

Intracranial Infection Can Mimic Hypoxic Injury

BY SHERRY BOSCHERT
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CABO SAN LUCAS, MEXICO — What looks like damage from hypoxic ischemic encephalopathy on neonatal brain imaging actually can be caused by intracranial infection, Robert A. Zimmerman, M.D., said during a conference on obstetrics, gynecology, perinatal medicine, neonatology, and the law.

Always correlate clinical findings and laboratory results with images of brain abnormalities to detect intracranial infections and to avoid attributing the infant's problems to hypoxic ischemic brain injury, said Dr. Zimmerman, who is the chief of pediatric neuroradiology at Children's Hospital of Philadelphia.

Dr. Zimmerman described several intracranial infections that could be confused with hypoxic ischemic encephalopathy:

► Acute cytomegalovirus infection, the most common intracranial infection that occurs in utero, causes fetal brain abnormalities in the second and third

trimesters. Edema in the brain seen on imaging shortly after birth may simulate a toxic ischemic brain injury.

"The clinical work-up of the patient turns out to be critical" to differentiate the two, he said during the conference, which was sponsored by Boston University and the Center for Human Genetics.

► Neonatal meningitis may result from exposure to a pathogen in utero, at the time of delivery, or in the neonatal nursery. Both gram-negative and gram-positive bacterial meningitis can be a problem, since neonates lack a functional immune system to resist CNS infection.

Severe brain swelling secondary to *E. coli* meningitis infection can look like severe brain swelling from hypoxic ischemic brain injury, Dr. Zimmerman said.

When infection damages areas of the

brain rather than causing complete brain injury, this also can be confused with hypoxic ischemic injury.

Cortical infarction from infection with streptococci or gram-negative rods, for example, may be confusing. Areas of cortical hyperintensity on imaging due to these infections can simulate damage from a partial prolonged asphyxia. Clinical findings become extremely important in differentiating the two, according to Dr. Zimmerman.

Infarction of the basal ganglia as a result of streptococcal infection may be confused with a profound asphyxial injury, but a gadolinium-enhanced MRI can highlight changes characteristic of meningitis to help make the diagnosis.

The most severe forms of infection with *Citrobacter* or *Serratia* cause diffuse brain swelling with supratentorial necro-

sis due to lack of perfusion, which can look like a severe hypoxic ischemic brain injury.

The clinical findings and cerebral spinal fluid analysis look quite different between the two problems, however.

Close to half of patients with meningitis due to *Citrobacter* or *Serratia* also will show brain abscesses on imaging.

► Herpes encephalitis can result from infection in utero or from infection acquired at birth. Symptoms from infection at birth typically present as seizures and fever days or weeks after birth. Herpes encephalitis can be a focal or diffuse disease. The diffuse form of herpes encephalitis causes cytotoxic edema that can mimic a hypoxic ischemic type of injury on imaging.

Herpes usually is easily recognizable on good-quality MRI scans with diffusion studies and using gadolinium enhancement.

In general, MRI is considered the best modality for imaging the neonatal central nervous system; CT scans can help look for brain calcifications, Dr. Zimmerman said during the meeting. ■

Breast-Feeding May Help Ease AED Withdrawal

BY BRUCE JANCIN
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BRECKENRIDGE, COLO. — A strong case can be made for encouraging a few weeks or months of breast-feeding by epileptic women who continued their seizure medication throughout pregnancy, Jose E. Cavazos, M.D., said at a conference on epilepsy syndromes sponsored by the University of Texas at San Antonio.

In addition to all the usual benefits of breast-feeding, this practice greatly reduces the likelihood of neonatal antiepileptic drug (AED) withdrawal syndrome, said Dr. Cavazos, a neurologist at the university's South Texas Comprehensive Epilepsy Center.

Transplacental passage of AEDs occurs readily. Studies have shown maternal serum and umbilical cord blood concentrations of AEDs are generally similar. After being exposed to therapeutic AED concentrations throughout fetal life, a baby who experiences abrupt postpartum discontinuation often develops a withdrawal syndrome marked by increased irritability. This can be avoided by taking advantage of the fact that most AEDs enter breast milk in concentrations similar to those found in maternal serum.

