Epidural abscess complicating insertion of epidural catheters

Editor—We read with interest the case reports on epidural abscesses by Phillips and colleagues as well as the related correspondence from Hearn. In total, 6143 epidurals have been performed in the University Hospitals of Leicester between February 1994 and August 2001. During this period there have been six epidural abscesses reported from two hospitals in the trust. This is an incidence of 0.1%, which is very close to the incidence reported by Phillips of 0.125%. The incidence reported elsewhere varies between 0.01% and 0.05%, but our results suggest a significantly higher rate.

One patient was a 57-yr-old male who was admitted for an Ivor Lewis oesophagectomy for adenocarcinoma of the gastro-oesophageal junction. His past medical history included bronchiectasis. He was admitted 5 days before surgery for optimization with bronchodilators and regular physiotherapy. Surgery was performed under general anaesthesia with an epidural sited at T7/8, requiring multiple insertion attempts. The patient was ventilated overnight and the trachea was extubated the following day.

As the epidural failed, it was re-sited at T8/9 in ITU, and again the next day at T11/12. The patient was comfortable after the third epidural and was transferred back to ward care on the fifth postoperative day. On the ward the patient deteriorated, however, and was transferred back to the ITU with sepsis and a chest infection. He was commenced on intravenous antibiotic therapy. Artificial ventilation was not required. On day nine, the epidural was removed and the patient started on PCA morphine, since the epidural site had become indurated with pus oozing out of the site.

An MRI was performed on the 10th day when the patient developed reduced sensation and numbness below the knees. The MRI did not suggest an epidural abscess or haematoma. A neurological opinion was sought and a repeat MRI showed no evidence of cord compression or need for surgical decompression. A sinogram on day 16 showed contrast entering the epidural space through the tract. Worsening neurological symptoms led to surgical exploration on day 19 with decompression of T10-L1. MRSA was cultured from the collection in the epidural space. Subsequently the patient has permanent motor and sensory loss below T11.

In a second case, a 35-yr-old female was admitted to hospital for pancreatectomy, cholecystectomy and islet cell transplant, secondary to alcohol intake and gallstones. Because surgery was delayed because of the lack of ITU beds, she insisted on remaining as an in-patient for several weeks before operation.

Surgery was performed under general anaesthesia with an epidural inserted at T8/9. There was no difficulty in insertion. The epidural catheter was tunneled subcutaneously away from the insertion site. The patient was ventilated overnight and remained in ITU for 6 days. Her epidural was then removed before returning to the ward.

On day 8, she developed a swinging pyrexia, photophobia, neck stiffness, and back pain. A CT scan of her head and a lumbar puncture led to the diagnosis of viral meningitis. On the ninth day after surgery, a tender area without erythema or a palpable mass was noted at the site of epidural insertion.

On day 12, she developed back pain and numbness in the right leg. A lump developed at the epidural site. An MRI scan performed on day 13 showed abscess formation at T4/5. Surgical decompression was performed. MRSA was cultured from the epidural space. The patient left hospital walking independently without any sensory defect but continues to have residual back pain.

In these cases there was a recognizable delay in recognition and intervention in one patient, which may have contributed to the adverse outcome. The first case was admitted 5 days preoperatively for optimization of his lung condition. The second case stayed as an in-patient for several weeks before surgery at her insistence, pending the availability of an ITU bed. In our view, the preoperative stay on the ward could have predisposed these patients to the subsequent development of MRSA infection.

Reviewing the documentation of both these cases revealed that the epidural site was not recorded on several occasions despite a protocol requiring this to be done regularly. It was apparent that communication between the multi-disciplinary teams in review and follow-up of these patients had proven difficult. This led to the development of new guidelines for insertion and management of epidural catheters at the University Hospitals of Leicester.

Adequate time must be allowed for evaporation of skin preparation fluid: 2 min as per manufacturer’s recommendations. The duration that an epidural catheter remains in situ must be based on clinical judgement and evaluation of the relative risks of the procedure and the potential benefit for the individual patient. The number of attempts to site an epidural needs to be minimized. The epidural site should be covered with a clear occlusive dressing at the time of insertion to facilitate daily review. The multi-disciplinary team must maintain a high index of suspicion for this complication when caring for patients with epidural catheters. Additionally, there should be a low threshold for MRI scanning in patients where there is any suspicion of serious epidural complications. This will enable prompt diagnosis and treatment with reduced likelihood of permanent neurological sequelae.

We agree with Hearn that a national database should be developed to gather information regarding major adverse events related to insertion of epidural catheters. We suggest that epidural abscesses are more common than previously believed. We highlight the concern that MRSA nosocomial infection of the epidural space may be related to infection being acquired during a prolonged preoperative stay in hospital, possibly associated with difficulty in scheduling surgery.

C. Gosavi
D. Bland
R. Poddar
C. Horst
Leicester, UK

Editor—Thank you for the opportunity to reply to this letter. We are pleased to see the publication of a further series of epidural abscesses and note with interest that the observed incidence of 0.1% was similar to that seen in our report.

These latest case reports raise some important issues. Both developed epidural abscesses attributable to MRSA. In addition, they were both in-patients for several days before epidural insertion. We share concern with Gosavi and colleagues as to what extent preoperative colonization with MRSA might have contributed to the subsequent development of the epidural abscesses. Both case reports certainly further emphasize the point that extreme care with infection control must occur whenever epidurals are considered. Strict asepsis must be observed at the

© The Board of Management and Trustees of the British Journal of Anaesthesia 2004
time of insertion and care to prevent infection must also be observed during the time that the epidural catheter is in situ. In addition, with the increasing prevalence of MRSA in hospital, prevention of infection and/or colonization should also be considered in the preoperative period.

We agree with the authors that daily inspection of the epidural site is essential. In our hospital, in addition to observing the condition of the epidural site, we also insist that this information is recorded daily on the epidural observation sheet and any signs of redness, swelling, infection or tenderness trigger a call to the Acute Pain Team.

Since the publication of our report, we have had two further cases of epidural abscess. In one of these cases, the epidural catheter remained in situ for 10 days. We have now issued recommendations that epidural catheters should normally be removed by day four, and that the tip of any catheter removed after day four should be sent for culture. Any positive results are returned by microbiology for review by the Acute Pain Team. The indications for a catheter to be retained for 7 days or more must be reviewed by the anaesthetist who inserted it. If that anaesthetist is unavailable or was a trainee or staff grade, the on-call consultant anaesthetist must be approached. In either case, the balance of risk for continuing must be discussed with the patient and recorded in the medical notes.

This first case report from Gosavi and colleagues emphasizes the importance of this latter point. The patient, with a past history of bronchiectasis, had been admitted preoperatively for optimization of his chest condition before major surgery. Great efforts were made to establish perioperative epidural analgesia to try to prevent postoperative chest infection. At this point, the risk/benefit equation appeared to be very much in favour of benefit. Unfortunately, epidurals were difficult to perform in this patient and, for 2 days, one assumes, analgesia may have been inadequate, resulting in a chest infection. The epidural was retained at this time, presumably with the intention of aiding physiotherapy and clearance of secretions, but also at risk of developing epidural infection because of retention of an indwelling catheter in the presence of sepsis. The risk/benefit equation had shifted to a less favourable position. It would be interesting to know if this patient’s chest infection was also attributable to MRSA.

C. J. Roberts  
Gloucester, UK


DOI: 10.1093/bja/aeh517