Traumatologie

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Coagulopathy following traumatic brain injury : what are the respective contributions of head and extra-head injury severities?

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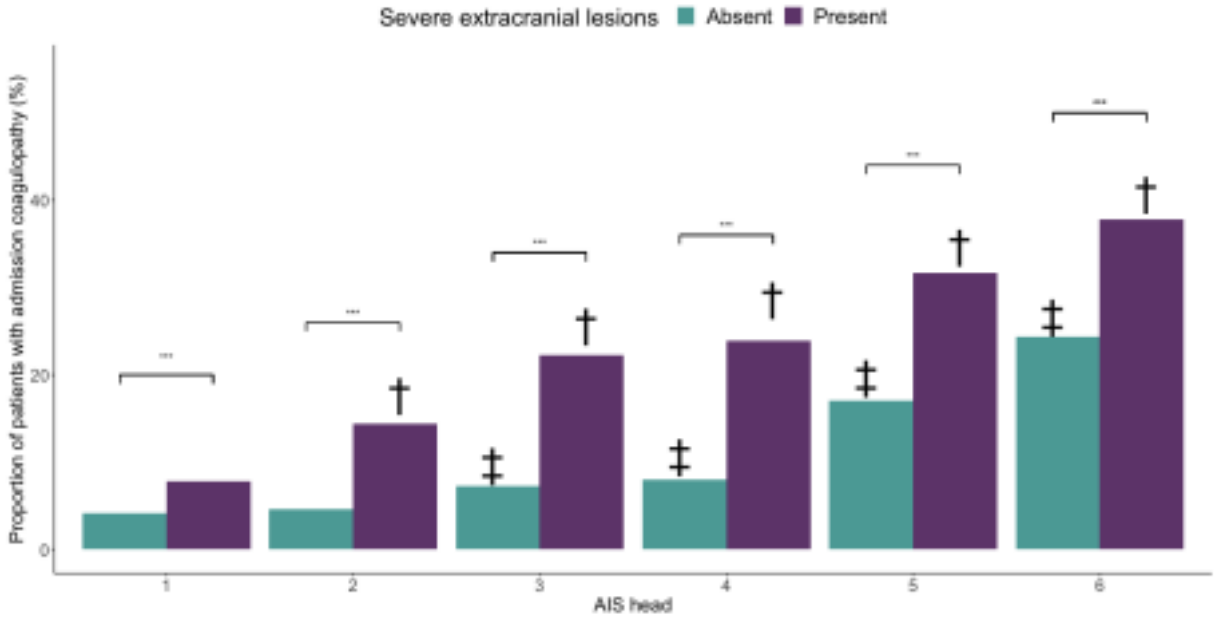
Position du problème et objectif(s) de l'étude:
Following traumatic brain injury (TBI), coagulopathy is found in about 25-35% of patients, with a wide range of 7 to 97 % reported among series1. The respective contributions of head and concomitant extracranial injuries to coagulopathy have been poorly investigated. The objectives was to determine at admission : 1/the incidence of post-TBI coagulopathy, according to the presence or absence of associated severe extracranial injuries, and 2/the independent risk factors for post-TBI coagulopathy.

