

# Increased Opening Pressures on Lumbar Puncture for Baclofen Trial in Children with Cerebral Palsy

Lora Kahn MD; Aaron Karlin MD; Cuong Bui MD

## Tulane/Ochsner Neurosurgery

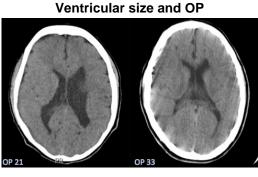


#### Introduction

It has long been observed but seldom reported that children with cerebral palsy and resultant spasticity tend to have increased intracranial pressure (ICP) even in the absence of radiographic ventriculomegaly. Though mostly clinically silent, increased ICP becomes evident when such patients undergo lumbar puncture (LP) as they have increased opening pressures (OP) and proclivity for cerebrospinal fluid (CSF) leak.

#### Methods

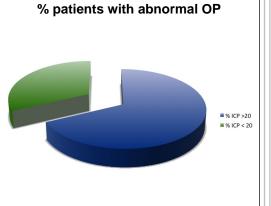
We retrospectively reviewed our database of pediatric patients with cerebral palsy undergoing LP for intrathecal baclofen trial between 2009 and 2012. We analyzed age, opening pressure, anesthetic agent, and post-procedure complications. We also considered whether the patients ultimately elected for placement of baclofen pump and, if a CT scan of the head was ordered, whether it demonstrated ventriculomegaly. Patients up to the age of 20 were included.



There is no observed correlation between opening pressure and ventricular size. Patient A (left) had OP of 21 cm H20; patient B's (right) OP was 33 cm H20.

# Results

Twenty-eight patients met inclusion criteria. Twenty (71.4%) had OP greater than 20 cm H20 and 5 (17.9%) developed CSF leaks post-procedure. The mean OP was 23.25 cm H20. Univariate analysis revealed no correlation with increased OP or CSF leak and type of anesthetic agent used or radiographic evidence of ventriculomegaly.

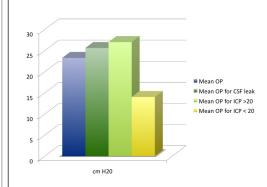


Twenty (71.4%) patients had OP >20 cm H20, while only 8 (28.6%) patients were less than 20 cm H20.

## Conclusions

Though mostly clinically silent, increased ICP may be responsible for a higher rate of post-LP and post-baclofen pump placement CSF leaks. These data confirm the findings of one previously reported series by Albright et al. that children with cerebral palsy have increased OP. More work ought to be done to elucidate the etiology of increased pressure in this population to optimize management of these patients.





Overall mean OP was 23.25 cm H20, but mean OP for patients who developed CSF leak was 25.6 cm H20. Of patients who had OP > 20, the mean was 27 cm H20, whereas patients who were below 20 cm H20 had a mean of 14 cm H20.

### Learning Objectives

By the conclusion of the session, participants should be able to: 1) Describe the common complications of LP and baclofen pump placement in children with cerebral palsy 2) Discuss how to minimize such complications, bearing in mind that these patients have increased OP 3) Consider whether more agressive management of ICP in these patients may provide any cognitive or functional benefit



Sagittal CT demonstrating post-op CSF leak along catheter track: a common complication from high intrathecal pressure

## References

Albright AL, Ferson S, Carlos S. Occult hydrocephalus in children with cerebral palsy. Neurosurgery 2005;56(1):93-97.