

A Higher Baseline Body Temperature May Be Key to Labor-Associated Fever

BY KATE JOHNSON
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BANFF, ALTA. — Some women who develop fever during labor may have a predisposition to labor-associated fever and may be identifiable by their higher baseline body temperatures, Tiffany Gelfand, D.O., said at the annual meeting of the Society for Obstetric Anesthesia and Perinatology.

And among women predisposed to labor-associated fever, epidural analgesia may have an additive effect, suggested Dr. Gelfand of Brigham and Women's Hospital, Boston.

"Maternal fever is not a benign thing; it's been related to neonatal cognitive deficits and cerebral encephalopathy, and even cognitive deficits 6 years out," she said in an interview. "We don't really know what the interaction is between the epidural and the patients who are predisposed to have a fever, but we really need to find those risk factors before we go ahead and say that certain patients shouldn't have an epidural."

Her prospective study followed 107 women in labor, at term, with mater-

nal temperature measured every hour from admittance until delivery. It found that among 86 women who received epidural, and 21 who received either opioids or no analgesia, 35% developed a temperature above 99.5° F, and 17% had a temperature above 100.4° F. Fever was much more common in women who received epidural, compared with those who did not (37% vs. 14%), she said. But a com-

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mon characteristic of all women who became febrile was a higher baseline body temperature.

"What was so interesting about this study was that these patients were already different the second they walked through the door. Even before they had an epidural, their baseline temperature, although afebrile, was significantly different. We don't know why they are different, and we need to figure that out."

The study shows that the gradual, steady rise in temperature that has been previously reported with epidur-

al analgesia is actually an artifact, due to averaging patients who develop clinical fever and those who do not, explained Dr. Gelfand. When women who became febrile were removed from the analysis, the rest demonstrated consistently low temperatures throughout labor, she said. "We think it might be some of type of inflammatory cause—perhaps an undisclosed infectious source," she speculated, and noted that the nature of the fever was also different in women who received epidural, compared with those who did not. "Among women undergoing natural childbirth, we

saw fever that responded well to acetaminophen, whereas in women who received the epidural, their fever did not respond to acetaminophen. We think it might be a different mechanism."

A further analysis of the study, presented as a poster, looked at only the 86 women who received analgesia and found that, compared with the afebrile women, women who became febrile had some known obstetric risk factors such as longer time from rupture of membranes and a higher number of vaginal exams. ■

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38° C or more, was similar in both the CLEA (30.4%) and the ILEA (27.9%) groups, and did not differ significantly at any of the time points except the first 4 hours.

A separate poster compared other outcomes in the ILEA and CLEA groups and found that CLEA was associated with significantly more instrumental/operative delivery (36.5% vs. 9.8%) and longer duration of labor (426 vs. 393 minutes). The cesarean section rate was also higher in the CLEA group, although this did not quite reach statistical significance (24% vs. 7%).

"With the continuous infusion, there may not be as effective contractions and effective pushing," he said, explaining this may be secondary to continuous perineal analgesia and decreased pelvic floor tone. Some previous studies reported in the literature have not found these specific differences between continuous and intermittent epidurals, he said. Possible explanations for this include a higher concentration of bupivacaine (0.25%) used in one study (*Obstet. Gynecol.* 2005;106:301-6), the retrospective methodology used in another study (*Int. J. Obstet. Anesth.* 2003;12:9-11), or the use of combined spinal epidural analgesia in a third study (*Anesth. Analg.* 2006;102:904-9).

In Dr. Vallejo's third poster examining the same cohort, he reported that, compared with patients who remained afebrile, those who developed fever had less baseline cervical dilation (2.75 cm vs. 3.78 cm), a higher baseline temperature (36.9° C vs. 36.5° C), more vaginal exams (6.6 vs. 5.5), a longer duration from ruptured membranes to delivery (586 minutes vs. 462 minutes), and fewer internal monitors (14 vs. 18). ■

Expertise Is Vital in Management of Antepartum Hemorrhage

BY DAMIAN McNAMARA
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MIAMI BEACH — Clinical acumen is crucial to diagnosis and management of antepartum hemorrhage of both known and unknown origin, according to a presentation at an ob.gyn. conference sponsored by the University of Miami.

Placenta previa and abruption are more common presentations, whereas vasa previa occurs less frequently.

However, vasa previa—where blood vessels cross the cervical opening—can cause massive hemorrhaging.

Prenatal diagnosis via ultrasound improves survival, compared with diagnosis at delivery.