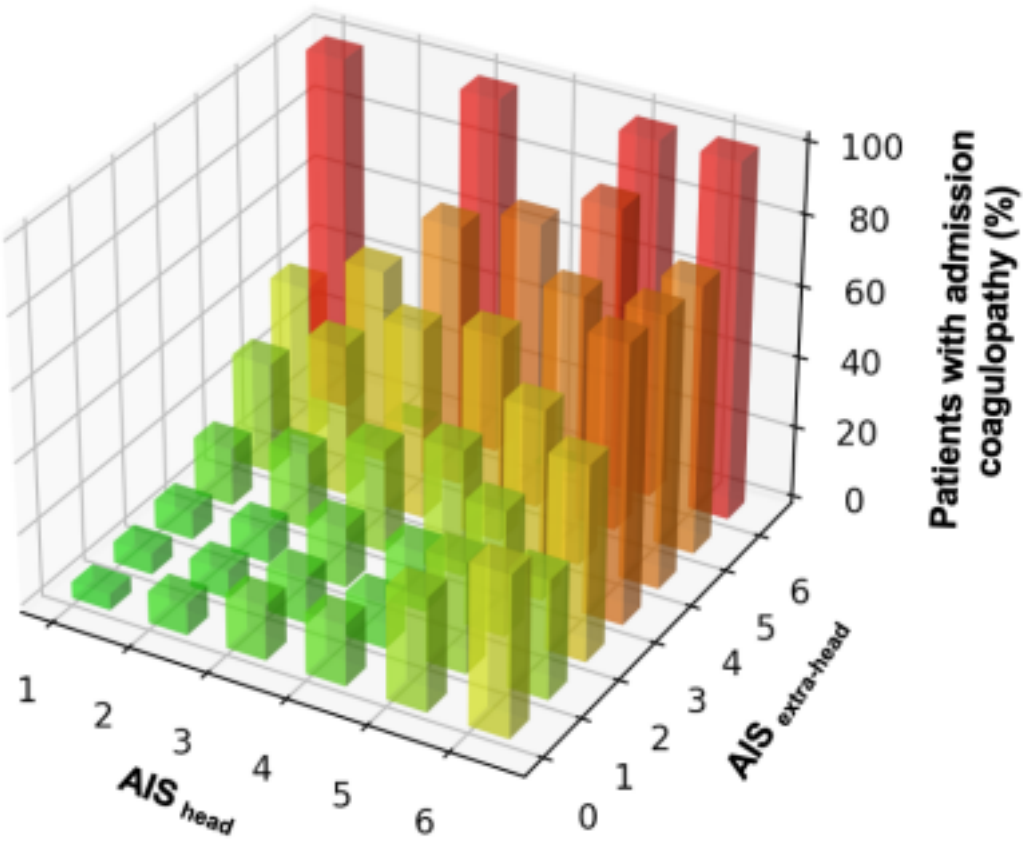
Matériel et méthodes:
Observational study from a multicenter prospective French trauma registry (Traumabase®). After a favourable approval from the national ethics committee ("Comité d'Ethique de la Recherche Paris Nord"), all adult patients directly admitted to one of the participating centers from January 2012 to December 2021 following TBI (AIS (Abbreviated Injury score) head ≥1) were included. Were not included patients : managed after secondary transfer, ≤15 years, pregnant, with anticoagulant or antiplatelet therapy prior to trauma, with transfusion prior to hospital admission and those with missing data. Post-TBI coagulopathy was defined by at least 1 of the following criteria: prothrombin ratio ≤70% or platelets ≤100 G/L or fibrinogenemia ≤1.5 g/L on hospital admission. Severe associated extracranial lesions were defined by at least 1 of the AIS extra-head scores ≥3. To identify risk factors independently associated with admission coagulopathy, bivariate and multivariate analyses were performed.

Résultats & Discussion:
Among 33875 patients admitted to 22 trauma centers, 9610 patients had TBI and were included in the analysis. The overall incidence of admission coagulopathy was 28.5%. Coagulopathic patients were significantly more severely injured and especially more severely head-injured, when compared to non-coagulopathic patients. Figures 1 and 2 show the proportion of patients with coagulopathy according to the TBI severity assessed by AIShead in patients with or without severe extracranial lesions. The higher the AIShead, the higher the proportion of patients exhibiting coagulopathy (p≤0.001), whatever the presence of extracranial lesions. When compared to patients with AIShead = 1, the increased incidence of coagulopathy with TBI severity was observed at an earlier stage of TBI severity when severe extracranial lesions were present. In multivariable analysis, severe extracranial injury was independently associated with the risk of post-TBI coagulopathy (OR 2.0 (1.8 – 2.3), ≤0.001).

Conclusion:
In the present study, a continuously graded association between the severity of head injury and coagulopathy at hospital admission was shown, and this increased incidence of coagulopathy was observed at earlier stage of TBI severity when severe extracranial lesions were present. The presence of severe extracranial injuries was one of the most important risk factors for coagulopathy following TBI.

Références bibliographiques:
1. Maegele M et al. Coagulopathy and haemorrhagic progression in traumatic brain injury: advances in mechanisms, diagnosis, and management. Lancet Neurol. 2017;16(8):630-47.





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