Fetal Pain: Life in Troubled Waters

Johnnye S. Johnson, MSN, RN

ABSTRACT

Maternal well-being is the key to fetal well-being. A fetus is highly vulnerable and sensitive to pain and stress, and exposure has the potential for negative developmental consequences. Childbirth educators can help raise parental awareness about the importance of the maternal environment for best outcomes in fetal development.

Journal of Perinatal Education, 16(2), 44–46, doi: 10.1624/105812407X191498

Keywords: pain, stress, fetal, intrauterine environment, prenatal violence

Dr. Gayle Page's article on pain processing and the neuronal consequences of pain in the very young—titled "Are There Long-Term Consequences of Pain in Newborns or Very Young Infants?"—was published in *The Journal of Perinatal Education (JPE)*, Volume 13, Number 3, issue (pp. 10–17) and is available free of charge at JPE's site on IngentaConnect (www.ingentaconnect.com/content/lamaze/jpe). Lamaze International members can access all of JPE's online journal articles free of charge at the IngentaConnect site by signing in at the "Members Only" link on Lamaze International's Web site (www.lamaze.org).

READER'S QUESTION

Expectant parents in my childbirth class have asked whether their fetus can feel pain. I know that there has been controversy over whether newborns feel pain. What should I tell expectant parents about fetal pain? Does it even matter?

— A childbirth educator in Virginia

COLUMNIST'S REPLY

Yes, Virginia, there is pain, and it does matter. Although it may be true that fetal pain is difficult to measure—especially if you define pain as the subjective perception of the individual experiencing it—fetal pain and newborn pain are real. In 2004, *The Journal of Perinatal Education* published a definitive review of the research on pain processing and the neuronal consequences of pain in the very young (Page, 2004). The review's author, Dr. Gayle Page of Johns Hopkins University, states that identifying pain is "even more challenging when its victims are very young or preverbal" (p. 10). When someone cannot tell you in words about his or her pain, does that mean he or she has no pain?

Furthermore, I think fetal or newborn pain matters, and it appears that your expectant parents may think so also. You are correct that, in the past, many caregivers believed human fetuses and newborns did not feel pain. Their belief was in spite of the physical response of newborns to pain from such procedures as circumcision—a response consistent with body language that we all associate with pain. As a nurse, I was reassured many, many times by highly educated physicians (and nurses), well into the 1990s, that the behavior of my infant patients during circumcision that bothered me so much was not a reaction to pain, only "reflexes," and that if infants had pain, it did not matter because they would not remember it.

The response of a fetus or a newborn to pain does not appear to be identical to that of an adult. The neural pathways of fetuses lack fully developed pain-inhibitory systems (Joseph, Brill, & Zeltzer, 1999), which means they are not capable of interpreting pain the way adults do. For them, localized pain is not felt as localized, but as global. Nociceptive pathways (the nervous system route that transmits pain to the brain) appear to be developed by

22–24 weeks in fetuses (Joseph et al., 1999). The belief that fetal behavior (e.g., changes in activity level) and biochemical measures of stress strongly suggest that fetuses and newborns “feel no pain” is *not true* (Anand & The International Evidence-Based Group for Neonatal Pain, 2001; Anand et al., 2006). It is, in fact, a tragic medical myth, one that professional groups such as the American Academy of Pediatrics (2000) and the National Association of Neonatal Nurses (Atimier, Brown, & Tedeschi, 2006) have worked in recent years to debunk.

In her review, Dr. Page demonstrates that infants not only feel pain, but they also experience negative, long-term physiologic effects from pain. Infants may also have long-term memories of pain, suggesting that the same is true for a fetus. Parents giving permission for medical procedures have often not been advised of this as a risk or as a disadvantage of the procedures. As childbirth educators, I think our duty to advise parents of the risks of pain and distress for newborns extends to the intrauterine environment of the fetus.

We know a hostile intrauterine environment increases the risk of such negative outcomes of pregnancy as preterm labor, premature rupture of membranes, and retarded fetal growth. Less obvious is that uterine environment can affect all aspects of growth and development of the sensitive fetus, even the development of temperament. What is temperament? Temperament may be a reflection of neurological development. It refers to some of the character traits that each of us exhibits. For example, do you need a lot of sleep or just a little? Are you reactive or calm? Are you spontaneous or very regular and predictable? Because we can identify traits like these from birth, they may have both genetic and prenatal environmental components. Women who experience high stress or emotional distress during pregnancy have different chemicals released into their bloodstreams than pregnant women who are safe and content. This means that the infants of troubled mothers may be floating in troubled waters.

As caregivers, some of us may think we have no control over fetal pain and stress and no way to intervene. However, that is also not true. What are some of the causes of maternal biochemically induced intrauterine troubled waters? They are anything that causes distress for the expectant mother. Domestic abuse and drugs are extreme, but real, examples of causes of intrauterine violence on the fetus through the mother. A lack of physical affection and the absence of emotional support and acceptance from

The neural pathways of fetuses lack fully developed pain-inhibitory systems, which means they are not capable of interpreting pain the way adults do. For them, localized pain is not felt as localized, but as global.

a caring and intimate partner or family member may also result in maternal distress, leading to global fetal distress.

