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Staphylococcus Aureus Meningitis in a Post Splenectomy Patient

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Patients who have undergone a splenectomy are recognized to be at higher risk for fulminant sepsis, especially with encapsulated organisms¹. Fulminant Staphylococcal infection is not characteristically associated with the late post splenectomy state. The patient described here presented with *S. aureus* meningitis ten years after splenectomy.

Case Report

A 49-year-old male was admitted with a seven day history of backache and intermittent high-grade fever. Eight hours prior to presentation, the patient developed altered mentation with irritability and restlessness. He had a past history of abdominal trauma related splenectomy ten years ago and had remained asymptomatic thereafter. Physical examination revealed a temperature of 38°C, blood pressure of 120/60mmHg, pulse of 140/min respiratory rate of 40/rn in, and oxygen saturation of 93%. He was jaundiced and chest auscultation showed coarse crepitations in the right mid and lower zones. The patient was very restless and disoriented but was moving all 4 extremities. His pupils were dilated, sluggishly reactive to light and fundoscopy showed papilloedema. Neck rigidity was not obvious but kernig's sign was positive.

Laboratory studies revealed Hemoglobin, 11 . gm/dl; white blood cells count (WBC), 50,100/mm³ (with 90% polymorphonuclear leukocytes); platelets. 87,000/mm³; blood urea nitrogen, 96 mg/dl; creatinine 5.6 mg/dl; total bilirubin, 5.4 mg/dl (direct bilirubin 3.7 mg/dl); prothrombin time, 19.4 sec (INR, 2.48); D-Dimer, 2.0; Random blood sugar, 16 mg/dl. Arterial Blood Gases showed compensated metabolic acidosis. Examination of the cerebrospinal fluid (CSF) showed WBC, 49,500/mm³ (with 90% polymorphonuclear leukocytes); proteins 1,576mg/dl; glucose, 2 mg/dl; Red blood cells, 10,800/mm³. Latex agglutination tests for *S. pneumoniae*, *H. influenzae* and *N. meningitidis* were negative on the CSF. Gram stain showed gram positive cocci. Later CSF as well as blood cultures were positive for *Staphylococcus aureus*. Lumbo-sacral spine x-rays, C.T scan of brain and ultrasound of abdomen were all normal. The patient was started on intravenous cloxacillin, ceftriaxone and benzyl penicillin. He was electively intubated but expired within 10 hours of hospitalization.

Discussion

Post-splenectomy infections are primarily associated with encapsulated bacteria like *S. pneumoniae*, *H. influenzae* and *N. meningitidis*. The majority of infections are due to *S. pneumoniae* (50-60% in most series) and carry a mortality rate of upto 60%^{2,3}. Infections with *Escherichia coli* and *Pseudomonas aeruginosa* are also associated with high mortality, though much less common⁴. Other infections associated with the post-splenectomy patient are malaria⁵ babesiosis⁶ and *Capnocytophaga canimorsus*, originally called *Dysgonic fermenter 2 (DF2)*. In the asplenic patient, the latter has been associated with severe sepsis, frequently after trivial bites and scratches by dogs^{7,8}. A search of the literature failed to reveal any reports of post splenectomy fulminant meningitis and sepsis secondary to *S. aureus*. The patient described presented with sepsis and multi-organ dysfunction due to *S. aureus* infection a severely advanced disease state possibly contributed to by the absence of splenic function. It is well known that *S. aureus* is a frequent cause of bacteremia with resulting metastatic infections at sites distant from the primary site of infection. Staphylococcal bacteremia can result from blood-stream invasion via catheter sites or minor skin lesions leading to the infections of lungs, heart, Central Nervous System, bones, joints and muscles^{9,10}. Community acquired *S. aureus* bacteraemia is a much

more serious infection than hospital-acquired infection. Staphylococcal aureus meningitis itself is a rare disease accounting for only 1-9% of all bacterial meningitis¹¹. It is usually seen either in the post-operative period (following neurosurgical interventions) or following hematogenous spread from a distant focus. The latter, which carries a higher mortality, is mainly associated with infective endocarditis and osteomyelitis. Though the primary route of entry is the skin but in the majority of cases the initial focus remains unknown.

The primary focus of infection in the patient presented could have been a vertebral osteomyelitis, too early to reveal changes on plain radiographs. To our knowledge there hasn't previously been any association between S. aureus sepsis (meningitis) and the post splenectomy state.

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