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ED Legal Letter

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Pitfalls of Evaluating a Pregnant Patient in the ED

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Editor's note: *Emergency health care providers frequently see pregnant patients for both pregnancy-related and nonpregnancy related complaints. In fact, emergency physicians (EPs) very frequently will screen for pregnancy even in the absence of any complaints that could be related to pregnancy. It is essential for emergency health care providers to be attentive to minor complaints in pregnant patients that could be ominous conditions. This issue presents vignettes from the law where our colleagues have been sued for pregnancy-related issues. It is hoped that we can extract lessons from those who have experienced the venue of the courts in order to keep our patients safe and our legal liabilities minimal. — **Richard J. Pawl, MD, JD, FACEP***

Introduction

A report by the U.S. Government Accountability Office in 2003, *Medical Malpractice: Implications of Rising Premiums on Access to Health Care* (GAO Medical Malpractice Report) asserted that the average payout for the average malpractice claim has been steadily rising since 1986, from about $95,000 in 1986 to about $320,000 in 2003.[1] The increase, the report pointed out, represents a growth rate of 8% per year, twice the general rate of inflation.

Although there are differences of opinion regarding the effects of rising malpractice premiums on patient access to health care, it is not disputed that obstetricians/gynecologists bear a substantial burden in premiums. For example, the average premium for obstetricians/gynecologists in Dade County, Florida, in 2002 was approximately $201,376.[2] There are anecdotal reports that suggest that providers in some states have stopped providing obstetrical services in order to attenuate their rising premiums. For example, the GAO

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Medical Malpractice Report found that pregnant patients in rural Mississippi now must travel 65 miles to the nearest hospital obstetrics ward to deliver because family practitioners at a local hospital stopped providing obstetrical services due to rising malpractice premiums. Although data may be difficult to obtain, it is not unreasonable to assume that even more pregnant patients are seeking emergency department (ED) evaluations of obstetrical and nonobstetrical complaints Currently, when a pregnant patient presents to the ED, her initial management often depends upon whether obstetrical services are present. In hospitals without obstetrical services, the EP will perform the initial evaluation of a pregnant patient presenting with health complaints at any gestational age. EPs at such hospitals will need to be familiar with the initial evaluation of second and third trimester bleeding, preterm labor, as well as the evaluation for fetal viability, to name only a few clinical issues. At hospitals with obstetrical services, emergency physicians are commonly relieved of evaluating the obstetrical complaints of pregnant patients beyond 20 weeks' gestational age. Nevertheless, they must remain facile with the evaluations of early pregnancy-related complaints (e.g. evaluations for ectopic pregnancies and miscarriages). Furthermore, all EPs must be able to evaluate pregnant patients at all gestational ages for trauma and non-obstetrical medical and surgical issues.

The selected malpractice cases herein remind the EPs and nurses of the complexities involved with the evaluation of the pregnant patient in the ED. Although some of the cases may not involve EPs, all of the cases involve issues that confront all EPs. It is beyond the scope of this writing to provide an extensive review of the medical evaluation of the pregnant patient. The reader should refer to reviews, such as those available in *Emergency Medicine Reports,* for a more comprehensive discussion of the clinical issues. Finally, because cases in law do not always publish the details that a health care provider may need to fully assess the case from a medical perspective, providers may find that the factual discussions omit some clinical details.

Abdominal Pain in the First Trimester

Case #1. Walker v Giles[3]

On June 20, 2001, Kimberly Walker, a 32-year-old G3P2 mother experienced the onset of periumbilical abdominal pain, vomiting, diarrhea, and anorexia during the 15th or 16th week of her latest pregnancy. She had been receiving prenatal care from Marietta OB-GYN Affiliates, PA, and thought it was prudent to see her doctors about her recent development of abdominal pain. However, because she "…was in too much pain…[and]doubled over," she asked her mother-in-law to drive her to her doctor's clinic for treatment. There a nurse practitioner assessed Ms. Walker to be suffering from viral gastroenteritis. Ms. Walker received an antiemetic medication and was instructed to go to the Kennestone Hospital Outpatient Infusion Center for rehydration. After it was apparent that Ms. Walker remained in pain, arrangements were made for her to be admitted to the Women's Center at Kennestone Hospital at approximately 6:00 pm by Dr. Giles, Ms. Walker's treating physician. He examined Ms. Walker in her room, noting that she was having mild abdominal pain to palpation and diagnosed her with viral gastroenteritis. A complete blood cell (CBC) count was ordered. The court records describe 'a shift to the left' in her CBC count. At court, the medical experts compared the hospital's CBC count results with

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those of one performed on Ms. Walker shortly before hospitalization and pointed out that the left shift was a deviation from her baseline CBC count. After being notified of the results of the second test, no further testing apparently was ordered by Dr. Giles.

The next day, Ms. Walker continued to complain of abdominal pain despite administration of analgesic medication. She also continued to vomit, and the staff notes describe a decreasing blood pressure and an increasing pulse rate. Dr. Klein, the Marietta OB-GYN partner on call that day, ordered a urinalysis that showed no further evidence of dehydration. Unfortunately, there was no record that he ever examined Ms. Walker, and no further tests were ordered. Intravenous fluids and analgesic medications were continued.

The following day, Ms. Walker's medical record continued to reflect a tachycardia and "decreased blood pressure." Dr. Klein was informed by Ms. Walker's husband that she continued to have pain, but Dr. Klein reportedly reassured the couple that Ms. Walker only had the stomach 'flu' and would be fine "in a couple of days," and he proceeded to discuss his decision to discharge Ms. Walker from the hospital later that morning.

Later that morning, Dr. Gingrey assumed the on-call physician responsibility for the Marietta OB-GYN group. Although there were notes made by Dr. Gingrey in Ms. Walker's medical record, the husband testified that he never left his wife's room that morning and never saw Dr. Gingrey assess Ms. Walker. No further testing was performed that morning, and Dr. Gingrey submitted an order to discharge Ms. Walker from the hospital.