Oratory stimulation leads to various responses in the fetus, including changing levels of activity and vital signs; thus, we know the fetus is a sensitive being. Tools to measure infant pain, such as the Neonatal/Infant Pain Scale, will help caregivers assess pain and study pain in the very young (Lawrence et al., 1993). Clearly, a need exists for ongoing studies on the critical topic of fetal pain and stress and their consequences for fetal development. Future research will provide us with a growing basis for best prenatal practices, as well as the best advice for parents.

In the meantime, the best evidence now supports the conclusion that newborns and fetuses experience pain and that pain is not supportive of the best outcomes in their development. One way to reduce pain and distress in a fetus is to reduce the pain and distress experienced by expectant mothers. A healthy mother makes a healthy baby; a happy mother makes a happy baby; and a happy mother is more likely to have a happy and healthy baby.

The saying that “if Mama ain’t happy, ain’t nobody happy!” may be more true than we ever realized. Most parents are aware that the physical health of the mother is important for the fetus. However, who warns expectant women and their families of the possible dangers of maternal emotional distress or abuse to the development of the fetus? Those of us who work with new mothers are aware of the need to nurture each woman physically and emotionally, so she can nurture her newborn. Who informs the family of the need to emotionally nurture

To view the Neonatal/Infant Pain Scale, visit the link at the “UCLA Pain Management Clinical Resource Guide” site (http://www.anes.ucla.edu/pain/assessment_tool-nips.htm). This site provides links to a variety of pediatric pain assessment tools.

Women who experience high stress or emotional distress during pregnancy have different chemicals released into their bloodstreams than pregnant women who are safe and content. This means that the infants of troubled mothers may be floating in troubled waters.

Clearly, a need exists for ongoing studies on the critical topic of fetal pain and stress and their consequences for fetal development.

the *expectant* mother, in order to protect and nurture her developing fetus? If not you, the childbirth educator, then who?

NOTE TO READERS

“Ask an Expert” answers are not official Lamaze International positions and are not intended to substitute for consulting with your own professional. Nayna Philipsen, coordinator of the “Ask an Expert” column, welcomes your questions or your own expertise on various topics. Please send them to “Ask an Expert,” Lamaze International, 2025 M Street NW, Suite 800, Washington, DC 20036-3309, or via email to naynamom@aol.com.

REFERENCES

- American Academy of Pediatrics. (2000). Prevention and management of pain and stress in the neonate (RE. 9945). *Pediatrics*, 105(2), 454–461.
- Anand, K. J. S., Aranda, J. V., Berde, C. B., Buckman, S., Capparelli, E. V., Carlo, W., et al. (2006). Summary proceedings from the neonatal pain-control group. *Pediatrics*, 117(3), S9–S22.
- Anand, K. J. S., & The International Evidence-Based Group for Neonatal Pain. (2001). Consensus state-

ment for the prevention and management of pain in the newborn. *Archives of Pediatrics & Adolescent Medicine*, 155(2), 173–180.

- Atimier, L., Brown, B., & Tedeschi, L. (2006). Position statement on pain assessment and management in infants. In *NANN guidelines for neonatal nursing policies, procedures, competencies, and clinical pathways* (4th ed.; pp. 129–137). Glenview, IL: National Association of Neonatal Nurses.
- Joseph, M. H., Brill, J., & Zeltzer, L. K. (1999). Pediatric pain relief in trauma. *Pediatrics in Review*, 20(3), 75–83.
- Lawrence, J., Alcock, D., McGrath, P., Kay, J., MacMurray, S. B., & Dulberg, C. (1993). The development of a tool to assess neonatal pain. *Neonatal Network*, 12, 59–66.
- Page, G. G. (2004). Are there long-term consequences of pain in newborns or very young infants? *Journal of Perinatal Education*, 13(3), 10–17.

A Yale University educated nurse midwife, JOHNNYE JOHNSON has worked with expectant and new parents for 40 years. Her recent experiences include parenting education at the Rosemont Elementary School, a Baltimore City Public School; membership on the Board of Directors of the National Women's Prison Project; and work to stop violence against women and children. Today, she teaches maternal and child nursing at Coppin State University and cares for primarily underserved inner-city families in Baltimore, Maryland.

DON'T DELAY! BE SURE TO RESERVE YOUR SEAT FOR THE OCTOBER 2007 LAMAZE CERTIFICATION EXAM

Lamaze Certified Childbirth Educators (LCCE) have achieved the most respected and recognized credential in childbirth education. You may already be eligible to sit for the Lamaze Certification Exam if you have successfully completed a Lamaze Accredited Childbirth Educator Program, or are an experienced educator, or a midwife or midwifery student.

Mark your calendar for the next round of exam dates:

Application Deadline: October 1, 2007

Exam Date: October 26, 2007

English and Spanish versions of the exam are offered at more than 700 LaserGrade® Computer Testing locations throughout North America. To find a test site near you, visit www.lasergrade.com or call 800-211-2754.

For more information, including eligibility requirements, exam fees and exam fee scholarships, visit www.lamaze.org.