Delayed Surgical Treatment for Idiopathic Communicating Hydrocephalus Decreases Treatment Efficacy and Prognosis

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Introduction

Previous studies have suggested that a longer duration of preoperative symptoms may correlate with worse post-operative outcomes following ventriculoperitoneal (VP) shunt treatment for idiopathic communicating hydrocephalus. The aim of this study is to determine the degrees and manners in which increased duration of symptoms prior to shunting may be associated with worse post-operative improvement and potentially prohibitive surgical prognoses.

Methods

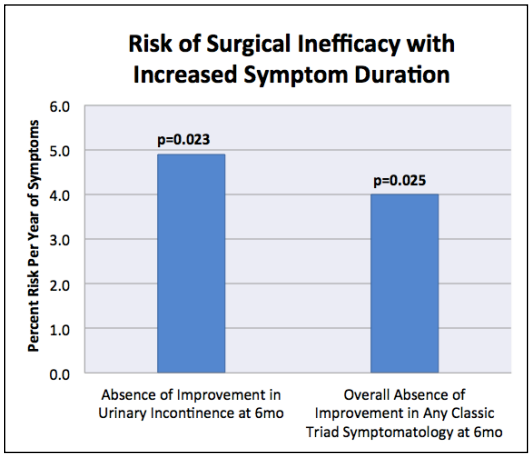
A retrospective review of 423 patients treated with VP shunts by the senior author between 1993 and 2013 was conducted. Duration of symptoms prior to operation was recorded. The following outcome variables were assessed at baseline, 6 months post-op and at last follow-up: clinical assessment of gait, urinary continence and cognition. The tests used for these assessments included the Mini-Mental Status Exam (MMSE), the Modified Rankin scale, the Bartel ADL index, the Wikelso scores, the Timed Up-and-Go test (TUG) and the Tinetti balance assessment. Multinomial logistic regression was used. Values with $p<0.05$ in these analyses were considered statistically significant.

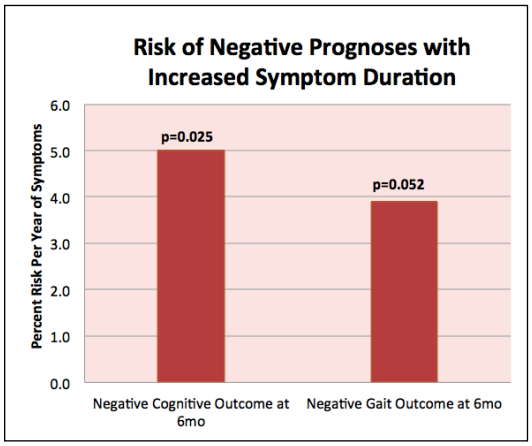
Results

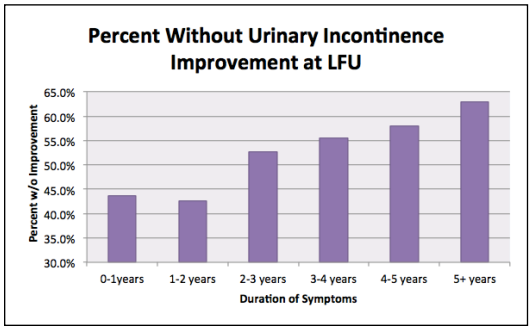
Median preoperative duration of symptoms was 28 months and the median follow-up duration was 32 months. Increased symptom duration was significantly associated with negative cognitive outcomes ($p=0.025$, RR=1.050 per year of symptoms), absence of improvement in urinary incontinence (RR= 1.049 per year of symptoms, $p=0.023$) and an overall absence of improvement in any of the classic triad symptomology (RR= 1.040 per year of symptoms, $p=0.025$) at 6 months post-surgery. At last follow up after surgery, there was a significantly increased risk of failure to improve urinary incontinence with increased pre-operative symptom duration (RR= 1.066 per year of symptoms, $p=0.028$). Though not statistically significant, there was a strong trend toward negative gait outcomes 6 months after surgery in patients with longer pre-operative symptom duration (RR= 1.039 per year of symptoms, $p=0.052$).

Conclusions

Patients with long-standing preoperative symptoms may not receive the same benefits of surgical intervention as patients with shorter duration of preoperative symptoms, and may even have increased risk of worse outcomes as a result of the surgery. In addition to the reported neurologic deterioration occurring with delayed treatment, this decreased efficacy of surgical intervention with delayed diagnosis highlights the importance of prompt diagnosis and treatment for communicating hydrocephalus.







Learning Objectives

By the conclusion of this session, participants should be able to 1) Identify an effective treatment for communicating hydrocephalus 2) Describe various measures used to assess patient function prior to and following treatment and 3) Understand the results of the present study in the context of potential risk factors and prognostic indicators for current treatment options.

References

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