Unusual presentation of spinal epidural abscess and a cautionary tale of acupuncture

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An 89-year-old male was diagnosed with spinal epidural abscess (SEA) following acupuncture. Only seven cases of SEA associated with acupuncture have been reported in the literature, with this case being the first to be reported in New Zealand. To our knowledge, it is also the first published case to present as radicular flank and hip pain.

Case report

GB, an 89-year-old male presented to the emergency department in Auckland, New Zealand with two weeks of poorly characterised left flank and hip pain. He had attributed his pain to a fall three months ago and subsequently sought acupuncture for pain relief. His medical history included type 2 diabetes, stage 4 diabetic nephropathy with single kidney.

Examination showed GB was afebrile with diffuse left flank tenderness and essentially normal hip and lower limb neurology. Investigations revealed raised inflammatory markers (C-reactive protein 112mg/L, white cell count 18·57x10^9/L - neutrophilic predominance). Chest radiographs, urine and blood cultures were negative. Lumbar spine and hip radiographs revealed degenerative changes but no fracture. Non-contrast CT showed a filled bladder, however no collections, lymphadenopathy, occult fracture or evidence of malignancy.

On day four, GB developed symptoms of urinary retention with 850mL on bladder ultrasound scan. Examination revealed

Figure 1: T1 Axial MRI lumbar spine: posterior left epidural spinal abscess with mass effect and post left radical nephrectomy.

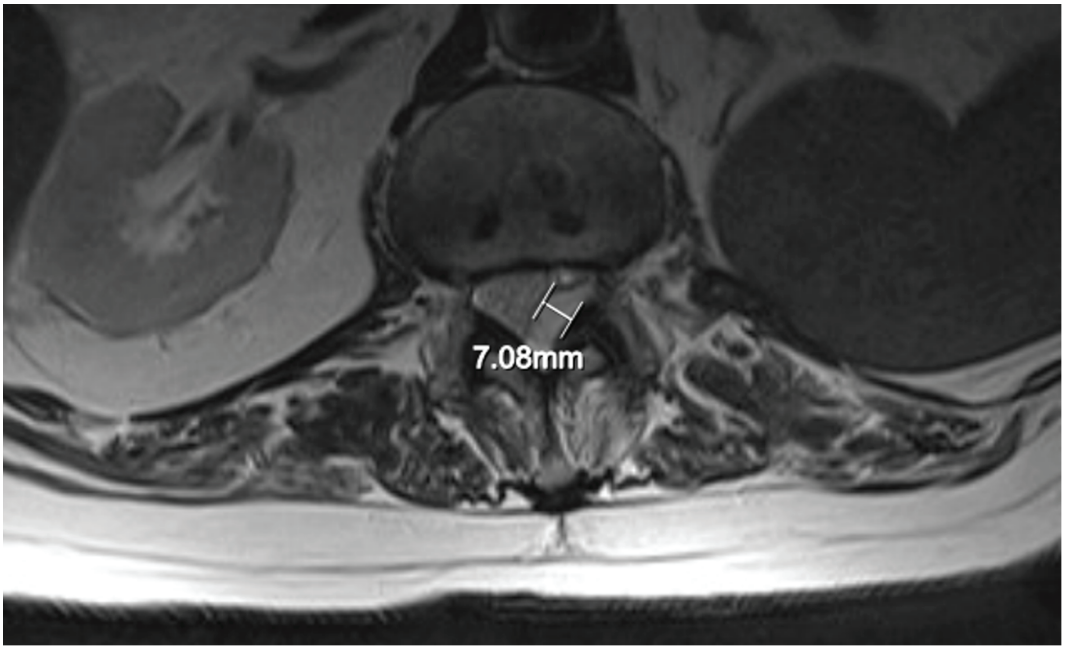

Figure 2: T1 Sagittal MRI lower thoracic and lumbar spine: posterior epidural spinal abscess with communicating complex paraspinal collection.

T10–S1 spinous process pain, right extensor hallucis weakness with otherwise normal lower-limb neurology.

An urgent MRI revealed a left posterior spinal epidural abscess extending from T11 to L4/5 with central canal and L1 to L4 nerve root compression (see Figures 1 and 2). CT guided biopsy aspirated pus culturing methicillin susceptible Staphylococcus aureus and he proceeded onto decompression laminoplasty with open drainage.