After 12 hours of being at home, Ms. Walker could no longer tolerate the right upper and right lower quadrant abdominal pain, and therefore, presented to the Kennestone ED at about 11:00 pm. Upon arrival, her vital signs showed a BP reading of 60/0 mmHg and tachycardia. The EP saw Ms. Walker, ordered intravenous fluids and a CBC count, which showed a significant change suggesting a bacterial intra-abdominal infection. The general surgeon on-call, Dr. Smith, was called to assess Ms. Walker. Dr. Smith diagnosed Ms. Walker with acute cholecystitis and made plans to have Ms. Walker undergo a cholecystectomy the following Monday; he was going to be out of town during the weekend. He assured Ms. Walker that if an emergency arose, his partner, Dr. Novak, would be available during the weekend. Dr. Smith then admitted Ms. Walker to his service, and ordered the staff to notify Dr. Gingrey of Ms. Walker's admission.

Again, although Dr. Gingrey wrote orders for antiemetic medications, Ms. Walker's husband testified that he never saw any physician enter his wife's room throughout the day to reassess her.

On that Sunday, at approximately 1:20 am, Ms. Walker's membranes spontaneously ruptured, and Dr. Gingrey arrived to evaluate Ms. Walker. After ordering more pain medication and intravenous antibiotics, he contacted Dr. Novak to inform him that he thought that Ms. Walker might have appendicitis rather than cholecystitis. Dr. Novak performed surgery on Ms. Walker and found an acute gangrenous ruptured appendix with peritonitis. Ms. Walker lost her fetus and developed adult respiratory distress syndrome causing her to remain on mechanical ventilation for more than a month. She subsequently suffered a stroke that left her with a permanent right-sided paralysis, a recurring seizure disorder, and cognitive deficits.

The Walkers on their behalf and on behalf of their deceased child sued the physicians alleging that they had failed to properly diagnose and treat Ms. Walker's appendicitis causing the loss of her fetus after Ms. Walker's appendix had ruptured. The defendants filed for a directed verdict alleging that the plantiffs failed to show evidence showing cause-in-fact and proximate cause. The case went to the appellate court on this directed verdict request, but the appellate court reversed the trial courts decision, and the judgment against the defendants remained intact.

Discussion

Regardless of the results of the trial in the aforementioned case, the scenario that unfolded for Ms. Walker involved, as the court said, "… allegations of malpractice in response to malpractice." With only a few direct encounters with the patient and limited laboratory testing, several providers saw Ms. Walker during a period of several days and continued to miss the clues that might have prompted them to consider another diagnosis other than viral gastroenteritis. The diagnosis progressed from viral gastroenteritis to acute cholecystitis to finally appendicitis. Based upon the limited information from the court's rendition of Ms. Walker's experience, it appears that the health of the fetus also was not adequately addressed.

The issues confronted by the caretakers of Ms. Walker were essentially no different than those issues that face EPs in the evaluation of such a patient. EPs manage the chief complaint of abdominal pain in pregnant patients quite commonly and must distinguish between gastroenteritis, appendicitis, cholecystitis, and other clinical entities within a period of several hours rather than days. Furthermore, despite the growing tendency for diverting second and third trimester patients to the labor and delivery departments, there are still scenarios where the EP may be called upon to evaluate patients for complications of pregnancy. Hence, it is useful to review some of these clinical entities in the context of the pregnant patient that are part of the differential diagnoses facing ED health care providers .

Gastroenteritis and Pregnancy

Acute gastroenteritis (AGE) is a common and ubiquitous illness. As is the general population, pregnant patients are susceptible to AGE, and they are vulnerable to complications that are often self-limiting and inconvenient rather than debilitating.[4] These patients typically present with nausea, vomiting, diarrhea, abdominal cramping, fever, chills, myalgias, and headache. The illness typically lasts for 24 to 48 hours. Some of the symptoms are obviously similar to those of early pregnancy.

The majority of AGE conditions in adults are predominantly caused by norovirus (previously known as Norwalk-like viruses) and accounts for 90% of the outbreaks of gastroenteritis reported to the Centers for Disease Control and Prevention.[5] AGE usually begins with abdominal cramping and nausea and then proceeds to vomiting and moderate diarrhea (4-8 watery stools per day). Low-grade fevers and myalgias usually will accompany the syndrome, but the condition usually resolves in 48-72 hours.

Early-onset AGE usually occurs from food contaminated by preformed toxins elaborated by bacteria such as *Staphylococcus aureus* or *Bacillus cereus*. Symptoms usually occur within six to 12 hours of ingestion of the contaminated food, a fact that helps distinguish this AGE from other conditions. The symptoms are nausea, vomiting, diarrhea, and sometimes fever.

Inflammatory diarrhea usually results from the mucosal invasion of the colon by invasive cytotoxigenic bacteria with subsequent fever, abdominal pain, fatigue, vomiting, and mucoid diarrhea that is usually positive for blood.[6] The stool specimens will be positive for fecal leukocytes. Common pathogens are *Shigella*, *Salmonella*, *Campylobacter*, and the enterohemorrhagic *Escherichia coli*. Most of these infections are self-limiting, but complications such as acute renal failure, microangiopathic hemolytic anemia, and thrombocytopenia may occur. Closer monitoring of pregnant patients with inflammatory AGE is warranted.

Whatever the cause of the AGE, pregnant patients, although more susceptible to dehydration, typically will respond well to antiemetic medications, intravenous hydration, and electrolyte replacement. When the pregnant patient with apparent AGE symptoms does not seem to be responding to these therapeutic interventions, other diagnoses must be considered.