"Many women have an irrational attitude of 'I don't want to give my baby this medicine.' I tell such a patient that for the last 9 months, her baby has been exposed to an AED. I suggest breast-feeding for the first several weeks, then weaning from the breast and, in that way, gradually

weaning the baby off the medication. When it's presented in that light, it's more often that breast-feeding will occur," the neurologist explained.

There is little downside to such an approach, he added. Idiosyncratic drug reactions are extremely unlikely in a neonate exposed in utero. There have been no large prospective studies of the neurodevelopmental impact of breast-feeding by mothers on AEDs, although several studies suggest in utero exposure is associated with mild, partially reversible delays in motor coordination. Breast-feeding while the mother is on an AED can result in neonatal sedation, but it's typically mild and of little concern unless the mother is taking large doses of phenobarbital.

And speaking of phenobarbital, some obstetricians still favor it for seizure control in pregnancy, although the practice is no longer recommended. "In fact, in the past year, I've had two women who were switched from other AEDs to phenobarbital because they became pregnant and happened to visit their ob.gyns. before seeing their neurologists. This is not necessarily the best way to go," Dr. Cavazos said.

A recent report from the North American AED Registry is instructive. Of 77 pregnancies exposed to phenobarbital monotherapy from conception and followed prospectively, 5 (6.5%) resulted in major malformations identified by 5 days of age. This represented a 4.2-fold elevation over the background risk (*Arch. Neurol.* 2004;61:673-8). ■

A Quarter of Pregnant Women Say 'No' to Abortion for Down Syndrome

BY NANCY A. MELVILLE
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PHOENIX, ARIZ. — About one-quarter of a diverse group of pregnant women would not consider a pregnancy termination for a fetus with Down syndrome, according to a study presented at the annual meeting of the Pacific Coast Obstetrical and Gynecological Society.

The prospective study of 1,038 pregnant women who were participating in research at the University of California, San Francisco, department of obstetrics, gynecology, and reproductive sciences showed that 24% said they would not consider a termination if testing showed the fetus had Down syndrome.

Among the 76% of women who said they would consider an abor-

tion under such circumstances, half said they would do so only in the first trimester, 36% said they would do so only in the first or second trimester, and 14% said they would at any point in the pregnancy, said lead author Lee A. Learman, M.D., of the UCSF department.

The women were interviewed before 20 weeks' gestation and were of diverse socioeconomic backgrounds.

When asked about their attitudes regarding abortion in general, 23% said that they thought abortion should be available only in cases of rape or incest, and 8% said abortion should not be available under any circumstances.

Seventy-two percent of the women answered yes to the question of whether they would ever consider having an abortion, and

52% reported that they had had an abortion in the past.

With adjustment for various factors, women were more likely to consider an abortion if they were older, had a previous abortion, or expressed distrust in the health care system. Conversely, they were less likely to consider an abortion if they had at least two prior births, were married, were fatalistic about the outcome of their pregnancy, or were not white.

"The overarching goal of the project is to help understand the tradeoffs involved in screening and testing strategies and to help patients make decisions that are consistent with their personal values and feelings," Dr. Learman said.

In a commentary on the study, Anita Nelson, M.D., medical director of Women's Health Care Programs at Harbor-UCLA Medical Center in Torrance, Calif., brought up the possibility that patients' actions may not always be consistent with their declared beliefs. Dr. Learman agreed, saying his lab is working on research to track discrepancies between actions and beliefs.

Dr. Nelson added that efforts to better prepare women for the many possible outcomes of a pregnancy should also extend to the preconception period to prevent unrealistic expectations.

"When women expect perfect outcomes, we can find ourselves in a bit of a legal jam, and it's therefore important to lay on the table all the risks of pregnancy while all options are still open—including the option to not become pregnant," she said during the meeting. ■

Among the 76% of women who said they'd consider termination of a fetus with Down syndrome, half said they would do so only in the first trimester.