

Quickly Obtained Magnetic Resonance Localizer Image in the Diagnosis of Anencephaly

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Dear Editor;

A 32-year-old and 32-week pregnant woman, gravida 6 parity 4, was admitted to obstetric clinic with complaints of eyes swelling for one week. Her physical examination and vital signs were normal except mildly bilateral eyelid swelling. Then the patient referred to the radiology department for first obstetric ultrasound (US) examination. Transabdominal obstetric US examination carried out to the patient. The US of fetus demonstrated absence of cranial bones and brain tissue and ranging amniotic fluid above the orbits (Figure 1). To confirm the sonographic diagnose patient underwent to the magnetic resonance imaging (MRI). A few minutes later only the localizer images was sufficient to definite the diagnose. The fast coronal localizer or scout magnetic resonance images demonstrated an absent skull consistent with anencephaly (Figure 2). The patient referred to the obstetrics and gynecology clinic again to terminate the gestation.

Anencephaly is an embryological malformation of the central nervous system characterized by the lack of the brain and cranial vault. According to embryological view, anencephaly rise from a breakdown in the neural tube shutting. It is a quite rare anomaly - one in about 20.000 birth (1). Etiology is not very apparent. Potential causes comprise some toxins and low intake of folic acid by the woman during pregnancy period. Even though sonography remains the primary imaging technique for assessing the fetal anomaly. Some significant limitations exist in the sonographic prenatal diagnosis especially some brain disorders. These limitations are, largely due to obscuration of portions of fetal intracranial anatomy caused by reverberative artifacts of the bony calvarium, engagement of the fetal head deep in the maternal pelvis and to the low sensitivity of fetal sonography to some brain malformations. Sonographic evaluation of the fetal head and spine can also be obstructed by oligohydramnios and maternal body habitus (2).



Figure 1. Sonographic image of the fetus illustrates the absence of cranial bones (star) and brain tissue and ranging amniotic fluid above the orbits (white arrow)

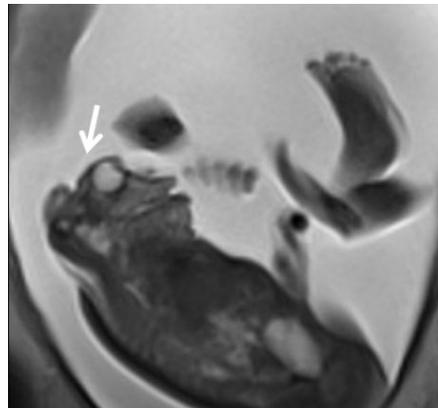


Figure 2. The fast coronal localizer or scout magnetic resonance images demonstrated an absent skull (white arrow) consistent with anencephaly

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Furthermore, sonography can be impaired by maternal obesity and oligohydramnios. Additionally operator dependent disadvantages and limited field of view are the other limitations of US. However MRI does not include these limitations, as it is not hindered by the presence of bone. Furthermore MRI includes unsurpassed soft-tissue contrast enhancement and multiplanar imaging capabilities. Similar to sonography, MRI does not expose patients to ionizing radiation and no clinical or experimental evidence of teratogenic or other adverse fetal effects. Additionally MRI has a higher intrinsic sensitivity than sonography assesment of various cerebral tissues. Moreover the superior spatial and contrast resolution of MRI provides good anatomic information. In general, fetal MRI is considered a valuable complement to prenatal sonography. The most common indications for fetal MRI are the evaluation of suspected brain or spinal anomalies. The next most common MRI technology continues to improve with development of faster pulse sequences and higher- field-strength magnets. Fast MRI is increasingly being used to determine the underlying cause of nonspecific fetal central nervous system abnormalities detected sonographically and to confirm or provide further support for such anomalies (3,4).

This case also illustrates the occasional importance of the "scout" images obtained during an MRI. Scout (also known as "localizer") images are obtained by the MRI technologist at the beginning of the MRI examination. These preliminary large field-of-view images are used to prescribe the MRI sequences in one or two minutes. It is important to carry out the MRI in pregnant patients because of comfortless situation. So in some cases as anencephly, these scout images can give very useful informations for definite diagnosis in a few minutes.

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