

The Increased Development of Shunt-Dependent Low-Pressure Hydrocephalus in Isolated, Posterior Fossa Vascular Pathology

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Introduction

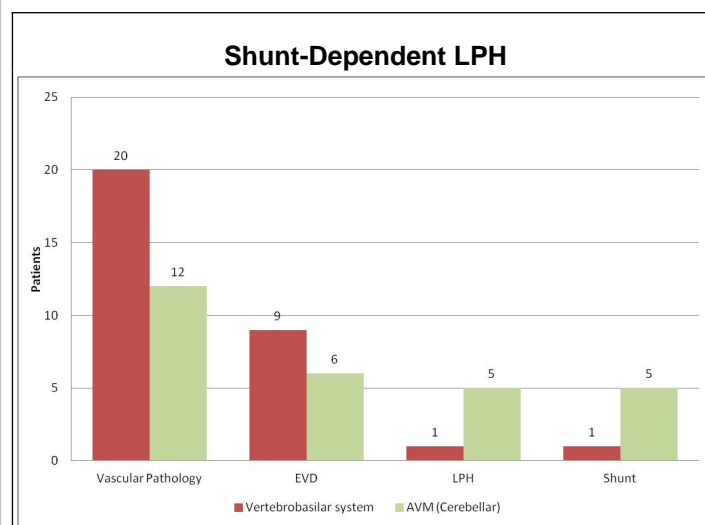
The development of low-pressure hydrocephalus (LPH) from ruptured posterior fossa pathology is underappreciated. It has been observed that posterior fossa pathology may increase the risk for developing LPH. In ruptured vascular pathology, current external ventricular drain (EVD) management to determine the need for a shunt is based off of output and pressure. Our aim was to evaluate the rate of developing LPH with isolated posterior fossa vascular pathology and discuss EVD management implications.

Methods

A retrospective review of a prospectively collected database at a high-volume neurovascular center was analyzed over a three-year period. Patients with isolated, posterior fossa pathology were evaluated for clinical presentation, hydrocephalus at presentation and eventual need for a shunt. In those needing a shunt, the indication was either hydrocephalus or LPH. The percent of patients developing shunt-dependent hydrocephalus was calculated.

Results

32 patients were identified in the data analyzed. Six patients (19%) went on to develop shunt-dependent hydrocephalus. Of those who developed shunt-dependent hydrocephalus, all were found to have LPH (6/6; 100%). The pathology of those with LPH was 5 (83%) cerebellar arteriovenous malformations (AVM), 3 of which had a flow-related aneurysm, and 1 (17%) vertebrobasilar aneurysm.



Conclusions

A high percentage of patients that have isolated, ruptured posterior fossa vascular diseases develop shunt-dependent low-pressure hydrocephalus. The presence of a cerebellar AVM with or without a flow-related aneurysm conferred an increased risk for the development of LPH. Standard external ventricular drain "weaning" based on pressure and output may not work in these patients.

Learning Objectives

1. A high percentage of patients that have isolated, ruptured posterior fossa vascular diseases develop shunt-dependent, low-pressure hydrocephalus.
2. The presence of a cerebellar AVM with or without a flow-related aneurysm conferred an increased risk for the development of LPH.
3. Standard external ventricular drain "weaning" based on pressure and output may not work in these patients.

References

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2. Pang D, Altschuler E: Low-pressure hydrocephalic state and viscoelastic alterations in the brain. **Neurosurgery** 35:643-55; discussion 655-6, 1994