Category :**Brain: Head trauma**

A125 - ***Intracranial compliance does not ameliorate with decompressive craniectomy***

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Introduction:

Decompressive craniectomy (DC) has demonstrated to be effective for intracranial pressure (ICP) control, although not relevant results have been observed concerning mortality reduction in TBI. One hypothesis for this outcome is that DC does not return intracranial compliance (ICC) for its previous state, before acute injury. The present study aimed to assess the morphological alterations in intracranial pressure pulse waveform (ICPPW) among neurocritical care patients with and without DC, by comparing the variations of ICPPW according to elevations in ICP by two techniques.

Methods:

Patients requiring ICP monitoring because of severe traumatic or spontaneous conditions were included. ICP mean values were compared with ICPPW features (P2/P1 ratio, time-to-peak [TTP]) obtained from ICP invasive catheters and a new technology that captures beat-by-beat skull pulsations (B4C). Elevation of ICP was produced by means of ultrasound-guided internal jugular veins compression. Analysis of ICPPW features were compared between techniques and distributed for three groups: intact skull (exclusive burr hole for ICP monitoring), craniotomy/large fractures (group 2) or DC (group 3).

Results:

57 patients were analysed, 32 with both techniques. 21 (36%) presented no skull defects, whereas 15 (26%) had DC. ICP was not significantly different between groups (p= 0.56). Significant elevation was observed for P2/P1 ratio for groups 1 and 2, whereas reduction was observed in group 3 (elevation of ±0.09 for groups 1 and 2, whereas reduction of 0.03 for group 3, p=0,01). B4C disclosed strong correlation with invasive ICPPW features (AUC .86 for P2/P1 ratio, .81 for TTP).

Conclusion:

Intracranial compliance was significative more impaired among decompressive craniectomy patients, although this technique seems to be protective for further influences of ICP elevations over the brain. Correlation between techniques was significative, indicating the B4C system as promising to monitor intracranial compliance noninvasively.