

PRESSURE-FLOW STUDY OF BLADDER DYSFUNCTION IN IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS

Hypothesis / aims of study

Idiopathic normal pressure hydrocephalus (iNPH) occurs to the elderly with the triad of gait disturbance, memory deficit, and bladder disorder. Characteristics of urinary dysfunction in iNPH include mainly overactive bladder but voiding disturbance is also observed. There is ventriculomegaly, but the cerebrospinal fluid pressure is within normal limits, and symptomatic improvement is obtained with shunt surgery. Several cystometry data to study the function of bladder in iNPH before shunt surgery have been available. However, urodynamic studies to compare bladder function in iNPH before and after shunt surgery has not been demonstrated.

Aim of study: To elucidate the mechanism of bladder dysfunction in iNPH, we performed pressure-flow study before and after shunt surgery.

Study design, materials and methods

Thirty patients with definite iNPH were enrolled. The subjects included 22 men and 8 women; mean age, 80 years (59-92 years). Overactive bladder symptom score (OABSS) was obtained pre and post lumbo-peritoneal (LP) shunt surgery from 17 patients (13 patients were not evaluated due to severe memory disturbance.). All patients underwent a pressure-flow study pre and post LP shunt surgery according to the definitions and methods proposed by the International Continence Society.

Results

Twenty nine patients complained lower urinary tract symptoms before shunt surgery and 72% of them felt improvement after surgery. OABSS of pre shunt surgery was 7.35 ± 0.96 , which decreased to 5.29 ± 0.93 after surgery ($p=0.08$). The values of first desire to void, maximum desire to void, and total bladder capacity of patients increased from 106.4 ± 15.7 ml, 145.2 ± 24.3 ml, and 145.2 ± 26.7 ml to 160.9 ± 20.2 ml, 223.6 ± 26.7 ml, 220.4 ± 27.3 ml respectively ($p \leq 0.01$) by LP shunt surgery. There were no difference in the values of maximum flow rate, average flow rate, residual urine volume, detrusor pressure at peak flow, maximum detrusor pressure and bladder compliance between pre and post LP shunt surgery.

Concluding message

The deteriorated storage function of bladder in iNPH patients is improved by LP shunt surgery whereas voiding disturbance is not.

References

1. Ryuji Sakakibara et al. Mechanism of bladder dysfunction in idiopathic normal pressure hydrocephalus. *Neurourology and urodynamics* 27:507-510, 2008

Disclosures

Funding: We have no funding or grant. **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** we studied whether bladder function of idiopathic normal pressure hydrocephalus patients improve or not by lumbo-peritoneal shunt using pressure-flow study. We got agreement from all patients in advance. **Helsinki:** Yes **Informed Consent:** Yes