Intracranial pressure monitoring for aneurysmal subarachnoid hemorrhage

Even though there is an association with intracranial pressure (ICP) raise and aneurysmal subarachnoid hemorrhage, there is a lack of recommendations regarding the indications for intracranial pressure monitoring for aneurysmal subarachnoid hemorrhage.

Defining what patients are at a higher risk to develop intracranial hypertension and its role in the functional outcome and mortality in patients with aSAH will be the purpose of the following systematic review and meta-analysis. The primary endpoint was to determine the prevalence and impact on mortality of ICP in patients with aSAH. Secondary endpoints aimed to describe the variables related to the development of ICP and the relationship between traumatic and aneurysmal etiology of intracranial hypertension. PubMed, Embase, Cochrane Central Register of Controlled Trials, and research meeting abstracts were searched up to August 2019 for studies that performed ICP monitoring, assessed the prevalence of intracranial hypertension and the mortality, in adults. Newcastle Ottawa scale (NOS) was used to assess study quality. The statistical analysis was performed using the Mantel-Haenszel methodology for the prevalence and mortality of intracranial hypertension for reasons with a randomized effect analysis model. Heterogeneity was assessed by I2. A total of 110 bibliographic citations were identified, 20 were considered potentially eligible, and after a review of the full text, 12 studies were considered eligible and 5 met the inclusion criteria for this review. One study obtained 7 points in the NOS, another obtained 6 points, and the rest obtained 5 points. Five studies were chosen for the final analysis, involving 793 patients. The rate of intracranial hypertension secondary to aSAH was 70.69% (95% CI 56.79-82.84%) showing high heterogeneity ($I2 = 92.48\%$, $p = < 0.0001$). The results of the meta-analysis of mortality rate associated with intracranial hypertension after aSAH found a total of four studies, which involved 385 patients. The mortality rate was 30.3% (95% CI: 14.79-48.57%). Heterogeneity was statistically significant ($I2 = 90.36\%$; p value for heterogeneity < 0.001). We found that in several studies, they reported that a high degree of clinical severity scale (Hunt and Hess or WNFS) and tomographic (Fisher) were significantly correlated with the increase in ICP above 20 mmHg ($P < 0.05$). The interpretation of the results could be underestimated for the design heterogeneity of the included studies. New protocols establishing the indications for ICP monitoring in aSAH are needed. Given the high heterogeneity of the studies included, they cannot provide clinical recommendations regarding this issue [1)].

1)

Florez WA, García-Ballestas E, Deora H, Agrawal A, Martinez-Perez R, Galwankar S, Keni R, Menon GR, Joaquim A, Moscote-Salazar LR. Intracranial hypertension in patients with aneurysmal subarachnoid hemorrhage: a systematic review and meta-analysis. Neurosurg Rev. 2020 Feb 1. doi: 10.1007/s10143-020-01248-9. [Epub ahead of print] Review. PubMed PMID: 32008128.

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