

Diagnostica di laboratorio in emostasi e trombosi

EFFICACY AND SAFETY OF VISCOELASTIC TESTING–GUIDED TRANSFUSION IN CIRRHOSIS UNDERGOING INVASIVE PROCEDURES: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Background and Aims. Bleeding risk in cirrhotic patients undergoing invasive procedures is commonly assessed using conventional coagulation tests, such as the international normalized ratio (INR) and platelet count, often leading to prophylactic transfusion of blood products. However, these tests poorly reflect the rebalanced hemostatic state of cirrhosis. Viscoelastic testing (VET), including thromboelastography (TEG) and rotational thromboelastometry (ROTEM), provides a global assessment of coagulation and may enable a more rational transfusion strategy. We aimed to evaluate the efficacy and safety of VET-guided transfusion strategies in cirrhotic patients undergoing invasive procedures.

Methods. We performed a systematic review and meta-analysis of randomized controlled trials comparing VET-guided transfusion strategies with standard of care. Primary outcomes were procedure-related bleeding and transfusion requirements. Secondary outcomes included platelet transfusion, any fresh frozen plasma (FFP) exposure, and FFP-only transfusion. Risk ratios (RR) with 95% confidence intervals (CI) were pooled using the Mantel–Haenszel method. Subgroup and sensitivity analyses were performed according to VET modality and study population.

Results. Six randomized controlled trials including 296 patients were included in the quantitative synthesis. Procedure-related bleeding was rare and did not differ between groups (RR 0.74, 95% CI 0.24–2.31; I^2=0%). VET-guided strategies significantly reduced transfusion requirements, including any blood product transfusion (RR 0.33, 95% CI 0.26–0.44; I^2=56%), platelet transfusion (RR 0.20, 95% CI 0.13–0.32; I^2=40%), and any FFP exposure (RR 0.40, 95% CI 0.28–0.57; I^2=63%). A marked reduction was observed for FFP-only transfusion (RR 0.22, 95% CI 0.10–0.46; I^2=81%). Results were consistent across subgroup and sensitivity analyses.

Conclusions. VET-guided transfusion strategies significantly reduce blood product utilization without increasing bleeding risk in cirrhotic patients undergoing invasive procedures. These findings challenge the reliance on conventional coagulation tests and support a shift toward a physiology-based, individualized approach to hemostasis, with potential benefits for patient safety and resource optimization