An observational study into the normal TEG6s values in term pregnant women undergoing elective caesarean section

Binks, Rebecca; Maronge, Lizzie; Pillai, Arani; Carlson-Hedges, Louise; Bradley, Jim
Nottingham University Hospitals NHS Trust

Nottingham University Hospitals NHS Trust

Introduction

Point of care coagulation studies such as thromboelastography (TEG) have growing popularity in the management of obstetric haemorrhage [1][3] . Current reference ranges for the TEG6s [2] are based on non-pregnant volunteers. There are no documented obstetric reference ranges. Major obstetric haemorrhage (MOH) is still a significant cause of morbidity and mortality; use of point of care coagulation tests could be beneficial in the management of this. We aimed to describe a reference range of values for TEG6s in the obstetric population, following which a treatment algorithm could be developed to aid management of MOH.

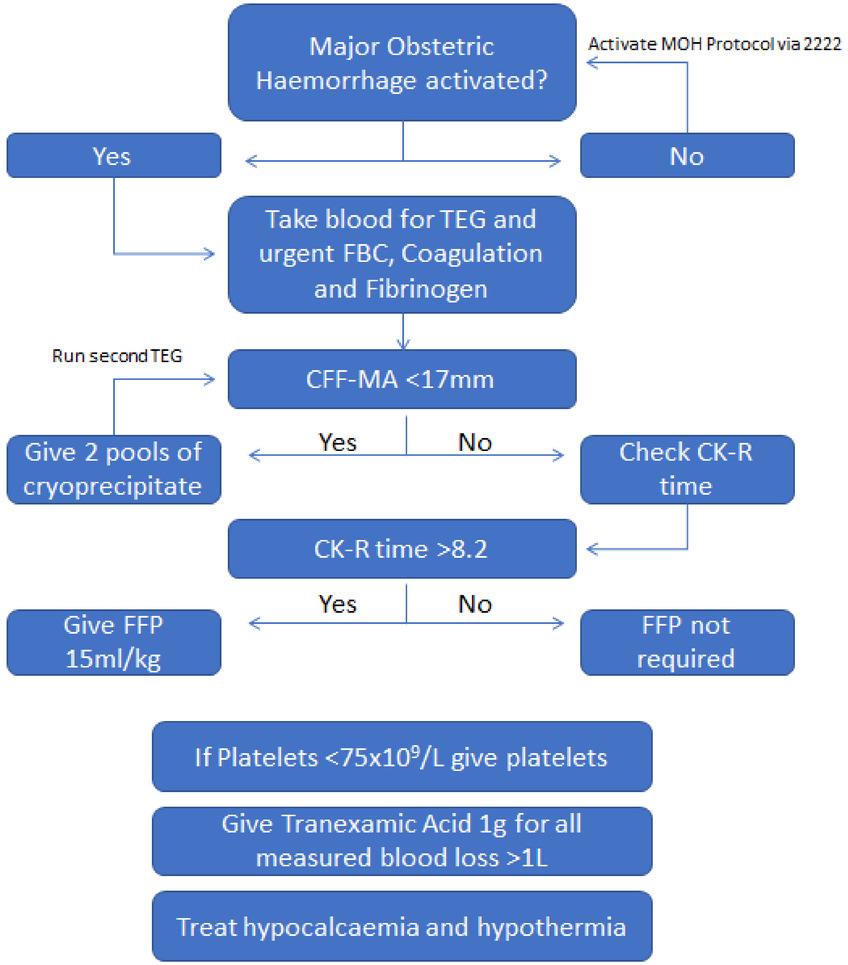
Methods

Ethical approval was obtained. Pregnant women booked for an elective caesarean section were approached to participate in this study.

Exclusion criteria:

- <37 weeks pregnant
- <18 years
- Pre-existing clotting disorders
- Recent antepartum haemorrhage
- Pre-eclampsia or HELLP syndrome
- Treatment with anticoagulants, antiplatelets or non-steroidal anti inflammatory drugs
- Renal, liver, cardiovascular or malignant disease
- Blood transfusion, recent bleeding or surgery within the last 28 days

10mls of blood was drawn at the time of cannula insertion and sent for clotting studies, fibrinogen and analysed using the TEG6s.



Obstetric TEG Treatment Algorithm

For Major Obstetric Haemorrhage Only

Results

120 pregnant women were recruited with a mean age of 32.6 years, mean weeks gestation 39.2, median parity: 1. Independant sample t-test was used to calculate p values; we assumed non-pregnant ranges contained 95% of the population.

Table: Comparison of obstetric results with non-pregnant reference range

	Mean	Standard Deviation	Obstetric reference range	Non-pregnant reference range	p value
CK-R	5.44	1.36	2.71 - 8.18	4.6 - 9.1	<0.0001
CFF-MA	27.55	5.27	17 - 38.1	15 - 32	<0.0001
ACT	87.89	13.68	60.52 - 115.26	82 - 152	<0.0001
Fibrinogen	5.02	1.4	2.2 - 7.84	1.8 - 4g/L	<0.0001

Discussion

Our results have demonstrated differences in TEG6s values in the healthy term obstetric population compared to those used in the non-pregnant population. The clinical significance of this difference, however, is unclear. Using these results we have produced a treatment algorithm for the use of the TEG6s in MOH, which is about to be implemented in our trust.

Disclosure - This study was funded by an OAA small project grant.

References

1. T.C.D. Roberts, L. De Lloyd, S.F. Bell et al. Utility of viscoelastography with TEG 6s to direct management of haemostasis during obstetric haemorrhage: a prospective observational study. International Journal of Obstetric Anaesthesia. 2021; 47: 103192
2. 2. P. A. Gurbel, K. P. Bliden, U. S. Tantry et al. First report of the point-of-care TRG: A technical validation study of the TEG-6S system. Platelets, DOI 10.3109/09537104.2016.1153617
3. 3. B. Macafee, J. P. Campbell, K. Ashpole et al. Reference ranges for thromboelastography (TEG) and traditional coagulation tests in term parturients undergoing caesarean section under spinal anaesthesia. Anaesthesia. 2012; 67: 741-747