



## BMI as a predictor of shunt failure and persistent symptoms in pseudotumor cerebri

Joshua Meyers MD; Gursant Atwal MD; Lindsay Lipinski MD; Jody Leonardo MD

University at Buffalo Neurosurgery



### Introduction

Obesity is a known risk factor for developing pseudotumor. Furthermore it has been shown to not predict shunt failure via regression models. It is unclear based on existing data if obesity is associated with shunt failure in patients with idiopathic intracranial hypertension. We sought to investigate and quantify these cases.

### Methods

We conducted a retrospective review of 19 patients with newly diagnosed pseudotumor cerebri referred to our institution without previous shunting using our electronic medical record database. Patients were stratified into the three types of obesity designated by the WHO classification of obesity. Type I obesity was defined as a BMI >30, Type II obesity as BMI 35-40, Type III obesity as BMI >40. All procedures including lumboperitoneal shunting, ventriculoperitoneal shunting, and revisions were identified.

### Results

Twelve patients underwent ventriculoperitoneal shunt placement and 6 patients had lumboperitoneal shunts. We stratified patients according to BMI: 25-30 (pre-obesity): 3 patients; 30-35 (type I) 3 patients; 35-40 (type II): 5 patients; 40 (type III): 8 patients. Twelve patients (63%) had an initial VPS with 75% (9/12) having persistent symptoms despite shunting, 90% of them having a BMI of >35. Three of the patients with a VPS required conversion to an LP shunt, 100% with a BMI >35. Only one patient who was converted had improvement in symptoms. Seven patients (32%) had an initial LP shunt; 75% of patients with persistent symptoms despite initial LP shunting had a BMI >35. One patient with type I obesity required conversion to VPS, not improving after conversion. Five of 12 (42%) VPS patients required revision, 80% of these patients had a BMI of >35.

### Conclusions

Obesity was associated with persistent symptoms despite CSF diversion irrespective of the type of initial shunt placed and conversion to a different type of shunt. A higher revision rate was seen in patients with BMI's of 35 or greater. Our data suggest that obese patients with pseudotumor, particularly with a BMI >35, are difficult to treat with CSF diversion. Perhaps alternate methods of treatment should be investigated.

### Learning Objectives

By the conclusion of this session, participants should be able to (1) describe the importance of obesity in evaluating and treating idiopathic intracranial hypertension (2) identify those patients who are at risk for shunt failure.

### References

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2. McGirt MJ, Woodworth G, Thomas G, Miller N, Williams M, Rigamonti D. Cerebrospinal fluid shunt placement for pseudotumor cerebri-associated intractable headache: predictors of treatment response and an analysis of long-term outcomes. *Journal of neurosurgery* 2004;101:627-32.