Acute traumatic coagulopathy (ATC)

Progressive hemorrhagic injury (PHI) can be divided into coagulopathy-related PHI and normal coagulation PHI. Coagulation disorders after traumatic brain injuries can be included in trauma induced coagulopathy (TIC). Some studies showed that TIC is associated with PHI and increases the rates of disability and mortality. In this review, we discussed some mechanisms in TIC, which is of great importance in the development of PHI, including tissue factor (TF) hypothesis, protein C pathway and thrombocytopenia. The main mechanism in the relation of TIC to PHI is hypocoagulability ¹.

A search of the MEDLINE database and Cochrane library, focused on subject headings and keywords involving coagulopathy and TBI.

There were 22 studies selected for analysis. A statistically significant heterogeneity among the studies was observed (p<0.01). Using the random effects model the pooled proportion of patients with ATC in the setting of iTBI was 35.2% (95% CI: 29.0-41.4). Mortality of patients with ATC and iTBI ranged between 17% and 86%. Higher blood transfusion rates, longer hospital stays, longer ICU stays, decreased ventilator free days, higher rates of single and multiple organ failure and higher incidence of delayed injury and disability at discharge were reported among patients with ATC.

ATC is commonly associated with iTBI and almost uniformly associated with worse outcomes. Any disorder of coagulation above the normal range appears to be associated with worse outcomes and therefore a clinically important target for management. Earlier identification of patients with ATC and iTBI, for recruitment into prospective trials, presents avenues for further research ².

1)

Liu J, Tian HL. Relationship between trauma-induced coagulopathy and progressive hemorrhagic injury in patients with traumatic brain injury. Chin J Traumatol. 2016 Jun 1;19(3):172-5. PubMed PMID: 27321300.

2)

Epstein DS, Mitra B, O'Reilly G, Rosenfeld JV, Cameron PA. Acute traumatic coagulopathy in the setting of isolated traumatic brain injury: A systematic review and meta-analysis. Injury. 2014 Jan 19. pii: S0020-1383(14)00022-9. doi: 10.1016/j.injury.2014.01.011. [Epub ahead of print] Review. PubMed PMID: 24529718.

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