Appendicitis and Pregnancy

Appendicitis always should be considered in the differential for a pregnant patient with abdominal pain and no prior history of an appendectomy. It is one of the more common surgical complications in pregnancy, occurring in 1 to 2 per 1000 gestations,[7] approximately the same as that which occurs in the general population. There is no evidence to suggest that pregnancy will predispose a woman to developing the condition. At one time it was thought that the gravid uterus during advancing gestation would change the position of where the patient would perceive pain. But Mourad and colleagues reviewed 66,993 pregnancies within which there were 68 pregnancies complicated by appendicitis.[8] Right lower quadrant pain was the most common symptom of appendicitis regardless of the gestational age.

The symptoms of nausea, vomiting, and abdominal discomfort sometimes associated with diarrhea can mimic gastroenteritis, and indeed, can mimic some of the symptoms of pregnancy. CBC counts showing only a minor leukocytosis can be of little help and even confusing because the normal leukocytosis of pregnancy is approximately 14,000/mm^3. Fever may or may not be present. Given the ambiguities involved with differentiating the cause of right lower quadrant pain in a pregnant patient, other diagnostic modalities have been used. Computer tomography (CT) and ultrasonography have been advocated as advanced diagnostic modalities to assist the physician in making the decision to oper-

ate for a possible surgical emergency.[9] Clearly, there is a trend toward favoring CT for the diagnosis of appendicitis. Abdominal CT is estimated to expose the fetus to 1.7-2.6 rads, well below the recommended lower limit for fetal exposure of 5 rads.[10] One of the recurrent criticisms of the plaintiff's medical experts in *Walker* was the failure to order abdominal CT imaging. Regardless of the imaging modality available, the premise that it is better to operate unnecessarily than to postpone surgery until a generalized peritonitis has developed has not changed.[11] Surgery can minimize fetal and maternal morbidity and mortality when it prevents the progression of an inflamed appendix to a perforation and peritonitis.

Cholecystitis and Pregnancy

Pregnancy probably increases the risk of developing gallstones secondary to the high progesterone levels that inhibit smooth muscle contractility, and hence, promotes greater gallbladder volume with retention of cholesterol crystals.[12] Therefore, it is not surprising that biliary tract disease is second to appendicitis as a cause for surgical intervention during pregnancy. Symptoms include nausea, vomiting, and sometimes fever. The abdominal pain tends to be located in the epigastric to right upper quadrant, sometimes with radiation to the subscapular area. The pain may be intermittent or persistent. Ultrasonography is helpful in identifying gallbladder stones and biliary obstruction in many cases.[13] In the second and third trimesters of pregnancy, the differential diagnosis for these symptoms should include other pregnancy-related complications such as acute fatty liver of pregnancy and severe preeclampsia with HEELP syndrome (*See Discussion, page 42*). In the absence of biliary tract obstruction or pancreatitis, cholecystitis in pregnancy initially should be treated conservatively with intravenous fluids, nasogastric suction, and antibiotic, analgesic, and antispasmodic agents. Should conservative treatment fail, surgery should be considered.[14]

Lessons from the Walker Case

Clearly, Ms. Walker's providers should have considered a broad differential diagnosis when she presented initially. 'Tunnel vision' in clinical practice can promote errors that harm the patient and put physicians at risk for malpractice liability. Intractable abdominal pain should be a clue to the clinician to consider nonsurgical diagnoses as diagnoses of exclusion. Abnormal vital signs must be attended, particularly vital signs that do not correct over time, but rather worsen. Pregnancy should not be a barrier to ordering definitive diagnostic testing (e.g., ultrasound or CT imaging) to rule out surgical diagnoses that can cause substantial morbidity and mortality to the mother and fetus.

Preeclampsia in the ED

Case #2. Burrows v Herman, et al.[15]

Debby Burrows was 37 years old and in her 32nd week of pregnancy with her first child. She developed abdominal pain, vomiting, diarrhea, and a headache on a Friday evening around 9:20 pm. On the way to the hospital, Mr. Burrows called the office of his wife's doctor, Dr. Barry Herman, and requested that the doctor meet them at the hospital. (It is not clearly stated in the facts if Dr. Herman was Ms. Burrow's obstetrician, but the inference is that he was her obstetrician.) In the hospital's ED, Dr. Cheryl Cochrane, the EP, evaluated Ms. Burrows. Based upon Ms. Burrow's history, normal vital signs, clinical presentation, and unspecified laboratory results, Dr. Cochrane suspected that the patient was suffering from food poisoning. After analgesic administration and a period of observation in the ED, Ms. Burrows "did not improve" and Dr. Cochrane contracted Dr. Heman, who requested that Ms. Burrows be admitted to the hospital for hydration and observation. Dr. Herman did not request fetal monitoring. While still in the ED, a nurse again took Ms. Burrows' vital signs. Apparently noting a blood pressure that concerned her (not specified in the facts of the case), the nurse notified Dr. Cochrane that Ms. Burrows could be suffering from "pregnancy-induced hypertension/ preeclampsia". The "emergency room physician reiterated that the patient had gastroenteritis", requested further blood pressure readings, and to notify her if the blood pressure readings remained abnormal. It is unclear from the facts of the case if any further blood pressure readings were performed in the ED, but when the patient arrived to the floor, her readings remained "dangerously high." The floor nurse contacted Dr. Herman and informed him of Ms. Burrows' blood pressure readings and that she now was complaining of an excruciating headache. Subsequently, Ms. Bur-

rows seized and developed a left hemiplegia. The floor nurse again called Dr. Herman to notify him. It is not clear if Dr. Herman ordered any interventions prior to his arrival at the hospital, but he ordered a CT scan when he arrived, and it was discovered that Ms. Burrows had suffered a cerebral vascular accident. She was transferred by helicopter to a tertiary care center, but despite neurosurgical intervention, Ms. Burrows' brain herniated, and neither she nor the child could be saved.

Mr. Burrows filed suit for the wrongful death of his wife and the failure to diagnose preeclampsia. The court awarded him $2,380,799.

