AANS Abstract Center
Abstract Date: 12/2/2009

Changes In Thermal Flow Determinations With Changes In Valve Settings In Shunted Hydrocephalic Patients

Author(s):
Joseph R. Madsen, MD
Gani Abazi, MD, MPH
Tomer Anor, PhD
Laurel Fleming, BA (Boston, MA)

Introduction
Thermal measurements from the ShuntCheck® device nominally show "flow" or "flow not confirmed" (FNC) in ventriculoperitoneal (VP) shunts. We investigated clinical implications in six patients who underwent adjustments of variable-pressure valves for various clinical reasons, to determine whether such changes altered flow detected by the device.
Methods
Six shunted hydrocephalic patients with adjustable valves, complaining of headaches, fatigue, or abdominal discomfort were tested for flow with the ShuntCheck device before and after valve setting adjustment. The patient with abdominal discomfort was tested before and after a Strata resetting from PL 2.5 to 0.5. The remaining five patients were tested during clinic visits where therapeutic valve resetting was attempted.
Results
Adjustment of Strata valve setting improved headaches in three out of four patients complaining of headaches and improved subjective fatigue in the fifth patient. In three out of four of the patients with improvement, a change in flow pattern was observed. The patient in whom a change in the flow pattern could not be documented showed no symptomatic improvement. In the abdominal pain case, no flow could be determined with either setting and the shunt was externalized, found to be occluded (and apparently unnecessary) and removed.
Conclusions
ShuntCheck may detect changes in flow when a valve setting is changed, which may prove of value in treating symptomatic patients with adjustable valves. Further, flow determinations may help predict shunt independence in specific patients. Further study would be warranted to determine the optimal use of flow information in shunted patients.

Keywords: Hydrocephalus|Shunt Flow|Noninvasive Flow Measurement