Thromboelastography in Pediatric Trauma

Purpose: Thromboelastography (TEG) is a viscoelastic test which quantitatively measures the blood's ability to form and break down clots. Thromboelastography has been shown to identify additional coagulopathies compared to conventional coagulation testing (CCT) methods in adult trauma patients. The purpose of this study is to describe TEG parameters seen in pediatric trauma patients.

Methods: This single-center, retrospective chart review evaluated pediatric level 1 trauma patients from January 2016 to June 2020. Patients included were less than sixteen years old, had an initial international normalized ratio value, prothrombin time and TEG values within 3 hours of admission. Descriptive statistics were used to analyze the data. This study was exempt by the Institutional Review Board.

Results: Ninety-eight patients met inclusion criteria for this study. Twenty-one percent of patients experienced a penetrating injury and seventy-one percent had a blunt injury. Of the 98 patients included, approximately 51% had an abnormal activated clotting time (ACT), 27% had an abnormal R time, 8% had an abnormal K value, 14% had an abnormal alpha angle and 17% had an abnormal maximum amplitude (MA). Patients who had at least one abnormal TEG value had a median length of stay of 5 days and patients who had at least one abnormal CCT had a median length of stay of 4.5 days. When evaluating the twenty-three patients that received blood products, 91% had at least one abnormal TEG value while 87% had at least one abnormal CCT. Of the 18 patients that died, 83% had at least one abnormality in both TEG and CCT.

Conclusion: In this pediatric trauma cohort increased K value and decreased MA had higher incidences of death compared to CCT. A larger data set is needed to further validate the utility of TEG in pediatric trauma.