Discussion

Hypertension during pregnancy may be classified into one of three categories.[16] *Gestational hypertension* defines the development of an elevated blood pressure during the pregnancy or in the first 24 hours of postpartum without other signs or symptoms of preeclampsia or pre-existing hypertension. In the absence of prior hypertension, a blood pressure of 140/90 mmHg is considered abnormal. *Preeclampsia* traditionally was defined by a classic triad of hypertension, proteinuria, and edema. However, edema is no longer considered to be part of the diagnostic criteria.[17] Hence, preeclampsia generally is defined by hypertension and proteinuria. However, in the absence of identified proteinuria, preeclampsia should be considered when hypertension is present along with cerebral symptoms, right upper quadrant or epigastric pain, plus nausea and vomiting, or abnormal laboratory tests (e.g.,thrombocytopenia or elevated liver enzymes). *Eclampsia* is the occurrence of seizures with preeclampsia in the absence of other causes for seizures and is categorized with preeclampsia. Then, the third category of hypertension is chronic hypertension, which is hypertension present before the pregnancy or diagnosed prior to the 20th week of gestation. The clinical entity of most concern to EPs is that of preeclampsia/ eclampsia.

Risk factors for preeclampsia/eclampsia include nulliparity, family history of preeclampsia, obesity, and preeclampsia with a prior pregnancy. Chronic risk factors for preeclampsia include chronic hypertension, renal disease, type 1 diabetes mellitus, and thrombophilias, such as protein C deficiency.

Complications of preeclampsia/eclampsia are the second leading cause of death in pregnancies after 20 weeks' gestation. Complications include cerebral hemorrhage, placental abruption with disseminated intravascular coagulation, pulmonary edema, renal failure, and death.[18] The HELLP syndrome (hemolysis, elevated liver enzymes, and low platelets) may be seen with preeclampsia, but there are patients who have been diagnosed with HELLP syndrome who never had hypertension. HELLP syndrome and its association with preeclampsia/ eclampsia is associated with a perinatal mortality of 7.7% to 60% and maternal mortality of 0% to 24%.[19]

Preeclamptic patients may present with numerous symptoms in addition to the findings of hypertension and proteinuria. Nausea, vomiting, headache, and visual changes may accompany the signs of preeclampsia. Such symptoms should alert the physician to consider preeclampsia in the diagnostic differential for a pregnant patient rather than assuaging the physician that the patient is merely suffering from gastroenteritis. Right upper quadrant pain should suggest to the physician to look for symptoms of the HELLP syndrome in addition to appendicitis, cholecytitis, or mere gastritis. If preeclampsia is diagnosed by the EP, consultation with an obstetrician is indicated.

The convulsions of eclampsia may occur antepartum, intrapartum, or postpartum. Half of all cases of eclampsia occur antepartum, with the other half equally divided between intrapartum and postpartum.[20] Although it is rare, eclampsia has been reported prior to the 20th week of gestation.[21] Hence, it is entirely feasible for an EP to encounter this clinical entity during his/her career, and eclampsia should be on the differential diagnostic list for seizures in any pregnant postpartum patient.

It is beyond the scope of this article to discuss details of the treatment of preeclampsia/eclampsia, but several management issues are worth addressing. The EP should be involved in the initial treatment of the hypertension involved with preeclampsia/ eclampsia. Traditionally, hydralazine has been the medication that has been used, but labetalol and nitroprusside also may be used. Magnesium sulfate is the drug of choice for the convulsions of eclampsia. The EP must be familiar with its use and complications; an overdose of magnesium sulfate can lead to respiratory depression and maternal death.

In malpractice cases such as *Burrows*, the error is often failure to diagnose. The EP in *Burrows*, aside from failing to diagnose the patient's preeclampsia,

also failed to listen to a health care colleague, the ED nurse, who pointed out to the physician that preeclampsia should have been considered. Failing to reconsider the diagnosis of food poisoning based upon new information of Ms. Burrows' hypertension was probably the fatal error in this case.

Missed Placental Abruption

Case #3. Mitchell v Palos Comm. Hospital, et al.[22]

Ms. Mitchell, who was seven and one-half months pregnant, was brought to the Palos Community Hospital ED on October 29, 1992, at approximately 2:15 pm after suffering a "dizzy spell" at work and vomiting once. Upon arrival, Ms. Mitchell was awake and alert with normal vital signs and a fetal heart rate of 172 bpm. She told the nurse that she felt much better and that she had had an uneventful pregnancy up to that point. She informed Dr. Goldberg that she had never had any abdominal pain before or after the episode of dizziness, nor did she experience any vaginal bleeding or vaginal discharge. Furthermore, the patient reported to the staff that her husband, nieces and nephews, all the members of her household had the 'flu' the last few days. A history of smoking or alcohol use and prior medical problems were denied. Not only did the patient report that she then felt just fine, Dr. Goldberg also noted that she was asymptomatic.

Subsequently, Dr. Goldberg performed his exam, which lasted approximately 15 minutes. He recorded that Ms. Mitchell's heart and lungs were normal and her abdomen was soft and non-tender. Her uterus was described as being appropriate in size for her stage of pregnancy and was soft and non-tender. Additionally, Ms. Mitchell's neurological exam was unremarkable. At approximately 3:05 pm, Dr. Goldberg requested intravenous fluids for Ms. Mitchell, a CBC count, and a blood glucose measurement. Her hemoglobin was 11.2 mg/dL, and her blood glucose reading was within normal limits.

