Obstetric Hemorrhage

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This summarizes a self-learning module including video scenes of a mock scenario available from ABC blood centers

Clinical Case: A blood group A, Rh(D) negative woman bled to death after giving birth. The small hospital didn’t stock A-negative red blood cells (RBCs). O-negative units were available, but were not used. Presumably, the laboratory policy required contacting the pathologist for out-of-type transfusions. This case highlights the need for transfusion services to prepare fully for cases involving massive transfusion, including postpartum hemorrhage.

World Health Organization (WHO) data indicate hemorrhage accounts for 35% of maternal deaths worldwide, reaching as high as 60% in developing countries. Causes of postpartum hemorrhage include:

a. Uterine atony;
b. Trauma (gynecological lacerations);
c. Retained or adherent tissue;
d. Clotting disorders; and
e. Inverted or ruptured uterus.

Two thirds of women who have obstetric (OB) hemorrhage have no risk factors recognized before delivery.

The response to postpartum hemorrhage must be coordinated between clinical, laboratory and support services. As in any massive transfusion, two-way communication is key. Roadblocks must be eliminated by preparing all that are involved. Joint plans and drills can assess how ready the staff is for this type of patient.

Lack of or mis-communication during transfusion emergencies can pose a significant risk of morbidity and mortality. Among all transfusions in the UK, the National Patient Safety Agency received reports of 11 deaths and 83 incidents during a four-year period in which a patient was harmed due to a delay in providing blood in an emergent situation.(1) Awareness of this problem prompted the following recommendations:

a. Hospital transfusion committees review emergency release protocols and practices
b. Protocols enable release of blood without initial approval of a pathologist. Pathologist should be advised as soon as possible.
c. All clinical laboratory and support staff are able to access and are familiar with the massive transfusion protocol by conducting training and regular drills
d. Blood bank laboratory staff are notified of patients with a massive hemorrhage as soon as possible with specific trigger phrase (e.g. “massive transfusion in the delivery suite”).
e. Specific OB team member coordinates communication with the laboratory and support services during the incident and clearly communicates when the situation is resolved

Key Points

- Obstetric hemorrhage is the leading cause of mortality during childbirth.
- Practicing scenarios with both the OB team and the lab enhances communication during a real event.
- Formalize communication: “SBAR: Situation, Background, Assessment, Recommendation.”
- Track patient vital signs and cumulative blood loss.
- Have planned escalation of intervention strategy including pharmacological and surgical strategies.

A particularly useful internet resource is the California public health website, dedicated to reducing maternal hemorrhage: www.cmqcc.org/ob_hemorrhage (2).
Specific best practices to anticipate and prevent peripartum hemorrhage:

- Assess bleeding risk on all OB patients.
- Quantify blood loss on all births and have a process for real-time cumulative measures.
- Use a vital sign tracking mechanism that requires alerting care providers of abnormalities before hemorrhagic shock.
- Appropriately use pharmacologic measures with escalation plan.
- Use non-pharmacological interventions including cell salvage and surgical interventions with an escalation pathway.
  Surgical interventions include: Bakri intra-uterine balloon, B-lynch suture and arterial embolization or selective arterial ligation.
- Run practice drills so that all personnel are aware of how to respond in a hemorrhagic emergency.

Communications strategies: SBAR

Many hospitals have instituted formal communications templates including SBAR which stands for “Situation, Background, Assessment, Recommendation.” These empower front-line staff to share observations and recommendations in a team centered approach. Atul Gawande has discussed the importance of medical care by teams instead of solo decision making by the physician. (3)

Emergency release versus Massive transfusion protocols

These are separate concepts but sometimes are confused by non-transfusion medicine clinicians. Emergency release protocols specifically allow release of compatible (either group O or type-specific) units prior to completion of antibody screen and crossmatch, if required. There must be a robust identification and tracking system, so released units can be tracked to the appropriate recipient, especially if type-specific units are released.

In contrast, massive transfusion specifically addresses the risk of dilutional coagulopathy that may be induced following receipt of a large number of RBCs (i.e. approaching a single blood volume of the recipient) in the absence of receiving plasma or platelet components. Observational experiences in both battle field and civilian trauma centers suggest that outcomes are superior if you prevent development of a coagulopathy rather than try to correct one after a large volume of red cells have been transfused.

Cell salvage: While theoretical concerns have been raised against using cell salvage during maternal hemorrhage including risks of contamination with nonsterile fluids and amniotic fluid embolus, in practice, several advocates have documented the efficacy of cell washing and the empirical rarity of complications. (4) One practical concern is maternal red cell alloimmunization should fetal Rh(D) + cells be infused into an Rh(D)-negative mother, hence, this possibility should be considered in Rh(D)-negative women and RhIg prophylaxis be considered if appropriate.

OB/transfusion service department next steps

- Establish multidisciplinary working groups to review post-partum hemorrhage websites and other content and scenarios (5-7).
- Setup simulations that include:
  o Having transfusion service laboratory participate in the mock event;
  o Holding the event in OB delivery room for more realistic training; and
  o Considering variations, including transfusion reactions, to train on additional transfusion risks.

7. Transfusion reaction mock scenario:
https://www.mededportal.org/publication/8424

Seminar #1: Obstetric Hemorrhage Prevention and Treatment (continued from page 1)

References

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