

Slope until reaching the plateau

Idiopathic normal pressure hydrocephalus diagnosis is based on clinical, radiological, and hydrodynamic data of **cerebrospinal fluid** (CSF) obtained by invasive methods such as **lumbar infusion test**, which is used to determine the resistance to CSF outflow (**Rout**). However, Rout has limitations, and its value as a predictor of valve response is questioned. Other variables can be obtained by the lumbar infusion test, such as the time to reach the **plateau** (TRP) and the slope until reaching the plateau (SRP). The objectives were to determine if SRP could be a predictor of response to ventriculoperitoneal shunt (VPS) and what variable (Rout versus SRP) would have a greater predictive value.

Patients with **probable idiopathic normal pressure hydrocephalus** who underwent a lumbar infusion test and were indicated for a VPS were retrospectively studied. Two groups were established, responders and non-responders. Rout, TRP (period between the start of infusion until reaching the plateau measured in seconds) and SRP (plateau pressure-opening pressure)/TRP) were obtained. For Rout and SRP, the receiver operating curves (ROC) with its areas under the curve (AUC) were calculated.

One hundred ten patients were included, being 86 responders (78.20%). Shunt responders had a significantly greater Rout (17.02 (14.45-20.23) versus 13.34 (12.10-16.28) mmHg/ml/min, $p = 0.002$) and SRP (0.049 (0.043-0.054) versus 0.031 (0.026-0.036) mmHg/sec, $p < 0.001$) and smaller TRP (641.28 (584.83-697.73) versus 777.65 (654.03-901.27) sec, $p = 0.028$) than non-responders. The AUC for SRP was greater than the AUC for Rout (0.763 (95 % CI 0.655-0.871, $p < 0.001$) versus 0.673 (95 % CI 0.595-0.801, $p = 0.008$), respectively), but the differences were not significant ($p = 0.180$).

SRP could be considered a predictor of response to VPS, and its accuracy tends to be better than Rout. So, this variable may be a useful tool to select shunt candidates among patients with probable iNPH. ¹⁾

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Otero-Rodriguez A, Arandia-Guzman DA, Pascual-Argente D, Ruiz-Martin L, de Oca JR, Garcia-Martin A, Torres-Carretero L, Uriel-Lavin R, Garrido-Ruiz PA, Rodriguez-Cedeño D, Cid-Mendes L. Slope until reaching the plateau: a new predictor of valve response obtained by lumbar infusion test for **idiopathic normal pressure hydrocephalus**. Acta Neurochir (Wien). 2023 Jun 22. doi: 10.1007/s00701-023-05670-y. Epub ahead of print. PMID: 37347295.

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