After receiving the intravenous fluids and having observed that Ms. Mitchell had experienced no further symptoms, Dr. Goldberg watched Ms. Mitchell walk around the ED without any dizziness or nausea. Ms. Mitchell stated that she felt fine. Dr. Goldberg formed his impression of "near syncope" but did not think that it was necessary to contact Ms. Mitchell's obstetrician, Dr. Gumpel, because of the absence of any symptoms or further complaints, a normal exam, and normal laboratory studies. Dr. Goldberg advised Ms. Mitchell to rest, take plenty of fluids, and follow-up with Dr. Gumpel as needed. He speculated that Ms. Mitchell might be experiencing early symptoms of the flu that the rest of her family was experiencing. Upon discharge at 3:55 pm, Ms. Mitchell's condition was stable and "she looked good and felt fine."[23]

Later that evening, Ms. Mitchell experienced a transient left flank pain and went to Dr. Gumpel's office between 7:00 and 7:30 pm. After informing Dr. Gumpel of the ED visit earlier that day, Dr. Gumpel examined her patient and found that the uterus to be soft and non-tender. Dr. Gumpel also listened to the fetal heart tones for 5 minutes with a Doppler and found the fetal heart rate to be normal during that time. Being concerned that Ms. Mitchell might be experiencing renal colic and had the potential to become dehydrated, Dr. Gumpel elected to admit Ms. Mitchell to the hospital for intravenous fluids and a routine obstetrical ultrasound and fetal monitoring. Dr. Gumpel did not contact the hospital after 10:00 pm because she was admitting the patient for routine hydration and support, the patient's cervix was not dilated, and the fetal evaluation had been unremarkable.

About 10:00 am the next morning, while at the hospital, Dr. Gumpel received a call from the radiologist that the ultrasound showed an "unusual accumulation next to the placenta," but could not further characterize the finding. Dr. Gumpel examined Ms. Mitchell and found the exam to be normal, that the fetal heart monitor was presently normal, and that the monitoring strips from the previous night appeared normal. However, at around 11:15 am, Dr. Gumpel received the results of Ms. Mitchell's hemoglobin level test, which had dropped from 11.2 g in the ED to 8.6 g since the morning phlebotomy. Then, Dr. Gumpel considered that the patient had a possible abruption, and that she should take Ms. Mitchell to surgery for a cesarean section. She decided to give Ms. Mitchell a blood transfusion and take her to surgery. Considering the normal vital signs for Ms. Mitchell and the normal fetal heart tracings up to the time of surgery, at no time did Dr. Gumpel feel that an emergency cesarean section was indicated. Although the cesarean section was not described in the facts of the case, Ms. Mitchell was found to have had a placental abruption, and her baby was born with hypovolemic shock and anoxic

brain damage with subsequent cerebral palsy.The Mitchells filed a suit against the hospital, Dr. Gumpel and her corporate entity, and Dr. Goldberg and his corporate group. The plaintiffs alleged the defendants failed to conduct timely fetal monitoring or ultrasound testing, failed to order a timely "CBC workup," and, on the part of Dr. Goldberg, that he failed to inform Dr. Gumpel of the ED care he rendered to Ms. Mitchell. Additionally, the plaintiffs alleged that Dr. Gumpel failed to perform a timely cesarean section upon reaching the diagnosis of abruptio placentae, which deprived the fetus of oxygen, proximately causing the infant's injuries. After the trial at which there was extensive expert testimony, the court returned a verdict for the defendants. With regards to the conduct of the EP, Dr. Goldberg, the defense expert opined that in the absence of any abnormal symptoms or findings in the ED, Dr. Goldberg had acted within the standard of care and did not have an obligation to call the plaintiff's treating obstetrician. The plaintiffs appealed the judgment for the defendants based upon four issues that all related to issues concerning the expert witness' testimony. The appellate court affirmed the trial court's verdict.

Discussion

The premature separation of the normally implanted placenta from the uterus is called placental abruption.[24] It is one form of obstetric hemorrhage that poses a significant risk of fetal and maternal mortality and morbidity. Other forms of antepartum hemorrhage include placenta previa and third trimester fetal bleeding. Abruption can be diagnosed only after the first 20 weeks of pregnancy because any separation of the placenta prior to 20 weeks is considered the process of spontaneous abortion. The incidence of placental abruption varies between 1 in 86 to 1 in 206 births, which approximates to about 1% of all pregnancies.[25] Considering that many EPs see pregnant patients only prior to 20 weeks' gestation due to the support from the hospital obstetrics department, to see an abruption in the ED certainly would be a rare event. However, for those departments without obstetrical support, such a patient is a risky event for the health and welfare of the mother and fetus, and a medicolegal risk for the health care facility and providers.

Placenta abruption is associated with a 25-30% combined fetal and neonatal mortality.[26] Those neonates who survive suffer an increased risk of permanent neurological damage of approximately 14%.[27] Severe maternal hemorrhage, amniotic fluid embolism, and disseminated intravascular coagulation are included in those complications of abruption that lead to increased maternal morbidity and mortality. Hence, the familiarity with fluid and blood products resuscitation is an essential part of the knowledge necessary for health care providers endeavoring to care for women with this condition and their fetuses.

The clinical hallmark of abruption is vaginal bleeding after the 20th week of pregnancy. If ultrasonography fails to identify a placenta previa, and other forms of vaginal bleeding (e.g., cervical or vaginal trauma) have been ruled out, placental abruption will be the most likely diagnosis.[28] Although not true at the time of *Mitchell*, ultrasonographic advances in the past decade have improved its ability to demonstrate ultrasound evidence of hemorrhage in about 50% of confirmed placental abruptions.[29] However, it is important to note that 20% of patients with placental abruption fail to exhibit any external signs of bleeding.[30] Most of these patients will be given an initial diagnosis of premature labor, and it is extremely rare for a patient, such as Ms. Mitchell, to exhibit virtually no ongoing signs of a placental abruption. Bleeding of more than 1500 mL can occur without clinical signs in women beyond the 30th week of pregnancy due the 40% expansion in blood volume. Minor symptoms in pregnant patients in the third trimester of pregnancy should elicit an increased index of suspicion for clinicians to suspect blood loss. Even an increased respiratory rate and a narrowing of pulse pressure can be ominous signs of blood loss.[31]

EPs who have considered the diagnosis of placental abruption (or any other antenatal hemorrhage) should be prepared for aggressive fluid and blood product resuscitation. Large-bore IV catheters should be placed, and fluid resuscitation should begin immediately. It is recommended that at least 4 units of packed red blood cells should be available for maternal transfusion and that initial laboratory requests include a CBC count, prothrombin time, partial thromboplastin time, fibrinogen and fibrin degradation products.[32] The EP should immediately consult the nearest available obstetrician, ideally the patient's own, and assist that obstetrician in expediting the care of the patient. It is particularly impor-

tant to consider aggressive fluid resuscitation of the patient if she needs to be transferred to another hospital.

