

Demonstration of Chronic Staphylococcus Bacteremia in a Patient with a History of Multiple Cerebrospinal Fluid Shunt Implantation : A Biofilm related?

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一位接受多次腦脊髓液分流管術後患者遭遇反覆金黃色葡萄球菌菌血症感染與生物膜的關係
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Background

Cerebrospinal fluid (CSF) shunt infections are a serious complication in the treatment of hydrocephalus. These infections are commonly caused by *Staphylococcus*. Diagnosis and therapy of such infections are complicated by the formation of bacterial biofilms attached to shunt surfaces. Here we presented a case found persisted bacteremia and his ventriculo-atrial (V-A) shunt contamination was impressed. After shunt revision , bacteremia can not be detected.

Case Presentation

This 22-year-old male has had hydrocephalus since 3-month-old and received right V-P shunt insertion then. He was well until August, 2011 and suffered from right V-P shunt broken and acute hydrocephalus. We performed right ventriculo-pleural shunt insertion due to severe abdominal adhesion. Wound infection and meningitis were found in September,2011 , so right ventriculo-pleural shunt was removed and left V-A shunt was inserted later.

In March, 2012, fever and blood culture revealed *Staphylococcus epidermidis* infection. Antibiotics were administered and fever subsided. Repeated blood culture revealed same bacteremia in spite of continuous antibiotics use in the following 3 months. Under the impression of left V-A shunt bacteria biofilm formation resulted in recurrent bacteremia, we removed left V-A shunt and implant right V-A shunt one week later. After this operation ,no fever and bacteremia were noted again.

Discussion

The most common organisms responsible for central nervous system catheter infections, *Staphylococcus epidermidis* and *Staphylococcus aureus*, are both known to form biofilms . Biofilms are organized communities of bacteria that attach and aggregate on the catheter surface. Within biofilms , bacteria can survive in a protected environment, evading the host immune response and antimicrobial agents, presumably by a bacterially derived extracellular matrix and other immunomodulatory factors .It is difficult to manage central nervous system catheter infections nonsurgically, such that catheter removal is currently recommended for effective treatment .

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