Use of Thromboelastography (TEG) to aid in Clinical Decision-making for Epidural Catheter Placement In a patient with von Willebrand Disease Type 2

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Introduction

The development of epidural hematoma is one of the most feared complications of epidural catheter placement in patients with coagulation abnormalities. The decision to place an epidural catheter in patients with von Willebrand Disease (vWD) type 2 is particularly challenging because this coagulation disorder has multiple subtypes, some with severe thrombocytopenia, and a wide range of clinical presentations. While standard coagulation laboratory studies measure individual aspects of coagulation and may be inadequate for clinical decision-making for epidural catheter placement, thromboelastrography (TEG) measures the ability of whole blood to clot and has become a useful adjunct to standard laboratory studies in assessing hemostatic function in patients with coagulation disorders. Here we describe the use of TEG to aid in clinical decision-making for epidural catheter placement in a patient with vWD Type 2 and thrombocytopenia.

Anesthetic Management

Admission

- 33-year-old G1P1 with vWD Type 2 and longstanding thrombocytopenia requested epidural analgesia for induction of labor
- Based on laboratory studies and TEG analysis (below), the patient received two units of platelets and desmopressin 0.3 mcg/kg IV prior to epidural catheter placement at the L3-4 interspace.

Labor

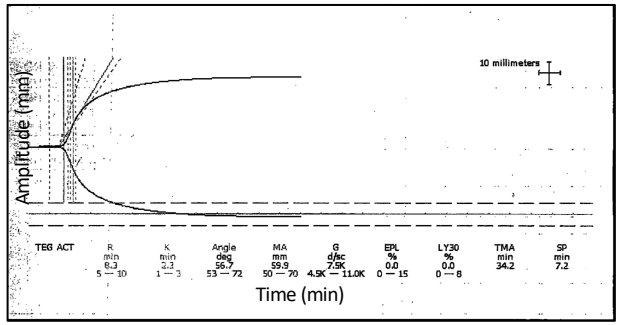
- Five hours after epidural placement, a healthy male infant with Apgar scores of 8 and 9 was delivered vaginally with EBL 600 mL

Postpartum

- Platelet count three hours after delivery was 90,000/µL, at which point the epidural catheter was removed uneventfully
- The patient had no postpartum bleeding issues
- Mother and baby were discharged home on postpartum day 2

Laboratory Studies

Lab Values (Normal Ranges)	Admission	Postpartum Day 1	Postpartum Day 2
Hgb (11.4 - 15.4 g/dL)	8.6	6.8, 9.3, 8.9	10
PLT (150 - 450 x 1000/µL)	68, 75, 84, 90	69, 60, 55	68
PT (9.5 - 11.5 s)	10		
PTT (23.0 - 31.0 s)	27		
INR (0.9 - 1.1)	1		
Factor VIII Activity (55-162%)	254		
vWF Ag (46 - 208%)	>300		
Rapid TEG			
ACT (86.00 - 118.00 sec)	128		
K (0.50 - 2.30 min)	1.3		
Alpha (64.00 - 80.00 deg)	73.2		
MA (52 - 71 mm)	61		
% Lysis at 30 min (0 - 8%)	0		
Citrated Kaolin TEG			
R (5.00 - 10.00 min)			8.3
K (1.00 - 3.00 min)			2.3
Alpha (53.00 - 72.00 deg)			56.7
MA (50 - 70 mm)			60
G (4.5 - 11.0 kdyn/cm2)			7.5
% Lysis at 30 min (0 - 8%)			0



Rapid thromboelastogram for this patient

Discussion

- TEG, which measures the ability of whole blood clotting, is a useful tool for assessing risk of epidural placement in cases of thrombocytopenia
- In this case, Rapid TEG demonstrated adequate platelet function, intact fibrin cross linking activity, and good clot integrity. These results, along with elevated vWF and Factor VIII levels, suggested that her thrombocytopenia was best managed with platelet transfusion and desmopressin rather than vWF – Factor VIII concentrate.
- Epidural placement and removal were accomplished uneventfully and no abnormal peripartum bleeding occurred

References

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