

5th International Conference and Exhibition on Surgery & ENT

November 07-08, 2016 Alicante, Spain

Point-of-care TEG/ROTEM based coagulation management in cardiac surgery: A meta-analysis of 8332 patients

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Aim: Severe bleeding related to cardiac surgery is associated with increased morbidity and mortality. Thromboelastography (TEG®) and thromboelastometry (ROTEM®) are point-of-care tests (POCT). Bedside POCT provides goal-directed, individualized coagulation therapy. In this meta-analysis, we aimed to determine the current evidence for or against POCT-guided algorithm with ROTEM®/TEG® in patients with severe bleeding after cardiac surgery.

Methods: We performed a meta-analysis of randomized controlled trials (RCT) and observational trials (OT). Trials comparing transfusion strategy guided by TEG/ROTEM with a standard of care control group undergoing cardiac surgery were included. In addition, at least one desired clinical outcome had to be mentioned such as mortality, re-thoracotomy rate, sternal infection, and acute kidney injury. Also surrogate parameters such as transfusion requirements and amount of blood loss were analyzed.

Results: The literature search retrieved a total of 17 trials (nine RCT and eight OT) involving 8,332 cardiac surgery patients. POCT guided transfusion management significantly decreased the odds for patients to receive allogeneic blood products (OR 0.63, 95%CI 0.56-0.71; $p<0.00001$) and the re-thoracotomy rate due to postoperative bleeding (OR 0.56, 95%CI 0.45-0.71; $p<0.00001$). Furthermore, the incidence of postoperative acute kidney injury was significantly decreased in the TEG/ROTEM group (OR 0.77; 0.61-0.98; $p=0.0278$). No statistical differences were found with regard to mortality.

Conclusions: TEG/ROTEM based coagulation management decreases the risk of allogeneic blood product exposure after cardiac surgery. Furthermore, it results in significantly lower re-exploration rate, decreased incidence of postoperative acute kidney injury and thromboembolic events in cardiac surgery patients. Results of this meta-analysis indicates that POCT guided transfusion therapy is superior to the current standard of care.

Biography

Antje-Christin Deppe has completed her Medical degree from Heinrich-Heine University of Düsseldorf and Post-doctoral studies in 2010. She has completed her Cardiothoracic Residency and she is currently the Head of the Cardiothoracic Intensive Care Unit at the Department of Cardiothoracic Surgery at University Hospital of Cologne, Germany.

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