Ventriculoperitoneal shunt infection (VPS)

see also shunt infection.

Ventriculoperitoneal shunt infection is the most common ventriculoperitoneal shunt complication, followed by abdominal pseudocyst, abscess, and infected fluid collection 1).

Epidemiology

see Ventriculoperitoneal Shunt Infection Epidemiology.

see Methicillin resistant Staphylococcus aureus ventriculoperitoneal shunt infection.

see Staphylococcus epidermidis ventriculoperitoneal shunt infection

see Cryptococcus neoformans ventriculoperitoneal shunt infection.

Risk factors

Ventriculoperitoneal shunt infection risk factors.

Treatment

Ventriculoperitoneal shunt infection treatment

Outcome

Infection of ventriculoperitoneal shunt causes major morbidity and mortality in patients with cerebrospinal fluid shunts.

The prognosis of CSF shunt infections caused by Gram-negative bacteria (GNB) has been thought to be particularly poor.

Stamos et al. reviewed all GNB shunt infections treated at Children's Memorial Hospital from January 1986 to January 1990 (n = 23). Of these infections 20 (87%) occurred within 4 weeks after shunt revision (median, 10 days). The most frequent symptoms were fever, lethargy, and irritability; the illness was not severe in the majority of these patients.

Escherichia coli was isolated from 12 of 23 patients (52%), Klebsiella pneumoniae from 5 (22%), and mixed GNB from 3 (13%) patients. Initial treatment always included immediate shunt removal, externalized ventricular drainage, and intravenous antibiotics. Extraventricular drainage revision and/or intraventricular antibiotics were required in four patients whose CSF cultures were persistently positive for GNB. At admission, these patients had CSF glucose levels of < 10 mg/dl and CSF positive for GNB by Gram's stain. The overall cure rate was 100%, and no recurrence was observed; however, a subsequent infection with a different organism developed in four patients. Only 2 of 19 patients (11%) who were followed up suffered apparent CNS damage. One patient died of unrelated causes shortly after treatment. Our findings indicate that 1) patients with GNB CSF shunt infections often appear relatively well at presentation; 2) CSF positive for GNB by Gram's stain and very low CSF
glucose levels predict continued positive CSF cultures, despite appropriate antibiotic therapy; and 3) GNB CSF shunt infections can be successfully treated by prompt shunt removal, extraventricular drainage, and intravenous antibiotics 2).

**Case series**

**Ventriculoperitoneal shunt infection case series.**

**Case reports**

**2016**

Fungal infection following placement of ventriculostomy or ventriculoperitoneal shunt is uncommon. Dadwal et al., report the first case of Alternaria related central nervous system (CNS) shunt infection in a patient with CNS ependymoma manifesting as leptomeningitis and a spinal intradural mass. This case illustrates the diagnostic and management challenges 3).

**2009**

A 6-year-old female presented with a large staphylococcal abdominal abscess manifesting as abdominal distension without significant clinical signs or blood and cerebrospinal fluid findings of infection. The patient had undergone repeated surgeries for craniopharyngioma at 2 years of age and had suffered central pontine and extrapontine myelinolysis during the clinical course, had severely impaired hypothalamic function, and was in a vegetative state on presentation. In addition, she had previously suffered epidural, subdural, and cerebral parenchymal abscesses, which had resolved completely. She underwent percutaneous irrigation drainage of pus and removal of the shunt coupled with intense antibiotic administration, which cured the abscess without recurrence. Culture revealed methicillin-resistant Staphylococcus aureus.

Preexisting intracranial infection, which had extended down into the abdominal cavity through the peritoneal tube of the shunt, coupled with the patient's impaired immune function, had probably caused the abdominal abscess. Abdominal abscess is a potential complication of ventriculoperitoneal shunting, and timely diagnosis and treatment may achieve a good outcome 4).

**2005**

Phenotypic variants of Staphylococcus aureus may be misidentified by routine microbiological methods, and they may also respond poorly to antibacterial treatment. Using molecular methods, we identified small-colony variants of methicillin-resistant S. aureus (which were misidentified by 3 widely used automated identification systems as methicillin-susceptible coagulase-negative staphylococci) as the cause of recurrent ventriculoperitoneal shunt-related meningitis 5).

3) Dadwal SS, Thompson R, Jandial R, Tegtmeier B, Chen MY. Chronic Leptomeningitis and Spinal
