



# The Utility of Shunt Surveys and Shunt Patency Studies in Patients with Pseudotumor Cerebri Presenting to the Emergency Department

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## Introduction

Shunt surveys and shunt patency studies can be performed in the emergency department to evaluate for shunt malfunction in patients with pseudotumor cerebri. Here, we examine the utility of these studies in this unique patient population.

## Methods

The ED visits of all shunted patients with a diagnosis of PTC from 2003 to 2015 were retrospectively reviewed. Demographics, symptoms, PTC diagnosis and treatment history, imaging findings, and information regarding management changes were collected. ED visits not related to PTC were excluded from our study.

Table 1: Patient demographics and Shunt Information

	Shunt Series (n = 25)	Shunt Patency (n = 9)
Age at ED Visit	36 (18)	34 (18)
Female	21 (84%)	9 (100%)
Race		
Caucasian	16 (64%)	5 (56%)
Black	9 (36%)	4 (44%)
BMI (kg/m2)	36 (12)	35 (14)
Age at Diagnosis	27 (9)	28 (2)
Age at Shunt Placement	27 (11)	27 (10)
# of Prior Shunt Operations	8 (2)	3 (3)
Type of Shunt		
VP	8 (32%)	3 (33%)
VA	10 (40%)	4 (44%)
LP	5 (20%)	1 (11%)
Lpleural	1 (4%)	1 (11%)
Vpleural	1 (4%)	0 (0%)

## Results

- 31 patients visited the ED a total of 171 times for symptoms related to their PTC.
- 5 patients had greater than 10 ED visits.
- 25 (81%) patients had a total of 105 visits involving a shunt survey, with four (3.9%) showing problems with the catheter.
- 9 (29%) patients had a total of 10 visits involving a shunt patency study: five were normal, four were abnormal, and one was inconclusive.
- Of the 105 visits with a shunt survey, 17 (16%) resulted in a change in management as compared to 12 out of 66 (18%) visits without a shunt survey (p = 0.83).
- Of the 10 visits with shunt patency studies, 5 (50%) resulted in a change in management as compared to 24 (15%) out of 161 visits without a shunt patency study (p = 0.014).

Table 2: Symptoms and Signs During ED Visit

	Shunt Series (n = 105 visits)	Shunt Patency (n = 10 visits)
Presenting Symptoms		
Headache	93 (89%)	10 (100%)
Nausea/Vomiting	62 (59%)	6 (60%)
Dizziness	13 (12%)	2 (20%)
Tinnitus	2 (2%)	1 (10%)
Fever/Chills	8 (8%)	1 (10%)
Visual Acuity Change	40 (38%)	7 (70%)
Ophthalmological Exam		
Papilledema	7 (11%)	3 (38%)

Table 3: Management outcomes and information from shunt imaging.

Management Change	Shunt Series Done?		p-value
	Yes	No	
Yes	17 (16%)	12 (18%)	0.83
No	88 (84%)	54 (82%)	
Total	105 (61%)	66 (39%)	

  

Management Change	Shunt Patency Study Done?		p-value
	Yes	No	
Yes	5 (50%)	24 (15%)	0.014**
No	5 (50%)	137 (85%)	
Total	10 (6%)	161 (94%)	

## Conclusions

Shunt surveys detected catheter pathology only 3.9% of the time, and there was no difference in the rate of management changes between those patients who underwent a shunt survey and those who did not. There was a significant difference in the rate of management changes in patients who received shunt patency studies as compared to those who did not. Shunt surveys may not be a sensitive tool to screen shunted pseudotumor patients in the ED.

## References

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