RAP Index

The accurate measurement of dynamic intracranial pressure is complex. Although the measurement of intracranial pressure (ICP) is an important factor in determining both the clinical management and outcome of patients with several neurosurgical conditions, recent studies have looked at the use of measuring the compensatory reserve as a possible predictor of clinical outcome and how it could be used to guide clinical management. Czosnyka et al. designed a coefficient between the mean intracranial pressure and the ICP mean pulse amplitude, the RAP index, as a potential descriptor of neurological deterioration in traumatic brain injury (TBI) patients [1].

RAP appears to characterize pressure-volume compensatory reserve in patients with hydrocephalus [2].

More studies have researched the use of the RAP index as a possible marker to guide clinical management in patients with raised ICP. This has included analysing the effects of baseline effect errors on both the RAP index as well as the ICP wave parameters, including the ICP mean pulse amplitude (AMP) [3] [4].

These studies concluded that baseline effect errors may hinder the use of the RAP index as a marker to guide clinical management due to their influential effect on the mean ICP, which is one of two factors used to calculate the RAP index. Other studies have shown that the AMP, as opposed to the RAP index, is refractory to these baseline errors and may provide a more accurate marker to guide clinical management, as well as its potential to predict mortality in certain neurosurgical events including traumatic brain injury [5].

Although further investigation needs to be undertaken in order to fully assess the role of ICP indices in guiding the clinical management of patients with raised ICP, the studies undertaken to date provide an insight into the potential role of ICP indices to treat raised ICP proactively rather than reactively and therefore help prevent or minimise secondary brain injury [6].

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