Considering the reasonably high incidence of poor neonatal outcome in abruption and the considerable emotional content involved with the morbidity with those children who have survived a placental abruption, it is no surprise that women and their families may be motivated to investigate the feasibility of litigation when an abruption occurs. Even in *Mitchell*, where there were virtually no clinical findings in the ED—and for almost 20 hours—that an abruption may have been present, the family elected to sue. Although one only can infer the clinical practices of the physician defendants, it seems clear from the detailed facts available in *Mitchell* that the clinicians were good at documenting their findings. Particularly, the EP re-evaluated Ms. Mitchell prior to her discharge from the ED and found that she exhibited no complaints before she left the ED. Because the expert testimony in this case concluded that the placental abruption probably had occurred when Ms. Mitchell experienced her initial near-syncopal event, had there been any subtle signs or complaints of hemorrhage that were present in this patient at the time of the ED visit, Dr. Goldberg's defense may have been more difficult.

Pre-term Labor

Case # 4. Andrews v Reynolds Mem. Hospital[33]

Gina Andrews and her husband sought evaluation for Ms. Andrews at Reynolds Memorial Hospital. She was approximately six months pregnant and complained of vomiting, diarrhea, vaginal discharge, and abdominal pain. Dr. R. W. Spore, the physician on duty in the ED, examined Ms. Andrews and spoke with her obstetrician, Dr. Richard Simon, by telephone. Concluding that Ms. Andrews was suffering from vaginitis, Dr. Spore prescribed an antibiotic and instructed her to "follow up with Dr. Simon or return to the emergency department, if necessary."[34] A footnote of the Virginia Supreme Court's opinion stated that testimony conflicted at the trial regarding the substance of the telephone conversation between the two physicians. "Whereas Dr. Spore testified that he 'passed on every bit of information' he could to Dr. Simon concerning Gina's condition, Dr. Simon indicated that, had he been made aware of all the facts available to Dr. Spore on that day, he would have, at least, had Gina monitored for preterm labor."[35]

Ms. Andrews continued to experience progressively increasing pain and she and her husband returned to the ED at 6:45 am that day. However, this time, she was taken to the obstetrics unit of the hospital for monitoring.

As Ms. Andrews indicated at trial, however, the baby began emerging before the arrival of the physician to her bedside. The backup physician for impending deliveries was the EP on duty in the department. Dr. John Templeton was called from the ED and upon his arrival he assisted Ms. Andrews with the completion fo the delivery of the child.At 7:50 am, Justin Kyle Andrews was born.

The delivery was breach. The baby was transferred to a tertiary care facility for complications including "serious respiratory problems;" he died the next day from "cardiorespiratory failure, secondary to prematurity" according to the death report.[37]

The Andrews filed suit against Reynolds Memorial Hospital and Dr. Spore for negligently failing to diagnose Ms. Andrews' premature labor and alleged that the negligence resulted in the death of Justin Andrews. Additionally, the plaintiffs sued the Reynolds Memorial Hospital for negligent hiring of Dr. Spore and retaining him on the medical staff.

At trial, the plaintiffs asserted that Dr. Spore should have diagnosed preterm labor and should have tried to slow the labor process through medications, or should have transferred Ms. Andrews from the ED to more specialized care. The defense attempted to assert that Ms. Andrews was suffering from chorioamnionitis that rendered the preterm labor and that Justin Andrews's death was inevitable. The plaintiffs successfully presented expert testimony to the effect that Ms. Andrews was not suffering from chorioamnionitis.[38] The jury returned a verdict in favor of the plaintiffs for $2,762,017. The case went through various appeal processes, but in September 1997 the Supreme Court of West Virginia remanded the case to the trial court for reinstatement of the award to the plaintiffs.

Discussion

In the United States, the complications of prematurity account for more than 70% of fetal and neonatal deaths.[39] In the children surviving prematurity complications, such complications significantly contribute to developmental delays and cerebral palsy, to only name a few consequences.[40] Although vaginitis/vaginosis—the diagnosis Dr. Spore made

for Ms. Andrews in her first ED visit—may be associated with preterm labor in women at high risk for preterm labor, the correlation is not significant enough for the current U.S. Prevention Services Task Force to make a recommendation regarding the screening of this condition in such women.[41] Because of the substantial impact that prematurity has upon the infant, insubstantial diagnoses when evaluating a woman beyond the 20th week of pregnancy should not be in the forefront of the clinician's mind. In fact, it easily could be argued that preterm labor should be the foremost consideration of the clinician called upon to evaluate a pregnant patient in this stage of her pregnancy.

It is important to be aware of the maternal and fetal conditions associated with preterm labor. (*See Table 1.*) Maternal diabetes mellitus, asthma, drug abuse, and pyelonephritis are conditions commonly associated with preterm labor.[42] Other maternal risk factors include age (younger than 18 years or older than 40 years), absent or minimal prenatal care, cigarette smoking, maternal race, bacteriuria, and vaginosis.[43] EPs who are called upon to evaluate pregnant patients beyond the 20th week of gestation must be familiar with these issues related to preterm labor.

