Spinal epidural abscess as a complication of *Staphylococcus aureus* bacteremia

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Epidural abscess is a rare but important suppurative infection of the central nervous system (CNS). Prompt diagnosis and proper treatment can avert complications and achieve cure in many cases.

Here we present a case with *Staphylococcus aureus* bacteremia complicated by meningitis and spinal abscess.

Case

A 6 month old child presented with a one month history of fever and discomfort. He had been with oral antibiotics with no improvement. A week ago, a transient maculopapular rash developed and during the last 2 days he had dizziness. His past medical history revealed otitis media and bronchiolitis, both twice. On admission he was lethargic, pallor and tachypnea were noted. Lung sounds and heart sounds were normal; no hepatosplenomegaly was detected. Meningitis was suspected and lumbar puncture was performed revealing 850 leukocytes (90% neutrophils), protein 2 g/l, and glucose 5 mmol/l in cerebrospinal fluid (CSF) examination. Blood tests showed hypochromic microcytic anemia, CRP 24 mg/dl, procalcitonin 1,7 ng/ml, Na 132 mmol/L, phosphorus 4 mg/dl. Vancomycin and ceftriaxone were initiated with a diagnosis of acute bacterial meningitis. Fever resolved on the second day. *Staphylococcus aureus* was isolated from both blood and CSF cultures. Ceftriaxone was stopped and rifampicin was added to vancomycin.

Since he had mild weakness on right hand magnetic resonance imaging (MRI) of brain and spinal cord were ordered revealing extensive epidural abscess at cervical, thoracic, and lumbosacral spinal regions (Figure 1,2). Dermal sinus tract or granulomatous otitis were not identified as predisposing factors. Blood samples from the father and the patient were studied for dihydrorhodamine 123 (DHR) test but were not compatible for chronic granulomatous disease (CGD). Serum immunoglobulins and lymphocyte subset analysis were normal His motor deficit improved after surgical decompression. Antibiotics were modified as ampicillin-sulbactam since the isolate was found to be methicillin susceptible (MSSA) and continued for 6 weeks. Repeat MRI revealed significant regression of abscesses (Figure 3). On follow up visits at 2, 4, 8, 12 weeks, his neurological examination was normal except borderline microcephaly.

Figure 1. Epidural abscess on lumbar spinal MR

Figure 2. Abscess formation on cervical region

Figure 3. Regression of spinal abscesses at one month of treatment

Discussion

Although spinal epidural abscess (SEA) is an uncommon disease, there is evidence that the incidence may have increased over the last several decades. Epidural catheter placement is an important risk factor for SEA. Other possible risk factors for SEA include diabetes mellitus, trauma, contiguous bony or soft tissue infection, and bacteremia, secondary to distant infections. The leading bacterial pathogen causing SEA is *S. aureus*, which accounts for about two-thirds of cases caused by pyogenic bacteria (2). Less common causes include gram-negative bacilli (GNB), coagulase-negative staphylococci, streptococci, and anaerobes.

The initial manifestations of SEA can be nonspecific, such as fever and malaise. The classical diagnostic triad consists of fever, spinal pain, and neurologic deficits. However, only a few patients have all three components at presentation. The two principles of optimal therapy are to minimize size; ultimately eliminate the inflammatory mass and eradicate the causative organism. Combination therapy by aspiration, drainage, and antibiotic therapy are necessary. The empiric antibiotic regimen should have activity against staphylococci, streptococci, and GNB. The usual duration of therapy is four to eight weeks. The first follow-up MRI is obtained at about four to six weeks if the patient is improving or at any time if clinical deterioration occurs.

References

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