

MRI of Fetal Chest Useful As Adjunct to Ultrasound

BY HEIDI SPLETE
Senior Writer

LAS VEGAS — Magnetic resonance images of the fetal chest can be a clinically useful addition to ultrasound to examine lung masses and identify underdeveloped lungs, Dr. Erika Rubesova said at a symposium on emergency medicine sponsored by Stanford (Calif.) University.

With MRI, "You will have a better characterization of the chest masses and you can perform measurements of the lung," said Dr. Rubesova, a radiologist at the university.

A fetal MRI provides a greater tissue contrast than ultrasound, and features such as lung volume and signal intensity are easier to see, she noted.

As for the safety of a fetal MRI, the safety committee of the Society for Magnetic Resonance Imaging recommends that the risks and benefits of fetal MRI be assessed on a case-by-case basis and that MR procedures are indicated in pregnant women if other nonionizing imaging techniques are inadequate or if the MRI can provide information that could only be otherwise acquired using radiation technology. However, the Food and Drug Administration states that the safety of MR during pregnancy has not been proved definitively, Dr. Rubesova said.

"The FDA does not require a contraindication to the use of MRI for fetal imaging in device labeling," Dr. Julia Carey-Corrado, an ob.gyn. at the FDA's Center for Devices and Radiological Health, said in an interview. "But the FDA does recommend that device labeling contain the following statement: 'The safety of magnetic resonance examination has not been completely established for embryos and fetuses,'" she said.

"We view ultrasound as the standard of care for fetal imaging, but MR can be viewed as a reasonable second-line imaging modality if you aren't getting enough information from ultrasound and you are concerned about a complex abnormality," Dr. Carey-Corrado added.

To perform an MRI of the fetal lung, place the patient in the most comfortable position possible and focus on the fetal

lung as best you can to minimize the blurriness associated with fetal movement, Dr. Rubesova said.

Dr. Rubesova usually uses 1.5-T and T2-weighted images. "You should be able to see both of the lungs and the airway," she said. "And the diaphragm sometimes appears as a dark line above the liver."

Congenital lung lesions fall into three broad categories: congenital cystic adenomatoid malformations, sequestrations, and bronchogenic cysts.

A congenital cystic adenomatoid malformation (CCAM) usually occurs early in fetal development, and the lesions are categorized based on size. In general, lesions larger than 2 mm are associated with a better prognosis for the infant than smaller lesions, so the ability to measure the lesions based on MRI data is useful for clinicians.

Sequestrations (also known as bronchopulmonary sequestrations) occur when a piece of the developing lung branches off from the main airway (but remains connected to it) and the lung fails to develop normally. Bronchogenic cysts form when a branch of the developing airway separates completely from the main bronchotracheal tree.

Data collected by researchers at Brown University, Providence, R.I., suggest that 1 in 3,000 infants has a congenital lung lesion. These masses compress the developing lung, and they may displace other organs in the chest. Large lung masses may cause fetal heart failure in severe cases because the pressure of the masses causes an abnormal accumulation of fluid around the heart, lungs, or abdomen.

The "horseshoe lung" is a characteristic image that is associated with CCAM, sequestrations, and bronchogenic fistulae. A fetal MRI can show the horseshoe shape of an underdeveloped lung, and the lung masses appear as areas of high signal intensity on a T2-weighted image, Dr. Rubesova noted.

There is no rush to perform fetal lung MRI procedures in cases of large lesions where the prognosis is good and termination of the pregnancy is unlikely, Dr. Rubesova said. The best time to get an accurate fetal MRI of these lesions is late in the third trimester because the fetus has less room to move, so the image is sharper. In these cases, the MRI helps parents and physicians plan for neonatal care that will allow the lungs to develop as completely as possible.

