Hypofibrinogenemia

Higher levels of fibrinogen, a critical element in hemostasis, are associated with increased postoperative survival rates, especially for patients with massive operative blood loss. Fibrinogen deficiency after surgical management of intracranial tumors may result in postoperative intracranial bleeding and severely worsen patient outcomes.

In major spine surgery, rotational thromboelastometry ROTEM-guided transfusion allows for standardization of transfusion practices and early identification and treatment of hypofibrinogenemia [1].

For adult spinal deformity (ASD) patients treated using lumbar pedicle subtraction osteotomy (PSO), more cryoprecipitate and less fresh frozen plasma (FFP) were transfused in the rotational thromboelastometry (ROTEM) group compared to the control group. These preliminary findings suggest Rotational thromboelastometry (ROTEM)-guided therapy may allow early identification of hypofibrinogenemia, and aggressive management of this may reduce blood loss and total blood product transfusion volume. Additional prospective studies of larger cohorts are warranted to identify the appropriate subset of ASD patients who may benefit from intraoperative ROTEM analysis [2].

In a study, Wei et al., retrospectively analyzed data from patients who underwent surgical removal of intracranial tumors in Beijing Tiantan Hospital date from 1/1/2013 to 12/31/2013.

A study of Wei et al., found that patients with postoperative fibrinogen deficiency experienced more operative blood loss and a higher rate of postoperative intracranial hematoma, and they were given more blood transfusions, more plasma transfusions, and were administered larger doses of hemocoagulase compared with patients without postoperative fibrinogen deficiency. Likewise, patients with postoperative fibrinogen deficiency had poorer extended Glasgow Outcome Scale (GOSe), longer hospital stays, and greater hospital expenses than patients without postoperative fibrinogen deficiency. Further, they assessed a comprehensive set of risk factors associated with postoperative fibrinogen deficiency via multiple linear regression.

They found that body mass index (BMI), the occurrence of postoperative intracranial hematoma, and administration of hemocoagulase were positively associated with preoperative-to-postoperative

plasma fibrinogen consumption; presenting with a malignant tumor was negatively associated with fibrinogen consumption. Contrary to what might be expected, intraoperative blood loss, the need for blood transfusion, and the need for plasma transfusion were not associated with plasma fibrinogen consumption. Considering this findings together, they concluded that postoperative fibrinogen deficiency is closely associated with postoperative bleeding and poor outcomes and merits careful attention. Practitioners should monitor plasma fibrinogen levels in patients with risk factors for postoperative fibrinogen deficiency. In addition, postoperative fibrinogen deficiency should be remediated as soon as possible to reduce postoperative bleeding, especially when postoperative bleeding is confirmed [3].

References

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