

A REVIEW ON VENTRICULO-PERITONEAL SHUNT INSERTION COMPLICATIONS IN CENTRAL SARAWAK FROM A HOSPITAL-BASED REGISTRY

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INTRODUCTION

Ventriculo-peritoneal shunting (VPS) involves inserting a device into the cerebral ventricle to divert excess cerebrospinal fluid (CSF) into the peritoneal cavity. This CSF diversion method is the mainstay of treatment in central part of Sarawak for hydrocephalic patients, as endoscopic third ventriculostomy (ETV) is not readily available. With VPS procedures, complications like shunt failure and infections tend to occur.¹ While it is a saving grace to many, when complications arise, it can be detrimental.

OBJECTIVES

To identify the rate and causes of complications from VPS insertion, to reduce the complication rate and further prevent morbidity and mortality.

METHOD

Data were collected prospectively between January 2020 to December 2022 from a hospital-based registry. Patients were then followed for any complication and the longest follow up was 3 years. Aetiologies of hydrocephalus, types of VPS used, and intraoperative CSF sampling results were also reviewed.

FIGURE 1: CAUSES FOR VPS INSERTION/ REVISION

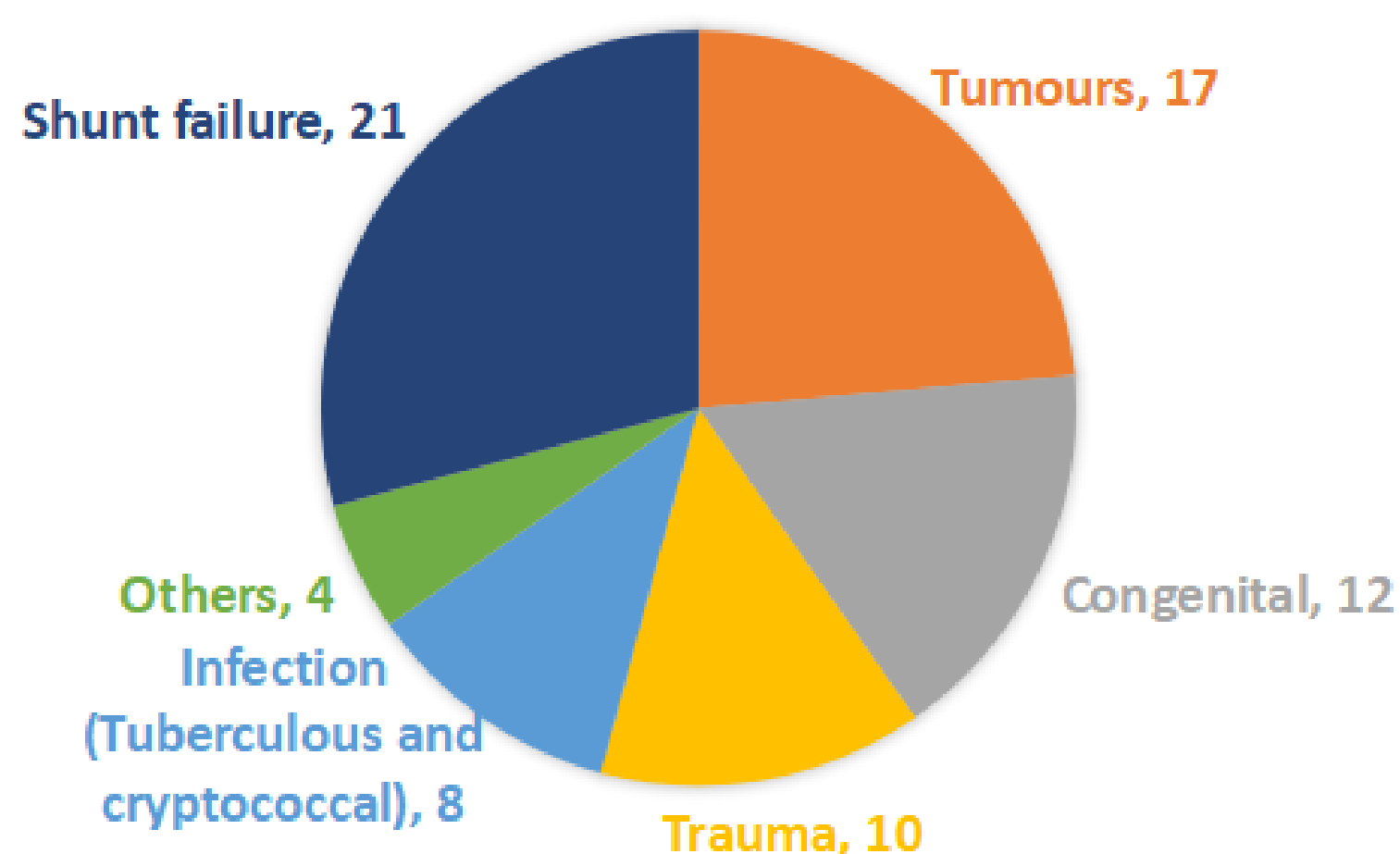


Figure 2 : Trans-anal protrusion of VPS.

In this case, the VPS was removed and Ommaya shunt was inserted. The intraoperative CSF was normal. A new VPS was reinserted after 24 days and to date, the child is doing well.²

RESULTS

A total of 72 shunts were performed throughout the study period. Revision rates were higher among children (67%) versus adults (33%). Malfunctioning/suboptimal VPS was a common cause of failure. Another complication was a child with trans-anal protrusion of the VPS after five months of insertion (Fig. 2).²

Interestingly in 2020, three brand X* programmable shunts were inserted and all malfunctioned, involving one adult and two paediatric patients. The paediatric patients were covered for infection due to high protein levels from intraoperative CSF sample. Only one child had positive CSF culture of *Janibacter sp.* (environmental bacteria with doubtful significance). They subsequently recovered extremely well after revision to brand Z* VPS. The adult patient with malfunctioned brand X* shunt was sent to a tertiary centre for ETV and recovered well too.

In my series, infection rate was 4.1% (3/72); only three paediatric patients were covered for infection for reasons as mentioned above in 2020, and one in 2021 who had CSF glucose level of 0 mmol/L, but negative CSF culture.

DISCUSSION

Complications tend to appear in the first year following VPS insertion, with a higher incidence in children.³ Shunt migration/malfunction was the main contributing factor for shunt revision, followed by infection. Raffa et al reported a reduced infection rate among high risk paediatric group from 34% to 9% with the use of antibiotic-impregnated catheters (AIC);⁴ an idea worth exploring to further reduce VPS infection rates. Unfortunately AICs are costly, but implementing a strict protocol such as administering perioperative antibiotics, optimizing sterile technique, and minimizing operative time have proven to be cost effective as well.⁵

CONCLUSION

Stringent follow-up during the first-year post VPS is vital especially for paediatric group. Caretakers should be educated to identify signs and symptoms suggesting shunt malfunction or infection so that early actions can be taken to prevent detrimental effects, considering that central Sarawak's geographical demographics pose a challenge for some to attain emergency neurosurgical services when issues arise.

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