Disseminated Intravascular Coagulation Syndromes in Obstetrics

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Question 1:

Vaginal delivery is certainly the preferred route of delivery for placental abruption. Can you comment on any guidelines for appropriate anesthesia in the setting of a laboring patient in disseminated intravascular coagulation (DIC)? Decreased platelet and fibrinogen values may make neuraxial anesthesia unsafe due to the risk of epidural hematoma. Can an obstetrician perform regional blocks such as a pudendal or paracervical block without increased risk? When would this be inappropriate?

Response from Drs. Cunningham and Nelson:

For any patient with a coagulopathic condition, an experienced obstetric team that includes a dedicated obstetric anesthesiologist is preferred. As recommended in the American College of Obstetricans and Gynecologists’ (ACOG) Practice Bulletin No. 36 (see Obstet Gynecol 2002;100:177–91), a patient with these serious medical disorders should prompt an anesthesiology consultation with coordination of care. A major factor in defining the preferred route of delivery is the fetal condition. If the fetus is dead, vaginal delivery is preferred unless hemorrhage is so brisk that it cannot be successfully managed even by vigorous blood replacement, or there are other obstetric complications that prevent vaginal delivery. For labor and vaginal delivery, options are unfortunately limited. As noted by Dr. Novotny, maternal coagulopathy is considered an absolute contraindication to regional anesthesia (see ACOG Practice Bulletin No. 36, Obstet Gynecol 2002;100:177–91). Similarly, hematoma formation can also occur with pudendal or paracervical blocks and are most likely when there is a coagulopathy present (see Anesthesiology 2004;101:143–52). As such, it would seem wise to avoid pudendal or paracervical block placement. Given these risks, we have traditionally used intravenous narcotics/sedative formulations for analgesia. For example, Meperidine
Question 2:

Many of us in obstetrics have been taught to ignore the D-dimer due to the normal elevation in fibrin split products in pregnancy. Is there a scenario where obtaining and following this analyte would be of clinical value?

Response from Drs. Cunningham and Nelson:

The physiologic increase of D-dimers across pregnancy are typically relatively “low” to “moderate” (eg, up to 1.7 micrograms/mL in the third trimester), whereas with clinically significant coagulopathy the values are typically markedly elevated (above 10 micrograms/mL). Additionally, serial surveillance may aide in monitoring clinical recovery, and of note, the presence of fibrin split products is a component of the International Society on Thrombosis and Hemostasis (ISTH)-DIC scoring system.

Question 3:

Is there a role for routinely obtaining coagulation labs in all patients with preeclampsia with severe features or HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome?

Response from Drs. Cunningham and Nelson:

We would not recommend routinely surveying coagulation studies in all women with preeclampsia with severe features. Instead, we would recommend targeted testing in those women in whom analytes are identified to be abnormal on the initial pregnancy-related hypertension panel survey. At Parkland Hospital, we typically survey aspartate transaminase (AST), serum creatinine, and a complete blood count. If these values are abnormal (eg, HELLP syndrome is identified), then we move to an expanded survey for coagulopathy. This serves several purposes by establishing the presence or absence of coagulopathy and also excludes alternative diagnoses such as acute fatty liver of pregnancy.

Question 4:

What guidelines do you suggest for the time intervals between lab draws while treating a patient with hemorrhage and DIC?

Response from Drs. Cunningham and Nelson:

Because of the wide variability of clinical scenarios with acute hemorrhage, there are no evidence-based guidelines for monitoring laboratory studies. We generally survey hematologic indices every 1–2 hours in the setting of acute hemorrhage within an operative setting. Thereafter, laboratory studies are drawn on arrival to the recovery unit or intensive care unit, and subsequent testing of hematologic studies for anemia are drawn every 2 hours and coagulation profiles are drawn every 4–8 hours during immediate resolution. Obviously, persistence of hemorrhage postoperatively will dictate timing of laboratory assessment.
Question 5:
Although DIC is rare with a retained dead fetus, in the setting of a surviving co-twin and continuing pregnancy, would you recommend routine labs to screen for DIC, and if so, at what interval would this be appropriate?

Response from Drs. Cunningham and Nelson:
Only a few cases of maternal coagulopathy after a single fetal death in a twin pregnancy have been reported. This is probably because the surviving twin is usually delivered within a few weeks of the demise (see Ultrasound Obstet Gynecol 2006;28:736–7). That said, we have observed transient, spontaneously corrected, consumptive coagulopathy in multifetal gestations in which one fetus died and was retained in utero along with its surviving twin. The plasma fibrinogen concentration initially decreased but then increased spontaneously, and the level of serum fibrinogen–fibrin degradation products increased initially, but then returned to normal levels. A reasonable approach would be to survey studies at the diagnosis of demise to establish baseline indices with subsequent testing at 3–4 weeks following the initial event if the patient has not yet delivered.

Question 6:
You suggest that in the future massive transfusion protocols will be tailored to specific obstetric situations. In your expert opinion, where do you feel the current generic protocol is most likely to fail to meet the needs of our obstetric patients, and what changes are you hopeful will be investigated in the near future?

Response from Drs. Cunningham and Nelson:
Our biggest perceived problem with transfusion protocols is recognition, or lack thereof, of acute hemorrhage warranting activation. Unrecognized and/or underappreciated hemorrhage with failure to activate a massive transfusion protocol often results in a bad situation becoming worse and figuratively getting “behind the eight ball.” Additionally, at Parkland Hospital, we continue to endorse use of whole blood as opposed to packed red blood cells for transfusion therapy; however, the shortage of whole blood relegates treatment with components for most women with torrential hemorrhage. Along these lines, we have serious reservations for use of thromboelastography (TEG, ROTEM, etc.) “guiding” and/or withholding transfusion of various components in an obstetric patient requiring a massive transfusion until more data become available.