Pregnancy and the Risk for Multiple Lawsuits

Kevin Klauer, DO, EJJD, Chief Medical Officer, Emergency Medicine Physicians, Ltd., Canton, OH

VENOUS THROMBOEMBOLISM

Incidence during pregnancy: 0.76 to 1.72/1000 pregnancies; 4 times greater than in nonpregnant women; deep venous thrombosis (DVT) — two-thirds occur antepartum (evenly distributed among trimesters); pulmonary embolism (PE) — 43% to 60% occur puerperium; leading cause of maternal death in developing countries; study by Greer et al — 50% of thromboembolic events occur ≤20 wk of pregnancy; relative risk for PE during puerperium period 20 times greater than at other points in time; risk factors — include history of thromboembolism, smoking, weight gain, and parity

D-dimer: levels rise at conception; test intended to rule out PE, but elevated levels may lead to false-positive diagnosis; retrospective chart review — among 220 D-dimer tests, 118 positive; positive predictive value 4.2%, ie, 5 patients had PE; D-dimer not useful for predicting need for further testing, particularly during pregnancy

Diagnostic approach: primary principle — limit exposure to ionizing radiation; clinical suspicion for PE — if DVT suspected, rule out using ultrasonography (US); if DVT not suspected, perform other diagnostic tests; radiation exposure — for fetus, greater with ventilation/perfusion (V/Q) scan vs computed tomography (CT); for mother, greater with CT vs V/Q scan; indeterminate results following CT — recommend higher-order test (eg, pulmonary angiography); clinical decision rules — not useful for pregnant patients; Wells criteria — well validated in general population but not in pregnant patients; include leg swelling, pain, and slow venous blood flow (all common during pregnancy)

PE rule-out criteria (PERC): D-dimer levels not included; because derivation study did not include pregnant patients, not useful in this population; registry study — in 6% of patients with PE, PERC rule results completely negative

AMNIOTIC FLUID EMBOLISM (AFE)

Case 1 (“SE”): 2 hr after delivery by cesarian delivery, 36-yr-old woman had episode of syncope and persistent hypotension; surgeon did not believe symptoms related to bleeding from surgery; 2 cardiologists consulted; 2 days later — patient had cardiopulmonary arrest; resuscitation successful; strategy for treatment debated among clinicians (who disagreed about whether finding of fluid in abdomen present at or increased since time of surgery); SE developed disseminated intravascular coagulation (DIC); patient died during insertion of catheter; postmortem examination — showed intraabdominal hemorrhage and AFE

Ovarian torsion (OT) vs testicular torsion (TT): complications — intraperitoneal sepsis and permanently impaired fertility more likely with OT than with TT

Ovarian torsion: pelvic examination in ED — did not change strategy for management in 94% of cases (ie, if OT suspected, do not perform pelvic examination if it delays more definitive diagnostic tests); imaging — CT not sensitive for torsion; US recommended

ECTOPIC PREGNANCY (EP)

Transvaginal US: difficult to perform; misinterpretation common with bedside US (eg, ectopic pregnancies misdiagnosed as cysts); if clinician unsure of how to interpret findings, obtain US through radiology

Epidemiology: incidence — as common as 1 in 40 pregnancies; mortality — high; increases with age; study — among patients with positive human chorionic gonadotropin (HCG), 7.5% had EP, but only ≈50% detected on initial presentation; most common misdiagnoses — threatened or spontaneous abortion

Signs and symptoms: abdominal pain — reported in 100% of ruptured vs 30% of unruptured EP; amenorrhea — ≈50% of unruptured EP; vaginal bleeding — 39% of unruptured EP; adnexal tenderness — 28% of unruptured EP; conclusion — unruptured EP difficult to diagnose without HCG test and US

Reliability of patient reports: >10% of patients reporting “last menstrual period on time” or “no change of pregnancy” have positive pregnancy test; perform HCG test in all patients of child-bearing age regardless of self-reported history

Assessment: patient with positive HCG, abdominal pain, and normal physical examination — transvaginal US recommended; change in HCG over 2 days — may increase as

Educational Objectives

The goals of this program are to improve management of patients with pregnancy-related emergencies and to help physicians limit liability associated with patients who refuse emergency medical services (EMS) care. After listening to and assimilating this program, the clinician will be better able to:

1. Diagram an approach for diagnosing venous thromboembolism in pregnant patients.
2. Use appropriate imaging and diagnostic testing for ectopic pregnancy and ovarian torsion.
3. Identify and treat preeclampsia and eclampsia.
4. Follow appropriate procedures when faced with patients who refuse transport to the emergency department.
5. Assess patient capacity for making an informed medical decisions about EMS transport.

