Ventriculoatrial shunt complications

The Ventriculoatrial shunt is a relatively rare procedure for hydrocephalus.

As reported, several complications of VA shunt include obstructions, malposition, shunt infections, endocarditis, heart failure, tricuspid regurgitation, intra-atrial thrombus, and pulmonary hypertension.

Vascular complications: perforation, thrombophlebitis, pulmonary micro-emboli may cause pulmonary hypertension (incidence ≈ 0.3%) [1].

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Thrombosis

Shunting-associated thrombosis is a potentially life-threatening complication after ventriculoatrial shunt insertion. The overall prevalence of this complication is still controversial because of substantial differences in the numbers found in studies using clinical data and in those analyzing postmortem findings. The etiology of thrombosis may be multifactorial, including shunt catheter itself, contents of cerebrospinal fluid, shunt infection, and genetic disorder. The clinical presentation can vary widely, ranging from asymptomatic to a life-threatening condition. Timely recognition of thromboembolic lesions is critical for treatment. However, early diagnosis and management is still challenging because of a relatively long asymptomatic latency and lack of clear guideline recommendations [2].

Endocarditis

Infective endocarditis (IE) can occur as rare complications of VA shunts, through the introduction of a foreign body close to the tricuspid valve. We report a case of infective endocarditis, that is, in a patient with VA shunt for congenital hydrocephalus. We present the case to highlight the importance of early investigation for IE in patients with fever of unknown origin and shunt in situ, as rapid deterioration can occur and be fatal. We also discuss past experience reported in the literature on the role of cardiothoracic intervention. Prompt diagnosis and early cardiothoracic referral for surgery are crucial, there may only be a narrow window of opportunity for intervention before patients develop fulminant sepsis [3].

Case reports

An 18-year-old man with congenital hydrocephalus who developed pulmonary arterial hypertension (PAH) in the long-term follow-up after a VAS procedure. He presented with progressive exertional dyspnea, stabbing chest pain and acral cyanosis. Echocardiography showed severe PAH and a digitiform mass adhered to the distal catheter. A ventilation/perfusion scan suggested chronic pulmonary embolisms. Anticoagulation with intravenous heparin was started and thrombus resolution

was achieved, but PAH remained. It is necessary to bear in mind complications linked to VAS when treating a patient with this device [4].

A case of VA shunt placement related complication, in which the dislodged distal fragment was retrieved by endovascular techniques. The remaining distal catheter, found to be in the internal jugular vein, was not only repositioned, but also resized for accurate placement in the right atrium [5].

In a case report and literature review, Hung et al discuss a rare case of intramuscular migration of a venous tube 1 year after VA shunt implantation. Hung et al., also report all the possible locations of migration after placement of VA shunt [6].

A rare case of endocarditis with tricuspid regurgitation following a migrated retained calcified shunt tube in the right ventricle of heart 30 years after of VA shunt that was successfully managed [7]

An 18 year old female with history of myelomeningocele and hydrocephalus had her ventriculoperitoneal shunt converted to a VA shunt following development of peritonitis at age 11 years. Seven years later she was admitted with abdominal pain. CT revealed a perihepatic abscess and incidental right lower lobe pulmonary embolus (PE). Further investigation revealed a large right cardiac ventricle thrombus. She underwent open thrombectomy and was anticoagulated. Pathologic evaluation of the thrombus demonstrated focal purulent inflammation without identifiable organisms [8].

1)
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