Intraventricular infusion test

Infusion tests, which measure resistance to outflow (Rout), are used in selecting patients suspected for idiopathic normal pressure hydrocephalus (iNPH) for shunt surgery. Infusion tests can be performed through an external ventricular drain (EVD). A 24-hour time gap from EVD insertion to an infusion test is a routine practice at our department due to concerns that the surgical procedure might influence the test results in the immediate postoperative period. The objective of the study was to investigate if timing of an intraventricular infusion test influences the results of the test in patients suspected for iNPH.

Methods: Ten patients scheduled for an intraventricular infusion test were included. Measurements of baseline intracranial pressure (ICP) and plateau ICP were obtained during constant rate intraventricular infusion test performed at two time points (1 and 24 h after EVD insertion) and Rout was calculated from these measures and compared within patients.

Results: Eight patients completed both infusion tests. In one of the 18 infusion tests performed, it was not possible to define an ICP plateau and this infusion test was excluded, leaving 7 paired infusion tests. Median Rout was 12.9 mmHg/ml/min (range 7.0-22.0) 1 h after EVD insertion and 11.3 mmHg/ml/min (range 7.8-18.1) after 24 h. Overall, there were no statistically significant differences in Rout (P = 0.83), baseline ICP (P = 0.70), or plateau ICP (P = 0.81) between the recordings performed 1 h and 24 h after EVD insertion. For two of the seven patients with paired infusion tests, there was poor agreement between Rout values at 1 and 24 h.

Conclusion: Overall, Rout estimates do not change significantly between 1 and 24 h after EVD insertion. We therefore propose that infusion tests can be performed shortly after surgery to reduce the period of indwelling EVD and duration of hospitalization [1)].

Intracranial Elastance Index

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Andreasen TH, Lilja-Cyron A, Holst AV, Christoffersen D, Johnsen SD, Juhler M. Timing of intraventricular infusion test for diagnosing idiopathic normal pressure hydrocephalus. Acta Neurochir (Wien). 2020 May;162(5):1011-1017. doi: 10.1007/s00701-019-04168-w. Epub 2020 Jan 7. PMID: 31912355.