Faculty Disclosure

In adherence to ACCME Standards for Commercial Support, Audio Digest requires all faculty and members of the planning committee to disclose relevant financial relationships within the past 12 months that might create any personal conflicts of interest. Any identified conflicts were resolved to ensure that this educational activity promotes quality in health care and not a proprietary business or commercial interest. For this program, members of the faculty and planning committee reported nothing to disclose.
in normal pregnancy; decreases or remains stable in some patients.

Study of transvaginal US in patients with low HCG: included patients with lower abdominal pain or bleeding and quantitative HCG <1000 mIU/mL; all underwent transvaginal US within 24 hr; HCG <1000 mIU/mL in ≥33% of EPs; conclusion — HCG not diagnostic for EP; obtain transvaginal US regardless of quantitative HCG result.

Indeterminate findings on US: empty uterus — EP present in >25%; nonspecific fluid — EP in ≥15%; gestational sac (normal or abnormal) — EP in <5%; high discriminatory zone for HCG (>3000 mIU/mL) with negative US — study showed 35% sensitivity for detection of EP; quantitative HCG not recommended to identify or rule out EP.

Methotrexate: indications — no evidence of rupture or hemoperitoneum, hemodynamic stability, <8 wk gestation, β-HCG <5000 mIU/mL, adnexal mass <3 cm, no fetal cardiac activity, and EP confirmed; surgeon should decide whether to administer and document decision.

Heterotopic pregnancy: definition — simultaneous intra- and extrauterine pregnancies; incidence — 1 in 4000 overall; 1 in 100 with in vitro fertilization.

Case 2: 26-yr-old woman with positive home pregnancy test; symptoms — spotting for 2 days, mild cramping, and pain in lower abdomen; physical examination — relatively normal, with “old” pelvic blood; diagnostic workup — qualitative HCG positive and urinalysis normal; patient discharged with instructions for US following morning; 2 hr after discharge — unable to sleep due to pain and presents to second hospital (returns home because of long wait time); 5 hr after discharge — patient has syncopal episode at home; transported to third hospital; emergency department (ED) physician diagnosed EP; review of care — diagnostic evaluation incomplete; patient should have been admitted for observation until US available; normal vital signs, lack of risk factors, and benign examination created “false sense of security.”

Case 3: 26-yr-old pregnant woman with schizophrenia and vaginal bleeding for 2 wk presented to labor and delivery unit of hospital; US showed empty uterus; obstetrician, who knew of patient’s schizophrenia, expressed disbelief about patient being pregnant and ordered discharge; 2 days later — patient presented to different hospital with severe abdominal pain; HCG test positive; pain decreased after large bowel movement and patient discharged; 1 day later — patient found dead in apartment; postmortem assessment — 1.5-in EP in fallopian tube undetected because obstetrician did not perform US.

Case 4: 30-yr-old woman with vaginal bleeding, abdominal cramping and positive HCG; US showed small amount of nonspecific endometrial fluid; obstetrician consulted with patient and prescribed methotrexate; 2 days later — patient presented to different facility; US showed 6-wk intrauterine pregnancy with fetal pole; follow-up US — showed decline in fetal heart rate; 1 wk later — decrease in HCG and fetal demise; dilatation and curettage performed; conclusion — methotrexate used inappropriately.

Acute Coronary Syndrome (ACS)

Case 5: 33-yr-old pregnant woman with chest pain radiating to back; history and physical examination — no risk factors for ACS, but examination detected ST segment elevation myocardial infarction (STEMI); intervention — percutaneous coronary intervention without stenting; outcome — excellent.

Background: incidence — 0.6 to 1/10,000 pregnancies; increasing as result of increase in mean age during pregnancy; mortality rate — 5% to 37%; detailed information lacking because of reporting bias (ie, no controlled studies); hypertension — odds increased 11.7-fold; location — subendocardial 37%; anterior 20%; inferior 20%; age >40 yr — increases risk 30-fold; pregnancy — increases risk for MI or ACS 3- to 4-fold.

