à la différence d'un syndrome de loge aigu atraumatique. Nous rapportons 3 cas d'un tel syndrome développé sans traumatisme important. Un diagnostic précoce et un traitement rapide par fasciotomie décompressive est d'importance capitale pour préserver la fonction du membre inférieur et éviter les complications.

Introduction

The compartment syndrome is a pathological condition characterised by a decrease, or even interruption, of the microcirculation within a soft tissue compartment. Most cases are due to trauma (crush syndrome or fracture) and have been widely reported, but there have been only a few papers on the compartment syndrome of atraumatic origin. These cases can very easily be overlooked and unless early decompressive fasciotomy is undertaken severe complications such as soft tissue necrosis may be frequent.

In this paper we report 3 cases of atraumatic compartment syndrome of the leg treated at our hospital.

Case reports

Case 1

A female, 30 years of age, presented with pain in her left leg which she had had for 12 h. As a result of her psychotic state, she

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had been walking for 10 h. There was swelling of the posterior aspect of her left leg and pain on stretching the gastrocnemius. Peroneal and tibialis anterior weakness was also present. An echo-doppler test was carried out, which showed a stenotic posterior tibial artery and a collapsed posterior tibial vein.

A prompt fasciotomy was undertaken through a lateral approach to decompress the four compartments of the leg. The superficial and deep compartments were very oedematous and the muscles pallid with scattered areas of necrosis.

Two years later, she was free of symptoms with normal sensation and muscle strength; except that the peroneal muscles remained grade 3 (MRC scale).

Case 2

A female, 52 year of age, felt a sudden snap and pain in her left leg while walking. There was hardness of the posterior surface of her left lower leg, weakness of the ankle and foot dorsiflexors and diminished sensation on the lateral border of her left foot. We suspected a venous thrombosis and therefore performed an echo-doppler scan which showed intracompartmental oedema with a gastrocnemius haematoma. The blood flow was also decreased. A lateral fasciotomy was carried out and confirmed the echo-doppler findings.

The patient now has no symptoms, but she still has diminished sensation of the dorsum of the first interdigital web and the toe extensors are graded 3.

Case 3

A male, 52 years of age, felt sudden pain in his left leg while climbing a ramp. There was hardness of the posterior surface of his leg, weakness of the ankle and foot dorsiflexors and diminished sensation on the lateral border of his foot. Echo-doppler scan showed interstitial oedema, a gastrocnemius haematoma and diminished blood flow. A lateral fasciotomy showed similar lesions to case 2. He was completely free of symptoms one year later.

Discussion

The diagnosis of compartment syndrome is based on the clinical findings of oedema, pain on stretching the affected muscles, diminished sensation and a variable degree of weakness. In some cases, when the clinical diagnosis is not clear, the compartmental pressure should be mea-

sured. Treatment, which depends on the clinical findings, may be observation or prompt fasciotomy.

All 3 of our cases required surgical fasciotomy as an emergency procedure with decompression of the 4 compartments of the leg. All also underwent echo-doppler scans to exclude deep vein thrombosis because the clinical picture was not definite. We do not know of reports of the use of echo-doppler for diagnosis of the compartment syndrome, but we believe that it is a good test to rule out deep vein thrombosis.

If the diagnosis of compartment syndrome is not correctly made there may be devastating complications, such as severe permanent muscle atrophy, loss of sensation or even amputation. Atraumatic cases present difficulties of diagnosis, since the clinical evidence may not be clear. An accurate clinical history and careful physical examination needs to be complemented by awareness that atraumatic compartment syndrome may exist. Measurement of the compartmental pressure can be helpful, and early fasciotomy is usually necessary, providing there is confidence that the functional and cosmetic results will be acceptable.

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