Discussion

Inoculation of the infection-prone fat in the epidural space by haematogenous (up to 50%), contiguous, or iatrogenic routes initiates the development of a spinal epidural abscess (SEA).[1–3] As the collection of inflammatory material expands, spinal cord and nerve root compressions occurs. In addition, vascular insults of the spinal cord arise from septic thrombophlebitis.[3] The clinical staging of this process has been described by Rabih with a step-wise progression of Stage 1: back pain, Stage 2: nerve root pain, Stage 3: neurological deficit, and finally, Stage 4: paralysis.[3] Early diagnosis and intervention to decompress the spinal cord within 24–36hrs of neurological deficit is essential to improve neurological outcomes and prevent paralysis.[1,2]

SEA has classically been described as a triad of fever, unremitting spinal pain and neurological deficits, however this is seen in only 10–15% of proven SEA cases.[2] Radicular pain is present in 35.4% of cases[4] and other atypical presentations of SEA such as headache,[5] abdominal[6] and shoulder pain have been reported. To our knowledge this is the first case in the literature to present as radicular flank and hip pain.

Two-thirds of cases have absent focal neurology[2,4] or are afebrile[7] and the progression from one stage of SEA to the next is highly variable. Inflammatory markers are universally raised and a leucocytosis is seen in approximately two-thirds of cases,[3] although these are not specific for SEA. Approximately 60% of SEA have positive blood cultures[3] leaving 30-40% of SEA cases without a microbial source.[2] The gold standard diagnostic modality is MRI with gadolinium,[3] however CT with IV contrast is almost as sensitive, though contrast was not administered in this case due to impaired renal function.

It is not surprising that between 11–75% of cases are initially misdiagnosed.[3] A 10-year review of the 45 SEA cases in the Christchurch neurosurgical unit showed a mean delay of diagnosis of 4.5 days under general medicine with approximately one-quarter of cases left with neurological deficits on discharge.[7] Due to the rare and non-specific nature of SEA, we recommend a high index of suspicion of SEA in afebrile spinal/radicular pain with raised inflammatory markers and to consider bladder ultrasound scans to screen for urinary retention in lumbar sacral involvement.

The location of needling in this patient directly correlated with the paraspinal collection and with the underlying comorbidities of diabetes, and age placed this patient at a greater infection risk. The practice of acupuncture in New Zealand has diverged to traditional Chinese acupuncture and western acupuncture-based on neurophysiological principles.[8] Although both use the same tool, traditional Chinese acupuncture training and education can range up to four-year bachelor level degrees, while 'dry needling' weekend courses with less than 14 hours[9] of education are available, posing a concern regarding minimum levels of training for an invasive procedure. In addition, the practice of acupuncture is unregulated, however it is unknown in this case whether acupuncture was provided by a qualified practitioner registered to a professional body. Nonetheless this case remains a cautionary tale to maintain strict infection control and to carefully consider relative contraindications such as diabetes.

Competing interests:
Nil.

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REFERENCES:

1. Patel AR, Alton TB, Bransford RJ, et al. Spinal epidural abscesses: Risk factors, medical versus surgical management, a retrospective review of 128 cases. Spine J. 2014; 14(2):326–330.
2. Alerhand S, Wood S, Long B, Koyfman A. The time-sensitive challenge of diagnosing spinal epidural abscess in the emergency department. Intern Emerg Med. 2017 Dec; 12(8):1179–1183.
3. Darouiche RO. Spinal epidural abscess. N Engl J Med. 2006 Nov 9; 355(19):2012–20.
4. Suppiah S, Meng Y, Fehlings MG, Massicotte EM, Yee A, Shamji MF. How best to manage the spinal epidural abscess? A current systematic review. World Neurosurg. 2016; 93:20–28.
5. Liu KT, Su CS. Cluster-like headache as an opening symptom of cervical spinal epidural abscess. Am J Emerg Med. 2009; 27(3):370.
6. Noy ML, George S. Unusual presentation of a spinal epidural abscess. BMJ Case Rep. 2012; 2012:5956.
7. Kempthorne JT, Pratt C, Smale EL, Macfarlane MR. Ten-year Review of extradural spinal abscesses in a New Zealand tertiary referral centre. Journal of Clinical Neuroscience. 2009; 16(8):1038–1042.
8. Kohut SH, Larmer PJ, Jones M. Acupuncture and dry needling: A fusion of horizons or conflicting paradigms? Physiotherapy New Zealand Conference; Wellington: New Zealand. Journal of Physiotherapy. 2012; 40(2):87–89.
9. McDowell JM, Kohut SH, Betts D. Safe acupuncture and dry needling during pregnancy: New Zealand physiotherapists' opinion and practice. J Integr Med. 2019; 17(1):30–37.