The symptoms associated with preterm labor are not necessarily those symptoms that a woman at full term would experience. Preterm labor symptoms may include symptoms of increased vaginal discharge, pelvic pressure, backache, flank pain, and nonspecific asynchronous cramping not unlike menstrual cramping.[42] The sensitivity and specificity of these symptoms are uniformly poor. Even the obstetrical criteria definition of preterm labor is fraught with inaccuracies. The traditional diagnosis of preterm labor was made with the persistence of contractions in association with dilation or effacement of the cervix as determined by a careful digital exam in the absence of preterm vaginal bleeding wherein a digital exam is contraindicated.[43] In fact, vaginal bleeding is one of the more accurate predictors of preterm delivery within 1 to 7 days and requires immediate preparation for dealing with the complications of antenatal hemorrhage and emergency consultation with the obstetrician.

It would be ideal for every EP to have the backup of in-house obstetricians 24 hours, seven days a week, but it is unrealistic in many hospitals. When the EP must evaluate a pregnant patient beyond the 20th week of gestation, the primary consideration should be to realize that the diagnosis of preterm labor requires the consideration of very subtle symptoms and to seek consultation with the obstetrician in virtually every case where a woman is exhibiting any persistent signs or symptoms when presenting to the ED. It is very apparent that the EP in *Andrews* was very unlikely to have considered preterm labor as a realistic possibility for the patient. However, preterm labor should have been a foremost consideration. Unfortunately, the data available in the legal databases do not allow us to enter into the minds of our defendants very often. We can surmise that if sufficient information had been conveyed to the obstetrician in *Andrews*, that the obstetrician may have considered preterm labor and admitted Ms. Andrews to the obstetrics department for evaluation. However, Dr. Spore may have conveyed all of the relevant information that would have been required for Dr. Simon to assess the consideration of preterm labor. Unfortunately, little information regarding the conversation was apparently recorded by Dr. Spore on the ED record. A complete notation in the chart regarding the conversation would have better supported Dr. Spore's assertion that he had conveyed all pertinent information to Dr. Simon.

TABLE 1. Common Conditions Associated with Premature Labor

- Preterm ruptured membranes
- Preeclampsia
- Abruption placentae
- Multiple gestations
- Placenta previa
- Polyhydramnios
- Oligohydramnios
- Fetal anomalies
- Amnionitis

Infectious Disease Complication

Case #5. The Hearlston Settlement

In an Internet publication of an article to be published in the *Vanderbilt Law Review*, the authors compare the cases with large settlement payouts of $1 million or more made to plaintiffs after medical malpractice jury verdicts with cases involving settlements of $1 million or more that did not go to law-

suit.[44] What they found suggests that the jury trial settlements of $1 million plus probably represent only the 'tip of the iceberg' of dollars paid to parties claiming injury from medical malpractice. Surely, it is common knowledge in the legal community that the legal databases do not attempt to publish many, if not most, of the cases that do not reach at least the appellate level within a jurisdiction. The authors point out that in a prior publication they found that the number of closed medical malpractice claims submitted by Florida insurers representing payouts of $1 million or more, the number of $1 million-cases settled without a lawsuit were more than double the number of cases representing similar size settlements after a jury trial.[45] In other words, it seems that in Florida, at least, the number of cases that represent medical malpractice claims that are not easily available in the public records may comprise at least twice the number of cases that are available for review by students of malpractice law. What lessons could they teach us? It is very difficult to know, but because those payouts make their way through the analyses of malpractice insurers and translate into malpractice premiums, a 'treasure trove' of educational opportunities is probably being lost.

On November, 24, 1998, the *Chicago Sun-Times* published an announcement that Loyola Hospital agreed to settle a wrongful death claim by the survivors of Agnes Hearlston for $4.25 million.[46]

Ms. Hearlston, it was reported, was six months pregnant when she apparently was found to have the early signs of a varicella infection. Ms. Hearlston had never had chicken pox as a child, nor had she had the varicella vaccine. Allegedly, she called her doctor and was told merely to use calamine lotion and warm baths to address her discomfort. She was not treated with intravenous acyclovir for another 36 hours. Ms. Hearlston ultimately died from the varicella infection, presumably from pneumonitis. Although we do not know the specialty of Ms. Hearlston's physician, there is a lesson to be learned for emergency providers, even in this settlement.

Even if an ED has 24-hour, seven-day obstetrical support available to evaluate pregnant patients past their 20th week of gestation, EPs still are called upon to evaluate these same patients for what initially are considered non-pregnancy related complaints. When such events happen, the prudent EP must recognize medical conditions that present unique threats to a pregnant patient. Taking the example provided to us by the Hearlston settlement, the manifestations of a primary varicella zoster infection certainly are seen less frequently in patients presenting to EDs since the emergence of the 'chicken pox' vaccine. Most of the varicella zoster infections were, and still are, seen in children. The antenatal risk for a primary varicella zoster infection is generally quite low (estimated 1 to 5 per 10,000 pregnancies).[47] Although the complications of a primary varicella zoster infection still may pose substantial risks to children, adult males and adult non-pregnant females, the same infection in a pregnant patient can be devastating. In fact, varicella pneumonitis in a woman without immunity to varicella is considered by most authors a medical emergency, even if the initial presentation appears to be very mild at the initial presentation.[48] As the numbers of childbearing women who have not been born in the United States increase, it is entirely feasible to predict that an EP may have to care for a pregnant patient with a primary varicella zoster infection.

CE/CME Objectives

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Participants who complete this activity will be able to:

- identify high-risk patients and practices within the ED;
- discuss a standard of care in the ED for treatment of conditions that may be considered as high-risk;
- explain conditions and practices in which informed consent is required in the ED;
- cite methods of minimizing risk in the ED setting.

Conclusion

In summary, other medical complications in pregnancy including trauma affect pregnant women in substantially different ways than nonpregnant women. Even if the EP is supported by in-house obstetrician consultants 24 hours, seven days a week, there remains the need for the emergency providers to remain attentive to pregnancy-related complications of common medical diseases.

