

Acute Compartment Syndrome Leading to Bilateral Foot Drop in Association with Hypothyroidism

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Abstract

Acute compartment syndrome (ACS) most often develops soon after significant trauma, particularly involving long bone fractures. However, ACS may also occur following minor trauma or from non-traumatic causes. ACS is a surgical emergency. We report an unusual case of acute compartment syndrome leading to bilateral foot drop in association with hypothyroidism.

Keywords: Acute compartment syndrome (ACS); Bilateral foot drop; Hypothyroidism

Introduction

Compartment syndrome has been defined as “a condition in which increased pressure within a limited space compromises the circulation and function of the tissues within that space” [1,2]. Compartment syndrome may occur acutely, often following trauma, or as a chronic syndrome, seen most often in athletes, that presents as insidious pain. Acute compartment syndrome (ACS) is a surgical emergency. We report an unusual case of acute compartment syndrome leading to bilateral foot drop in association with hypothyroidism.

Case Report

32 year male working at Kuwait, presented to our hospital with sudden onset of bilateral painful foot drop. He was apparently well and had gone for shopping with his relatives, which lasted for 5 hours. Next day morning on routine morning walk, he developed sudden onset of pain in both lower limb and was unable to walk any further. He was immediately taken to a local hospital and was found to have bilateral foot drop. A provisional diagnosis of inter vertebral disc prolapse with bilateral foot drop was made and was treated with three pulses of 1 gm methylprednisolone. After 5 days, as there was no improvement, he was brought to our hospital.

On examination he was obese (BMI 35), vital were stable, there was bilateral foot drop with MRC grade 0/5 power in the dorsiflexors

of the ankles and extensors of the toes (Figure 1). The sensations for fine touch and pinprick over the first interdigital cleft on the dorsum of both the feet were diminished, bilateral ankle reflexes were sluggish. He had tender, tense with a firm “wood-like” feeling in both in the lower extremity. The rest of the systemic examination was normal.

Laboratory assessments showed Total count 15600 cells/ μ l with 77 % neutrophils, creatine phosphokinase (CPK) was 13370 IU/L, TSH >100 μ U/ml (0.3-4.2), T3 81 μ g/dl (85-202), T4 2.32 μ g/dl (5.1-14.1). His renal functions and electrolytes were normal. Nerve conduction studies showed deficiencies in the tibial and peroneal muscle responses supportive of common peroneal nerve palsy. MRI of lumbar spine showed L5/S1 disc prolapsed with no significant canal impingement. Compartment pressure in the lower leg was measured which was more than 35 mmHg. A diagnosis of acute bilateral compartment syndrome was made and patient underwent bilateral four compartment fasciotomy of the leg (Figure 2). The lower end of left anterior fasciotomy shows a patch of whitish tissue which is dead muscle. This was just the tip of Ice berg, his whole anterior and lateral compartment muscles along with the thrombosed anterior tibial artery and vein had to be excised. Needed serial debridements and four weeks of vacuum dressings for wound to heal. Pt was started on thyroid replacement therapy, along with broad spectrum antibiotic coverage. Over the next few weeks he underwent rehabilitation and he had partial recovery of his foot drop.

Discussion

ACS most often develops soon after significant trauma, particularly involving long bone fractures. However, ACS may also occur following minor trauma or from non-traumatic causes. ACS in a patient with hypothyroidism was first reported in 1993 [3] and subsequently two more case were reported [4,5]. All cases recovered with conservative treatment, where as our case required fasciotomy, which indicates severity. Multiple explanations for the complex pathophysiology of ACS



Figure 1: B/L foot drop.

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Figure 2: The lower end of left anterior fasciotomy shows a patch of whitish tissue which is dead muscle.

exist [6]. In all cases, the final common pathway is cellular anoxia [7]. A prerequisite for the development of increased compartment pressure is a fascial structure that prevents adequate expansion of tissue volume to compensate for an increase in fluid.

Early symptoms of ACS include progressive pain out of proportion to the injury; signs include tense swollen compartments and pain with passive stretching of muscles within the affected compartment. Important clues to the development of ACS include rapid progression of symptoms and signs over a few hours and the presence of multiple findings consistent with the diagnosis in a patient at risk. Close

observation and serial examinations in patients at risk for ACS are of great importance. Motor deficits are late findings associated with irreversible muscle and nerve damage. Immediate surgical consultation should be obtained whenever ACS is suspected based upon the patient's risk factors and clinical findings.

Conclusion

This case illustrates the need to consider the diagnosis of compartment syndrome in a patient presenting with bilateral foot drop and prompt intervention is essential.

References

1. Matsen FA, Krugmire RB (1978) Compartmental syndromes. Surg Gynecol Obstet 147: 943-949.
2. Elliott KG, Johnstone AJ (2003) Diagnosing acute compartment syndrome. J Bone Joint Surg Br 85: 625-632.
3. Thacker AK, Agrawal D, Sarkari NB (1993) Bilateral anterior compartment syndrome in association with hypothyroidism. Postgrad Med J 69: 881-883.
4. Hsu SL, Thadani RI, Daniels GH (1995) Acute compartment syndrome in a hypothyroid patient. Thyroid 4: 305-308.
5. Muir P, Choe MS, Croxson MS (2012) Development of anterotibial compartment syndrome and rhabdomyolysis in a patient with primary hypothyroidism and adrenal insufficiency. Thyroid 22: 651-653.
6. Frink M, Hildebrand F, Krettek C (2010) Compartment syndrome of the lower leg and foot. Clin Orthop Relat Res 468: 940.
7. Olson SA, Glasgow RR (2005) Acute compartment syndrome in lower extremity musculoskeletal trauma. J Am Acad Orthop Surg 13: 436.