The outcome for most newborns with congenital lung masses is good, although congenital lung hypoplasia accounts for 10%-15% of all neonatal deaths, Dr. Rubesova noted. Sometimes the masses will shrink substantially by the time of birth, and in other cases the lesions can be surgically removed after birth to reduce the risk of recurrent infections such as pneumonia. ■

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DRUGS, PREGNANCY, AND LACTATION

Rounding Out Risk-Benefit Assessment Of Prenatal SSRI Use

Studies released over the last year have raised a spectrum of concerns regarding the use of antidepressants during pregnancy, while others have brought into focus the risk for new onset or relapse of depression during pregnancy and the impact of maternal depression during pregnancy on obstetrical outcome and neonatal well-being. These findings received a considerable amount of attention in the literature and in the media.

Among the concerns raised was the extent to which fetal exposure to one selective serotonin reuptake inhibitor (SSRI)—paroxetine—has been associated with an increased risk for cardiovascular malformations. In other studies, SSRI use during pregnancy was associated with compromised neonatal adaptation with symptoms of jitteriness, tachypnea, and tremulousness, so-called "neonatal abstinence syndrome."

This finding of transient neonatal jitteriness and tremulousness has been highly consistent across studies dating back to the mid-1970s, when similar concerns were raised with prenatal exposure to the older tricyclics. About 25% of children born to mothers treated with SSRIs, particularly late in pregnancy, appear to have these symptoms.

It is noteworthy, however, that the clinical relevance of the syndrome seems small. Even in the most rigorous study to date, which described a subgroup of children exposed in utero to SSRIs, those who had these symptoms required no particular treatment interventions during the acute neonatal period. (OB.GYN. NEWS, April 15, 2006, p. 12).

Also reported last year was our collaborative study with investigators at the University of California, Los Angeles, and Emory University, Atlanta, demonstrating that the rate of depressive relapse associated with antidepressant discontinuation during pregnancy is high—about 70%—compared with 25% among pregnant women who maintained treatment with these medicines across pregnancy.

These new data on teratogenicity, treatment-emergent neonatal syndromes, and relapse risk have provided more well-delineated information on the risks and benefits of antidepressant use during pregnancy. The information is extremely important in this setting, because antidepressant use during pregnancy in the United States may be as high as 4%-6%, based on estimates by some of our recent work.

A study published last summer by investigators from the University of Michigan, Ann Arbor, illustrates the

fact that while depression is relatively common during pregnancy, most women at risk for illness don't receive any treatment, and, when treatment is prescribed, it is often suboptimal.

In the study, 1,837 pregnant women from five hospital-affiliated obstetrics clinics were screened for depression, 276 of whom were identified as being at risk. Only 20% of the at-risk women were receiving some form of antidepressant treatment. Of the group getting treatment, 48% received a combination of medication and counseling with psychotherapy, 21% received antidepressants only, and 31% received psychotherapy only. Still, in many cases, treatment was inadequate. Only 43% of those taking antidepressants for 6-8 weeks were given the recommended daily dose.

Among the women who met the criteria for major depressive disorder, only 33% received any type of treatment; only 11% received what was reported to be adequate antidepressant therapy. (Gen. Hosp. Psychiatry 2006;28:289-95). The low rate of treatment of depression during pregnancy may reflect concerns regarding the effects of antidepressants on the fetus. However, even women in the study who received psychotherapy alone did not receive an adequate intensity of treatment.

One has to wonder whether these findings reflect concerns over the past year about fetal exposure to antidepressants. It is notable that, even when a clinical decision is made to use antidepressant therapy, treatment is incomplete.

Incomplete treatment of depression during pregnancy represents a failure in clinical risk-benefit decision, because the woman and child are exposed to both medication and the adverse effects of the disorder. And clinical depression untreated during pregnancy is the strongest predictor of postpartum depression—which can have enduring effects for the patient, her newborn, and her family.

The Michigan study underscores the need for effective strategies to detect and treat women at risk for depression during pregnancy. Sustaining euthymia and maintaining emotional well-being during this period should be our major clinical goals.

DR. COHEN directs the perinatal psychiatry program at Massachusetts General Hospital, Boston, which provides information about pregnancy and mental health at www.womensmentalhealth.org. He also is a consultant to manufacturers of antidepressants, including SSRIs.



BY LEE COHEN, M.D.

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