Postoperative Central Nervous System Infection after Neurosurgical Procedures: The Bride Is Too Beautiful

To the Editor—In one of the largest neurosurgical studies to have investigated postoperative CNS infection, McClelland and Hall [1] reported an impressively low incidence of infection (<1%), which was >6 times lower than that reported in recent studies of comparable numerical size [2, 3]. However, their articles raises 2 important questions that they did not address in the discussion. First, in their study, all operations were elective. Because an emergency surgical procedure is an acknowledged risk factor for postoperative infection after various surgical procedures [4], including neurosurgical procedures [3], it is not surprising that the rate of postoperative CNS infection after elective surgery is lower than that reported in previous studies, which included emergency as well as elective procedures. Second, the article does not indicate whether the patients who underwent surgery during the study period underwent any systematic follow-up, and it does not indicate whether any attempts were made to ensure that no complications occurred once the patients were discharged. However, a substantial proportion of postoperative infections are diagnosed after discharge from the hospital [5]; this raises the possibility that some postoperative CNS infections occurred but remained unknown to the investigators in this study. Thus, the authors may have underestimated the true incidence of postoperative CNS infection.

Of course, these limitations do not attenuate the high value of this article, which adds important data on the characteristics of postoperative CNS infection after different types of neurosurgical procedures, identifies some risk factors, and describes the most common offending organisms. However, the authors’ conclusion that the true incidence of postoperative CNS infection after neurosurgical procedures may be greatly overestimated in the literature is somewhat excessive.

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Reply to Tattevin et al.

To the Editor—The letter by Tattevin et al. [1] raises 2 insightful points that pertain to our recent study examining the incidence of infection and associated factors among 2111 consecutive patients who had undergone neurosurgical operations [2]. All surgical procedures were elective; however, not all would be considered to be “clean.” The transphenoidal resection of pituitary lesions is considered to be a clean-contaminated event, although extensive surgical scrub is performed before the start of the event. The enhanced vascularity of the nasal region is probably responsible for the low rate of infection seen for these events. The authors are correct in stating that the follow-up for these patients is not described in the discussion, although such follow-up did take place. All patients were observed 4–6 weeks after surgery for a routine postoperative evaluation. Because many of the patients had brain tumors and were receiving postoperative adjuvant therapy, they were seen at 8-week intervals if they were receiving chemotherapy; if they had stable, benign tumors, they were evaluated at 3-, 6-, or 12-month intervals. We did not detect an increased incidence of delayed postoperative infection among our patients, although the authors’ point is well taken, particularly with regard to those patients in whom indwelling devices, such as CSF shunts, were implanted. The authors are justified in stating that our conclusion that the infections were overestimated in the past may be a bit overzealous, such that the true incidence is most likely somewhere in the middle between our results and the previously reported results [3, 4] mentioned by Tattevin et al. [1].

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References

Acute Pyelonephritis: Management Steps That Remain Unresolved

To the Editor—We read with great interest the recent article by Czaja et al. [1], an analysis of a large database of patients with acute pyelonephritis from Seattle, Washington. Although the scale of the project was impressive, we found its clinical utility somewhat limited. The data were obtained 5 years ago (2001), lessening their applicability to current therapy and antimicrobial resistance patterns. In addition, as emphasized in the accompanying editorial [2], resistance data were largely confined to the outpatient setting, because only 40% of inpatient cases were culture confirmed. Whether prior antibiotic therapy was responsible for this low rate is unknown, because data about antibiotic use were not available for inpatients.

Two additional management issues, which remain unresolved in the literature but could have been further addressed by the study of Czaja et al. [1], include the role of blood cultures and renal-tract imaging of adults with acute pyelonephritis. As a consequence of tightening health care resources and the pressures for improved efficiency in many countries, the role of these management issues is escalating. Despite the uncertainty reported in the literature [3–5], national guidelines recommend renal-tract imaging for patients with acute pyelonephritis, to exclude the presence of upper-tract obstruction [6]. To further define these issues, we performed a retrospective review of all patients admitted to the Infectious Diseases Unit at the Alfred Hospital, Melbourne, Australia, between January 2002 and March 2004. Patients were identified as described by Czaja et al. [1]. Seventy-four patients were included, of whom 92% were female, and the median age was 28 years (range, 17–75 years). Complicated pyelonephritis (defined as having ≥1 of the following characteristics: known structural or neurological abnormality of the urinary tract, instrumentation of the urinary tract in the previous month, previous urinary tract infection, male sex, pregnancy, and the presence of a comorbid condition) occurred in 45% of patients. The most common causative organism was Escherichia coli (69%), followed by Staphylococcus saprophyticus (5%) and other gram-negative rods (4%). Urine cultures yielded negative results or contained fecal contaminants in 16 patients (22%), with 11 (69%) of these having antibiotic exposure within 48 h of culture. Antimicrobial resistance patterns were similar to those described by Czaja et al. [1], with 45%, 29%, and 4% of E. coli strains being resistant to ampicillin, trimethoprim, and norfloxacin, respectively.

All patients had a blood culture performed; only 6 cultures (8%) yielded positive results (all for E. coli). All patients with positive blood culture results had concordant positive urine culture results, except 1 patient who had prior antibiotic exposure within 48 h of urine culture. The result caused no change in antibiotic therapy. Eighty-seven percent of patients underwent some type of imaging: 58% underwent renal ultrasound, 39% underwent abdominal CT, and 15% underwent abdominal radiography. A total of 26 patients (40%) had an abnormal imaging finding; however, 17 (26%) of these showed changes consistent with pyelonephritis only. Eight (12%) showed anatomical abnormalities of the urinary tract, which may have predisposed the patients to infection, and 1 (1.5%) showed an obstruction at the pelvic-ureteric junction that required acute intervention. Of the 6 male patients, 5 had normal imaging findings, and 1 had changes consistent with pyelonephritis. Renal-tract imaging was less likely to change management or to show a predisposing condition in patients with uncomplicated pyelonephritis (OR, 0.21; 95% CI, 0.03–1.3; P = .06).

These data suggest that blood cultures may have limited clinical utility in the management of acute pyelonephritis and that renal-tract imaging, at least in our institution and especially for patients with uncomplicated pyelonephritis, may be overutilized. Given the size of the database analyzed by Czaja et al. [1], it would be instructive if these questions could be addressed, to optimize investigations in patients with this common infectious disease.

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