Introduction

Lower back pain (LBP) affects approximately one-third of the UK adult population each year. 20% (1 per 15 of the population) will consult their GP about the pain.1

LBP is also a common presentation in the emergency department.

Consideration needs to be given to the possibility that there is an acute and treatable cause for their pain.2

Red flag signs and symptoms cause concern and can be suggestive of an unstable fracture, trauma, cord compression or cauda equina syndrome.3,4

We describe an unusual case of severe LBP in a young gentleman due to acute Paravertebral Compartment Syndrome (PVCS).

The case illustrates how good history taking and consideration of the wider differential is essential.

Case

A 30y male attended A&E with acute, severe lumbar back pain which had woken him from sleep. The pain was worst in the left lower paravertebral region and radiated to the left groin.

Urine dip was strongly positive for microscopic haematuria. An initial diagnosis of Renal Colic was made and the patient referred to Urology.

CT KUB report; normal with no evidence of renal stones.

By day 2, the patient required stepped up analgesia to obtain adequate pain relief.

CT Urogram report; normal.

Bloods; WCC - 14.92 (13.31 Neutrophils) CRP - 1.5
Creatinine - 81
AST - 378

No history of illicit drug use or alcohol excess.
No regular or OTC medications.

Creatinine Kinase (CK) was requested (on the basis of the raised AST). It was significantly raised at 66,000.

The history was further explored; six hours prior to presentation the patient had performed a series of 100kg dead lifts at the gym.

A more targeted examination revealed the lower left paraspinal muscles were tense and very tender with reduced sensation.

On re-evaluation, the CT scans illustrated a markedly oedematous and swollen left erector spine muscle (images 1, 2).

An MRI showed high signal in the left paraspinal muscle mass consistent with rhabdomyolysis (images 3, 4).

A diagnosis of acute Paravertebral Compartment Syndrome with evidence of rhabdomyolysis was made.

Conservative management was undertaken following advice from the local tertiary spinal centre, this consisted of adequate analgesia and IV hydration.

Due consideration was given to a paravertebral fasciotomy but a watch and wait strategy was adopted.

The patient's pain improved over the next four days, CK normalised (renal function was unaffected).

On discharge, muscle function and mobility were as normal.

Discussion

Acute compartment syndrome (ACS) was first described in 1881 by Volkman.5 It is a surgical emergency warranting prompt evaluation and treatment to avoid complications and to preserve muscle function.6

ACS can occur in any muscular compartment. It has been reported in the paraspinal muscles but is rare.7

ACS occurs when the tissue pressure within a closed muscle compartment exceeds the perfusion pressure and results in muscle and nerve ischaemia.7 The increased pressure causes muscular compression and leads to cell damage [rhabdomyolysis] with toxic intracellular material being released into the circulation.

Treatment consists of urgent surgical decompression if deemed appropriate with aggressive rehydration (to prevent acute kidney injury).

In this case, the delay in diagnosis potentially influenced the decision to treat conservatively. It has been demonstrated that a delay of > 48h in diagnosing ACS can increase post-operative infection; this may then outweigh the benefits of surgery.8

Debate was had as to whether a true compartment exists in the lumbar spinal region. Carr et al carried out a series of cadaveric dissections in 1985 and they described the erector spinae muscles to be contained within a well-developed fascial sheet.9

Acute exertional PVCS has only been reported fifteen times previously.10 Importantly, eleven of these cases involved patients who had engaged in specific lumbar weight lifting exercises such as the dead lifts in our case.10,11

There is no consensus on the gold standard of treatment of acute PVCS and currently case reports provide the only standard for comparison. Out of the fifteen reported cases, seven underwent thoraco-dorsal fasciotomy with immediate improvement in physical symptoms and biochemical parameters. The other eight cases were treated conservatively and, although recovered well, several developed chronic exertional back pain.

This case highlights the importance of good history taking, thorough examination and re-evaluating evidence. It reminds us of the lesser seen syndromes and the importance of good clinical knowledge.

References

8. 66,000.
9. 2
10. 10-21
12. 30 (2010): 30
14. 9
15. 1126-128.
16. 87.5 (2005): 9
18. 188-90.
19. 5
21. 2
22. 2005: 66,000.
23. 2010: 803-05.
24. 188-90.