Preeclampsia and Eclampsia

Preeclampsia: criteria — for gestational age >20 wk, blood pressure ≥140/90 mm Hg, or significant increase in systolic or diastolic blood pressure from baseline, proteinuria, and edema; consider molar pregnancy if gestational age <20 wk; symptoms — headache, vision changes, edema, or abdominal pain; risk factors — primigravida status, diabetes, hypertension before pregnancy, young or older age, multiple gestation, obesity, family history, and molar pregnancy.

Eclampsia: criteria — preeclampsia with seizures; symptoms — headache, central nervous system and vision changes, and hyperreflexia; treatment — decrease blood pressure; administer magnesium sulfate to prevent and treat seizures; if hypermagnesemia develops, treat with calcium gluconate; parturition — not always curative, ie, preeclampsia and eclampsia may occur ≤8 wk postpartum.

Hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome: clinical variant of preeclampsia; treatment — same as for preeclampsia; avoid diuretics and angiotensin-converting enzyme (ACE) inhibitors.

Rh Isoimmunization

Walker v Rincke: decision of court stated “physician owes duty to future children of woman with Rh factor-negative blood who gives birth to Rh-positive child”; Rh(D) immune globulin (eg, MIRhOGAM, RhOGAM) must be administered to pregnant woman with Rh factor-negative blood within 72 hr if possible transfusion occurs between maternal blood and Rh-positive fetal blood.

Rh(D) immune globulin: purpose — destroy Rh-positive fetal red blood cells in maternal circulation; dose — 50 μg for gestational ages <12 wk and 300 μg if ≥12 wk (or, give 300 μg in all cases); after spontaneous abortion — per Cochrane Database of Systematic Reviews (2013), has little effect on maternal sensitization or Rh alloimmunization in future pregnancies for women with Rh-negative blood.

Suggested Reading


Refusal of Emergency Medical Services

John Dery, DO, Associate Medical Director of Emergency Services, and EMS Director, Sparrow Health Systems, Lansing, MI.

Laws addressing refusal of emergency medical services (EMS): patient rights — shared decision making with providers; refusal of treatment; must consent to treatment (eg, surgery); treatment of adult without consent may be considered assault; disclosure — must be documented; care of patient — must conform to that which reasonable practitioner would provide in given environment; ED physicians often act via proxies, ie, EMS providers and paramedics, but may be held responsible in lawsuits; liabilities related to lack of informed consent — battery (ie, touching patient without consent); medical negligence (eg, no informed consent obtained for refusal of care).

Competence: 3-step rule — patient must be capable of 1) retaining and understanding; 2) believing; and 3) using relevant information to make informed decision; determined by judge (not physician).
Capacity: determined presumptively by clinicians as substitute for judge’s determination of competence; assessment made of whether patient capable of understanding consequences of actions and making informed decisions; documentation — assess for altered mentation, intoxication, psychiatric disease, or dementia; talk to and observe patient; use repeatable instrument, eg, Glasgow Coma Scale, for documentation in patient chart; proxies for informed consent on behalf of patient —, parent, legal guardian, or next of kin; emancipated minors can make informed decisions if married, active military, or living independently, and if doing so “is in their best interest”

American College of Emergency Physicians policy: each medical system should create own medically directed protocols for patient refusal; online physicians and gross negligence — no case law available; speaker believes online physician can be held liable; key elements — patient must be capable of understanding decisions; individuals who can make refusals for minor should be identified

National Association of EMS Physicians policy: evidence for allowing paramedics and prehospital providers to accept refusals insufficient; need for more peer-reviewed literature and education cited

Case of refusal: 52-year-old man found lying face down by girlfriend; patient conscious when EMS arrived and answered questions appropriately; EMS contacted online medical control, who allowed EMS to accept refusal because patient had capacity and signed refusal form; overnight — patient vomited (may have had seizure); following morning — EMS contacted; ruptured aneurysm subsequently identified; trial and appeals courts — found no gross negligence because EMS and online physician thoroughly documented refusal