There are fewer data regarding hemorrhage of unknown origin, but pooled findings from several studies suggest a threefold increased risk of premature birth and twofold increased risk of stillbirth, Dr. Amanda Cotter said.

There is an increased risk of mortality with hemorrhage, Dr. Cotter said. In one study of 108 obstetric maternal deaths in North Carolina, cardiomyopathy was the leading cause of mortality, responsible for 21% (*Obstet. Gynecol.* 2005;106:1228-34). Hemorrhage was the second leading cause, a culprit in 14% of deaths.

Placenta previa causes approximately 20% of all cases of antepartum hemorrhage, Dr. Cotter said. It has an incidence of 1 in 200 live births. Sentinel bleed at about 30 weeks' gestation is another indi-

cator of placenta previa, Dr. Cotter said. About 10% of women with this condition present without bleeding or pain, making it an ultrasound diagnosis. Another 20% of patients experience contractions with bleeding. The remaining 70% of women with placenta previa present with painless bleeding.

"Some women report standing up and blood runs down their leg and puddles on the floor," said Dr. Cotter, a faculty member in the division of maternal fetal medicine, University of Miami.

"We must use ultrasound to do this diagnosis—but is it transabdominal or transvaginal?" Dr. Cotter asked. Only an experienced operator should perform transvaginal ultrasound in a bleeding patient, she said. "You have to prevent the probe from entering the cervix and causing any fetal insult." Therefore, transabdominal is the preferred approach to ultrasound in these patients.

"Rule out placental separation, even with previa, to improve our diagnostic accuracy," Dr. Cotter said.

Risk for placenta accreta—an abnormally firm attachment of the placenta to the uterine wall—varies depending on a patient's history. For example, a woman with no history of previa or cesarean section has a 5% risk, Dr. Cotter said. If she had a previous previa and one cesarean, the risk is approximately 24%.

The risk increases to 67% for a woman with a previous previa and a history of multiple cesarean deliveries. "This also

applies to patients with multiple, previous D&Cs," she added.

Ultrasound will show placenta previa or low-lying placenta. Dr. Cotter cited the case of a 35-year-old woman who presented for a routine pregnancy exam. She had blood vessels formed across the myometrium from her uterus to her bladder.

"I knew this was a placenta accreta—I left the placenta in without touching it at all—and did a breach delivery via C-section," Dr. Cotter said. "She did very well, had no bleeding in postpartum period, and had normal resumption of her menses. I performed a tubal ligation with her permission at the same time so she should not be back in the same situation."

Placental abruption is often associated with substance abuse during pregnancy, particularly cocaine. Ultrasound might show a retroplacental or preplacental hematoma, and increased placental thickness and echogenicity, Dr. Cotter said. "You can also sometimes see a subchorionic collection."

Vasa previa occurs with an incidence of 1 in 2,500 pregnancies. "We don't see this as often," Dr. Cotter said. It occurs when blood vessels transverse the internal cervical os.

"Once these membranes rupture, you will have massive bleeding," she noted.

Early detection is important. In a study of 155 pregnancies complicated by vasa previa, 39% were diagnosed prenatally and the fetal survival rate was 97% (*Obstet. Gynecol.* 2004;103:937-42). In con-

trast, in the 61% diagnosed at delivery, survival dropped to 44%.

"Use color flow Doppler to confirm the diagnosis," Dr. Cotter recommended.

The etiology of antepartum hemorrhage is unknown in 2%-3% of cases, Dr. Cotter said. Bleeding in these cases is associated with adverse outcomes.

"The most likely reason these people are bleeding is they have very tiny abruptions. So we have to monitor for preterm delivery and closely monitor the fetus up to delivery," she added.

A meeting attendee asked if a physical examination of the cervix should be the first step when a patient presents with bleeding and does not have a diagnosis. "No, I would do an ultrasound first before I do an exam," Dr. Cotter replied.

There is a paucity of data in the literature regarding this presentation, Dr. Cotter said. Pooled data from four studies suggest a threefold increase in risk of premature birth and twofold increase in risk of stillbirth with bleeding of unknown origin, she said. "It is important to counsel our patients with bleeding of unknown origin that they are at increased risk. I hope you will leave here and have a heightened awareness about increased risk of preterm delivery."

Another meeting attendee asked about a connection between bleeding and risk of mental retardation. "I always counsel patients with recurrent bleeding that there is an elevated risk of cerebral palsy," Dr. Cotter said. ■