



Vertebral osteomyelitis, epidural and psoas abscess after epidural catheter use

Kalliopi ALPANTAKI, Antonis PAPOUTSIDAKIS, Pavlos KATONIS, Alexander HADJIPAVLOU

From the Department of Orthopaedics, University of Crete, Greece

We report on a patient who developed persistent low back pain, pyrexia and neurological deficit soon after she underwent a laparotomy under combined general and epidural anaesthesia. The diagnosis of lumbar vertebral osteomyelitis, discitis, epidural and psoas abscesses was made one month later when she was referred to our institution. The patient was successfully treated with posterior decompression, drainage of the epidural abscess and fusion in combination with percutaneous, computed tomography-guided needle aspiration of the psoas abscesses.

Keywords : epidural anaesthesia ; infection ; spondylodiscitis ; psoas abscess ; *Pseudomonas aeruginosa*.

INTRODUCTION

Infectious complications after epidural analgesia are uncommon. Although spinal epidural abscess (SEA) is a well-recognized complication (4), vertebral osteomyelitis and septic discitis are quite rare (1,2,5,8,10). *Pseudomonas aeruginosa* is the commonest pathogen. Some degree of immunodeficiency may be present.

CASE REPORT

A 67-year-old woman was admitted with fever, low back pain, and paraparesis. Her past medical history included diabetes mellitus and hypertension. One month before presentation she had undergone excision of an ovarian cyst under gener-

al and epidural anaesthesia. The epidural catheter was left postoperatively for four days for pain control. The patient gradually developed severe back pain, fever and paraparesis.

Physical examination revealed tenderness at the lower thoracic and lumbar spine, decreased deep tendon reflexes and quadriceps weakness in both lower extremities. Bowel and bladder function were not disturbed. The patient was febrile (38° C), was alert and had stable vital parameters. There was no evidence of injury.

Chest, spine and abdominal radiographs were unremarkable. Initial laboratory investigation showed anaemia (Hct 30.2%), leukocytosis (WBC 14 000/mm³ with 60% neutrophils), hypokalaemia 2.9 meq/L, hypoalbuminaemia 3 gr/dl and hyperglycaemia 274 mg/dl. Erythrocyte sedimentation rate (132 mm/h) and CRP (15.50 mg/dl) were elevated. Urinalysis showed many white blood cells and microorganisms. *Enterococcus faecalis* was

-
- Kalliopi Alpantaki, MD, Orthopaedic Surgeon.
 - Antonis Papoutsidakis, MD, Orthopaedic Surgeon.
 - Pavlos Katonis, MD, Assistant Professor in Orthopaedics, Spine Surgeon.
 - Alexander Hadjipavlou, MD, Professor in Orthopaedics, Spine Surgeon.

Department of Orthopaedics, University of Crete, Greece.

Correspondence : Dr Antonis Papoutsidakis, Dimitrakaki 31, Rethymno 74100, Crete, Greece. E-mail : antpap@edu.uoc.gr.

© 2007, Acta Orthopædica Belgica.



Fig. 1. — CT scan showing the psoas abscesses pre op

isolated in urine culture. Blood cultures revealed no pathogens. The appropriate antibiotic treatment for the urinary tract infection was started, while other sites of infection were investigated. The patient was initially admitted by the internists and they organized the diagnostic work out, which included transoesophageal echography in order to rule out infectious endocarditis. They also ordered CT scans of the chest and abdomen to rule out other causes of infection.

Computed tomography (CT) and magnetic resonance imaging (MRI) scans demonstrated vertebral osteomyelitis with an epidural abscess extending from L2 to L4 and a bilateral psoas abscess (fig 1&2).

Three days later a posterior spinal decompression and an L1-L5 instrumented fusion were performed under general anaesthesia. The aim of surgery was to make a definitive diagnosis, to drain the abscess, to decompress the neural tissue, and to stabilise the lumbar spine. Necrotic tissue was found in the anterior epidural space, but there was no pus. The posterior epidural space and posterior bony elements appeared normal. Cultures of the infected tissue were obtained and *Pseudomonas aeruginosa* was isolated. Four days later a CT-guided needle aspiration of both psoas abscesses was performed. Approximately 30 ml of pus was obtained from both psoas abscesses. A catheter was



Fig. 2. — MRI showing the epidural abscess pre op

left in the left abscess for ten days. Again *Pseudomonas aeruginosa* was cultured and the antibiotic treatment was changed to Ampicillin/Clavulanic acid (1 gr TDS for 10 weeks).

Fever and back pain diminished progressively. The neurological status normalised in six weeks time. The patient was discharged from hospital after eight weeks of IV antibiotics. Treatment with oral Ampicillin/ Clavulanic acid (375 mgr TDS) was continued for another six weeks.