Costa v community EMS: fire department EMS responded to patient with head trauma; EMS determined patient had mental capacity to refuse transport; next morning — patient’s mental status altered; epidural bleeding identified, and craniotomy and evacuation performed; outcome — loss of vision in one eye and ongoing cognitive impairment; all responders, online medical director, and medical director for EMS found responsible

Intoxication: assume altered mental status; determine whether caretaker available, potential for endangerment to self or others, and nature of intoxicant consumed

Criteria for requiring evaluation by EMS: cases conflict (ie, required if called to scene, vs required only if EMS has already “laid hands on” patient); police involvement — may take patient into custody and transport to hospital if patient appears mentally ill or danger to self or others; if conditions unproven, false imprisonment and/or assault and battery may be claimed

Refusals for minors: parens patriae — children can be taken into custody if in their best interest (neither EMS nor physician criminally liable); may be exercised if parents separated and one not reachable (common with incidents involving injury to multiple minors)

Responsibilities of ED physician: gain familiarity with refusal form used locally; ensure paramedics perform appropriate evaluation and follow-up; communicate with patient or caretaker to assess level of concern and convince patient to accept EMS transport; resident and attending physicians — study showed both able to accept refusals; patients more likely to present to hospital if they conversed with doctor

Suggested Reading


Acknowledgments

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- Review Educational Objectives on page 1: 5 minutes
- Take pretest: 10 minutes
- Listen to audio program: 60 minutes
- Review written summary and suggested readings: 35 minutes
- Take posttest: 10 minutes
HIGH-RISK PATIENTS

1. In pregnant women, D-dimer levels:
   (A) Are similar to those in nonpregnant women during the first trimester
   (B) Can reliably rule out pulmonary embolism
   (C) May have false-positive results leading to diagnosis of pulmonary embolism
   (D) Should be measured routinely

2. Which of the following is recommended for evaluation of suspected pulmonary embolism in a pregnant patient for whom results of computed tomography are indeterminate?
   (A) Pulmonary angiography
   (B) Wells criteria
   (C) Pulmonary embolism rule-out criteria (PERC)
   (D) None of the above are valid in pregnant patients

3. Amniotic fluid embolism most often occurs:
   (A) During the first trimester
   (B) As a result of a procedure or event that causes release of amniotic fluid into maternal circulation
   (C) Spontaneously
   (D) In multiple gestation pregnancies

4. A retrospective multicenter review showed that ovarian torsion is associated with a _______, compared with testicular torsion.
   (A) Lower incidence
   (B) Shorter time between diagnosis and surgery
   (C) Lower salvage rate
   (D) Shorter time between request for and completion of imaging

5. Which of the following signs is generally observed only AFTER an ectopic pregnancy (EP) has ruptured?
   (A) Amenorrhea
   (B) Vaginal bleeding
   (C) Adnexal tenderness
   (D) None of the above (all are common in unruptured EPs)

6. Among patients with indeterminate findings on transvaginal ultrasonography, EP is most likely in those with:
   (A) Nonspecific fluid
   (B) An empty uterus
   (C) A normal gestational sac
   (D) An abnormal gestational sac

7. A woman presents to the emergency department at midnight with persistent vaginal bleeding and lower abdominal cramping and pain. Her qualitative HCG test is positive, and the ultrasonography technician will not be available until the following morning. The emergency department physician should:
   (A) Discharge the patient with instructions to return for ultrasonography in the morning
   (B) Admit the patient for observation and perform ultrasonography as soon as available
   (C) Discharge the patient with instructions to obtain ultrasonography if symptoms worsen
   (D) Admit the patient and monitor quantitative HCG levels over a 2-day period

8. To prevent exposure to Rh-positive fetal blood, pregnant women with Rh-negative blood should receive Rho(D) immune globulin:
   (A) Immediately upon confirmation of pregnancy
   (B) Only if they show signs of Rh alloimmunization
   (C) At 2-wk intervals throughout pregnancy
   (D) Within 72 hr of possible transfusion between maternal and fetal blood

9. Competence to refuse medical treatment can be determined by:
   (A) A paramedic
   (B) A physician
   (C) A judge
   (D) Any of the above

10. Which of the following individuals CANNOT make an informed decision about refusal of emergency medical services (EMS)?
    (A) An emancipated minor
    (B) An otherwise healthy adult with alcohol intoxication
    (C) The next of kin for an adult with dementia
    (D) A and C


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