Enterococcal Meningoencephalitis Following Epidural Anesthesia

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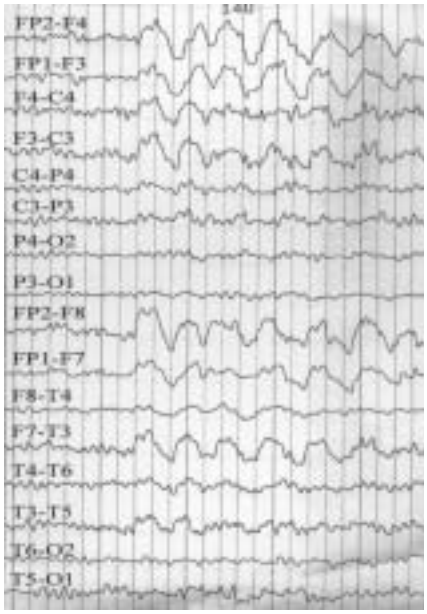
Bacterial meningitis following regional anesthesia is remarkably rare. Enterococcci have very rarely been incriminated in its pathogenesis. We report a 60 year old man with enterococcal meningoencephalitis following epidural anesthesia, definitively diagnosed after 45 days. This was due to the combination of an atypical clinical course and partial antibiotic treatment.

Patient Description

A 60 year old man had a severe occipital headache that prompted his admission to the Department of Neurology at the Meir General Hospital. Four weeks prior to admission he underwent right knee arthroscopy under routine uncomplicated epidural anesthesia in a private clinic. Twenty-four hours later he was admitted to the Department of Medicine at the Meir Hospital with headache, confusion and distorted speech. The physical examination on admission was normal, but mild motor aphasia was noted. During the second hospital day the headache and language disorder subsided, but body temperature rose to 38.6°C. The neck was supple and no source for infection was found on repeated physical examinations. Initial blood and urine cultures were reported sterile, and brain computed tomography without contrast enhancement was normal. A provisional diagnosis of urinary tract infection was considered and treated with intravenous amoxycillin-clavulanic acid (Augmentin®) 3 g per day for 5 days. After his discharge and for the following 3 weeks he had neither fever nor headache, but felt some difficulty with concentration.

At the present admission he was afebrile and the physical and neurologic examinations were unremarkable. Complete blood count, serum routine biochemistry and urinalysis were normal. He remained afebrile, with no signs of meningeal irritation, but with persistent headache. A repeated brain CT with contrast enhancement revealed no abnormalities. A lumbar puncture performed on the 5th hospital day disclosed crystal clear cerebrospinal fluid, under normal opening pressure. There were 120 white blood cells/mm^3 (mononuclear 84%) with normal glucose and 79 mg/dl protein. These results were considered as indicative of aseptic meningitis. On the 7th hospital day body temperature rose to 38.6°C. Fever workup revealed no source for infection outside the central nervous system, and no evidence for other inflammatory or neoplastic conditions. Spiky high fever and chills appeared and persisted during the following days. Serologic tests for herpes simplex virus 1, Epstein-Barr virus, cytomegalovirus, human immunodeficiency virus, West-Nile virus, *Mycoplasma pneumonia*, *Chlamydia psittaci*, *Chlamydia trachomatis*, Brucella sp., Rickettsia sp., *Bartonella henselae*, *Leptospira interrogans* and *Toxoplasma gondii* were all negative. As the immunoglobulin M and A titers for *C. pneumonia* were abnormally high, doxycycline (Doxylin®) 200 mg per day was initiated and continued for 9 days, with no apparent effect on the clinical course. Electroencephalogram performed for gradual sleepiness showed frontal intermittent delta activity [Figure]. A repeat lumbar puncture on the 18th hospital day disclosed somewhat turbid CSF under normal opening pressure. The WBC count was 1,040/mm^3 of which 91% were mononuclear cells. The protein was 161 mg/dl and glucose 24 mg/dl. CSF culture grew *Enterococcus faecalis* while concomitant blood and urine cultures were sterile.



The tracing is moderately abnormal showing high voltage synchronous bifrontal intermittent repetitive delta activity (FIRDA).

Intravenous combination therapy with ampicillin (12 g/day) and gentamicin (240 mg/day) was given for 21 days as the isolated *E. faecalis* was sensitive to ampicillin, gentamicin and vancomycin. Fever and headache resolved, the EEG returned to normal and there was no residual neurologic deficit. Transesophageal echocardiogram and gallium body scan were normal. Repeated CSF examination on the 8th day of treatment showed 52 mononuclear WBC, 126 mg/dl protein and normal glucose. The culture was sterile. Long-term follow-up revealed no neurologic sequelae.

CSF = cerebrospinal fluid
WBC = white blood cells

EEG = electroencephalogram

Comment

Our patient underwent epidural anesthesia for arthroscopy one day before his first admission to the hospital for severe headache. We believe that procedure was the port of entry for his enterococcal CNS infection, diagnosed definitively 45 days later.

Bacterial meningitis as a complication of regional anesthesia is very rare [1,2]. A recent review of the literature for iatrogenic meningitis disclosed 59 cases following invasive spinal procedures, of which 27 were associated with spinal anesthesia and 4 with epidural anesthesia [1]. The latency from the procedure to the appearance of symptoms ranged from 8 hours to 30 days (median 23.5 hours). Streptococci, especially of the viridans group, were found to be the most common pathogens [1].

Enterococci have recently emerged as significant human pathogens. They are usually associated with urinary tract, wound and blood infections, following instrumentation or intravascular catheter contamination. However, enterococci have only rarely been associated with CNS infections [3]. In a survey of 493 episodes of bacterial meningitis in adults, diagnosed at Massachusetts General Hospital from 1962 through 1988, only 4 patients (0.8%) were found to have enterococcal meningitis [4]. In several reported series of bacterial meningitis over the years, enterococcal meningitis accounted for 0.3–4% of all cases [3].

Enterococcal meningitis tends to occur in patients with chronic medical conditions, and is often associated with the use of immunosuppressive therapy. CNS trauma, neurosurgical procedures and gastrointestinal disorders were also implicated as associated conditions [3]. None of these predisposing factors was present in our patient. Enterococcal meningitis following regional anesthesia has been previously documented in only three cases – one was associated with spinal anesthesia for inguinal hernia repair [5] and the other two were related to epidural catheterization [3].

The appearance of drowsiness and the synchronous bifrontal intermittent repetitive delta activity (FIRDA) pattern in EEG later in the course of our patient's disease suggested the diagnosis of meningoencephalitis, however regional anesthesia-associated meningoencephalitis has not yet been described. Although the typical clinical presentation of iatrogenic meningitis is that of acute bacterial meningitis, the atypical prolonged course in the present case may be responsible for the progression from meningitis to meningoencephalitis. The initial antibiotic treatment given for suspected urinary tract infection might have contributed to the protracted course. This case emphasizes the need for prolonged therapy in cases of enterococcal meningitis and the high index of suspicion required for this diagnosis. Similar but less extreme examples of a prolonged and relapsing course due to insufficient antibiotic therapy have been documented [3].

CNS = central nervous system

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