DISCUSSION

Although spinal epidural abscess after epidural catheterisation is uncommon, it is a well-recognised complication. Vertebral osteomyelitis and septic discitis after the use of an epidural catheter have been reported in the literature (1,2,5,7,8,9,10).

Risk factors for epidural abscess formation after catheter insertion according to Kinder *et al* are the insertion site and the duration of the catheterization (4). However the site of epidural puncture was not mentioned in their cases of vertebral osteomyelitis. Immune deficiency states such as AIDS, malignancy, alcohol abuse, diabetes mellitus and steroids use may be implicated (2,5,8). In the previous reported cases, some degree of immune compromise was present (2,5,8,10). Our patient had had diabetes for fifteen years.

The clinical manifestation may be non-specific and diagnosis of spondylodiscitis after epidural catheterisation may be difficult. However when severe back pain occurs associated with systemic signs of infection, the diagnosis should be suspected and thorough investigation is indicated. Back pain is the major clinical sign (2,5,8). Early laboratory findings include leukocytosis followed by elevated ESR and CRP levels. Epidural and psoas abscess formation may complicate pyogenic spondylodiscitis (3,8). The development of sepsis or a neurological deficit may indicate an epidural abscess formation and must be investigated without delay (3,8).

Initial plain radiographs may reveal no abnormality (3). MRI is the investigation of choice because of its superior sensitivity and morphological imaging (6). MRI enhanced by Gadolinium is more sensitive and accurate than radionuclide bone scan particularly in the early stages of the disease (2).

Pseudomonas aeruginosa was isolated in the majority of the reported cases of SEA, when pyogenic spondylodiscitis coexisted (1,2,3,5,8). In that case prior genitourinary system surgery has been reported (1,2). In contrary, when SEA, following catheterization, is the only clinical manifestation, Gram-positive *Staphylococcus aureus* is the most common causative agent.

In our case the posterior bony elements and the posterior epidural space were not involved: the potential source of the infection may have been a haematogenous spread originating from the urinary tract and the epidural catheter may not have caused the spondylodiscitis by direct contamination. Haematoma formation or local tissue inflammation caused by the epidural catheter may however have constituted a predisposing factor for spinal infection.

Once a diagnosis is obtained and the responsible infecting micro-organism has been isolated treatment consists of intravenous antibiotics followed by oral antibiotics and immobilisation. Surgical treatment is indicated in the presence of an epidural abscess or kyphotic deformity. Percutaneous CT-guided drainage is indicated for iliopsoas abscess (3).

REFERENCES

1. **Chevalier X, Lavarde C, Claudepierre P, Larget-Piet B.** Iatrogenically induced vertebral osteomyelitis due to *Pseudomonas aeruginosa*. *Clin Exp Rheumatol* 1996 ; 14 : 191-194.
2. **Coapes CM, Roysam GS.** Vertebral osteomyelitis secondary to epidural catheter use. A case report. *Spine* 2001 ; 26 : 1492-1494.
3. **Hadjipavlou AG, Bergquist SC, Chen JW et al.** Vertebral osteomyelitis. *Current Treatment Options in Infectious Diseases* 2000 ; 2 : 226-237.
4. **Kindler CH, Seeberger MD, Staender SE.** Epidural abscess complicating epidural anesthesia and analgesia. An analysis of the literature. *Acta Anaesthesiol Scand* 1998 ; 42 : 614-620.
5. **Kruger M, Harries K, Dumont S.** Osteomyelitis following epidural analgesia in a immunocompromised patient. *Anaesthesia* 1998 ; 53 : 314-315.
6. **Kuker W, Mull M, Mayfrank L et al.** Epidural spinal infection. Variability of clinical and Magnetic Resonance Imaging findings. *Spine* 1997 ; 22 : 544-551.

7. **Parkinson JF, Sekhon LS.** Spinal epidural abscess : appearance on magnetic resonance imaging as a guide to surgical management. Report of five cases. *Neurosurg Focus* 2004 ; 17 : E 12.
8. **Pinczower GR, Gyorge A.** Vertebral osteomyelitis as a cause of back pain after epidural anesthesia. *Anesthesiology* 1996 ; 84 : 215-217.
9. **Reihsaus E, Waldbaur H, Seeling W.** Spinal epidural abscess : a meta-analysis of 915 patients. *Neurosurg Rev* 2000 ; 23 : 175-205.
10. **Wenningsted-Torgard K, Heyn J, Willumsen L.** Spondylitis following epidural morphine. A case report. *Acta Anaesth Scand* 1982 ; 26 : 649-651.