Endnotes

1. U.S. Government Accountability Office. *Medical Malpractice, Implications of Rising Premiums on Access to Health Care,* GAO-

03-836.
2. Id.
3. *See Walker et al v. Giles et al.* 2005 Ga. App. LEXIS 1286; 2005 Fulton County D. Rep. 3664
4. *See* Stys SJ. Gastroenteritis. In: Gabbe SG, Niebyl JR, Simpson JL, eds. *Obstetrics, Normal and Problem Pregnancies*, 4th Ed;Churchill Livingston:2002;239.
5. Id. at 241.
6. Id. at 244.
7. *See* Ludmir J, Stubblefield, PG. Surgical procedures in pregnancy. In: Gabbe SG, Niebeyl JR, Simpson JL, eds. *Obstetrics, Normal and Problem Pregnancies*. 4th Ed., Churchill Livingston, 2002;617.
8. Mourad J, Elliott JO, Erikson L, et al. Appendicitis in pregnancy: new information that contradicts long-held clinical beliefs. *Am J Obstet Gynecol* 2000;182:1027.
9. *See* Puylaert JBCM, Rutgers PH, Lalisang, RI, et al. A prospective study of ultrasound in the diagnosis of appendicitis, *NEJM* 1987;317:666; and Barloon TH, Brown BP, Abu-Yousef MM, et al. Sonography of acute appendicitis in pregnancy. *Abdom Imaging* 1995;20:149.
10. Cunningham FG, MacDonald PC, Gant NF, et al. *Williams Obstetrics*, 20th ed., Stanford CT, Appleton & Lange, 1997.
11. *See* FN 5, supra at 617.
12. Id.
13. Chesson RR, Gallup DG, Gibbs RL, et al. Ultrasonographic diagnosis of asymptomatic cholelithiasis in pregnancy. *J Reprod Med* 1985;30:921.
14. *See* FN 5 at 618.
15. *Bruce Barrows v. Barry Herman, MD, et al.* 2002 WL 32105299 (Cal. Superior).
16. *See* generally, Sibai BM Hypertension. In: Gabbe SG, Niebyl JR, Simpson JL, eds. *Obstetrics: Normal and Problem Pregnancies*, 4th Ed. Churchill Livingston;2002.
17. Id.
18. Hals G, et al. The pregnant patient: Guidelines for management of common life-threatening medical disorders in the emergency department. *Emerg Med Rep* 2000;21(6).
19. *See* FN 16 at 959.
20. Id. at 975.
21. Id.
22. *Mitchell et al. v. Palos Community Hospital, et al*. 317 Ill. App. 3d 754, 740 N. E. 2d 476, 2000 Ill. App. LEXIS 899, 251 Ill. Dec. 395.
23. Id.
24. *See* Benedetti TJ. Obstetric Hemorrhage. In: Gabbe SG, Niebyl JR, Simpson JL, eds. *Obstetrics, Normal and Problem Pregnancies*, 4th Ed. Churchill Livingston, 2004;510.
25. Id.
26. Id. at 515.
27. Hals G. Vaginal bleeding during the second 20 weeks of pregnancy: Emergency department management strategies for maximizing fetal and maternal outcomes. *Emerg Med Rep* 2000;21(5);166.
28. *See* FN 24, supra, at 512.
29. Id.
30. Id. at 513.
31. Id. at 503-04.
32. Id. at 513.
33. *Andrews et al. v. Reynolds Memorial Hospital et al*., 201 W. Va. 624, 499 S.E. 2d 846, 1977 W. Va. LEXIS 261.
34. Id at 849.
35. Id.
36. Id.
37. Id.
38. Id at 850.
39. Iams JD. Preterm birth. In: Gabbe SG, Niebyl JR, Simpson JL, eds. *Obstetrics, Normal and Problem Pregnancies*, 4th Ed, Churchill Livingston, 2002;755.
40. Id.
41. U.S. Preventative Services Task Force. Screening for bacterial vaginosis in pregnancy: recommendations and rationale. *Amer Fam Phys* 2002;65(6):1147-50.
42. *See* FN 39, at 776.
43. Id.
44. *See* Vidmar N, MacKillop K, Lee P. *Million Dollar Medical Malpractice Cases in Florida: Post-Verdict and Pre-Suit Settlements.* Available at: http://eprints.law.duke.edu/ archive/00001274. Accessed: February 28, 2006.
45. Id at 23.
46. *Chicago Hospital Settles Chicken Pox Case*. Illinois Trial Lawyers Association Web site. Available at: http://www.iltla.com/Tort%2520Briefs%252012/98.htm. Accessed March 2006.
47. *See* Pride PG. Varicella zoster virus in pregnancy. In: Craigo SD, Baker ER, eds. *Medical Complications in Pregnancy*. McGraw-Hill, 2005;383.
48. Id at 386. *See* also, Duff P. Maternal and perinatal infection. In: Gabbe ST, Neibyl JR, Simpson JL, eds. *Obstetrics, Normal and Problem Pregnancies*, 4th Ed., Churchill Livingston, 2002;1293.

CE/CME Questions

16. Which of the following statements is/are true about preeclampsia/eclampsia?
    A. Risk factors for preeclampsia/eclampsia include nulliparity, family history of preeclampsia, obesity, and thrombophilias.
    B. The complications of preeclampsia/eclampsia are the leading cause of death in women who are beyond the 20th week of pregnancy.
    C. Approximately 20% of the cases of eclampsia are seen in post-partum women.
    D. A and B

17. Approximately 20% of patients with placental abruption will *not* have vaginal bleeding or obvious signs of blood loss.
    A. True
    B. False

18. Which of the following statements is/are true about the diagnosis of preterm labor?
    A. Maternal risk factors associated with preterm labor include asthma, pyelonephritis, and cigarette smoking.
    B. The complications of premature labor account for less than 50% of fetal and neonatal deaths.
    C. The symptoms of preterm labor may include backache, pelvic pressure, and/or vaginal discharge.
    D. A and C

19. Women with varicella pneumonitis during pregnancy can be treated with oral acyclovir as an outpatient.
    A. True
    B. False

Answers: 16. D; 17. A; 18. D; 19. B