SMRT Student Scope Submission

Title and Author

Title: ***Early Detection of Schizencephaly with MRI Fetal Imaging***

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Introduction or Patient History

A 23-year-old female received an ultrasound, which showed fetal abnormalities. The fetus had brain abnormalities with schizencephaly in the right cerebral hemisphere, lissencephaly and heterotopic gray matter in the left cerebral hemisphere. The mother was in healthy condition and the fetus had no other known symptoms other than the abnormal ultrasound. After obtaining these ultrasound results her doctor then ordered a MRI of the fetus.

Patient Preparation and Scan Set up

The imaging was performed on a GE 1.5 Tesla scanner. The patient was screened according to MRI safety guidelines. The patient was positioned on the table supine with their feet first and arms at their sides. Earplugs were also given to the mother for the scan. A body ray coil was used to obtain the images of the fetus. Multiple T2 weighted single shot turbo spin-echo images were obtained in multiple planes throughout the fetus, as well as the uterus. T1 weighted images were obtained throughout the brain.

MR Imaging Parameters

A three plane localizer was obtained first.

Sequence	TR	TE	Field of View	Slice Thickness
Axial T2 FSE BH	1108	88	32	4mm skip 0mm
Sagittal T2 FSE BH	1108	88	32	4mm skip 0mm
Coronal T2 SSFSE	1212	91.5	32	4mm skip 0mm
Coronal T1 SPGR	185	4.2	32	5mm skip 0mm
Axial T1 SPGR	160	4.2	32	5mm skip 0mm

Findings and Discussions

In the evaluation of the fetal brain, there is marked loss of cerebral cortical tissue in the right cerebral hemisphere. It appears most consistent with a large area of schizencephaly. In the left hemisphere, an area of lissencepahly with a cleft was present in the posterior parietal region. Also found was multiple areas of heterotopic gray matter present throughout the left cerebral hemisphere. The male fetus brain was otherwise normal.

Conclusions

Schizencephaly is an extremely rare developmental birth defect characterized by abnormal slits, or clefts, in the cerebral hemispheres of the brain. Babies with clefts in both hemispheres commonly have developmental delays in speech and language skills. They also have problems with brain-spinal cord communication. Babies with clefts in only one hemisphere are often paralyzed on one side of their body but may have an average to near-average intelligence. Individuals with schizencephaly may also have an abnormally small head, mental retardation and partial or complete paralysis. Most children affected with this disease will have seizures and some will have an excessive accumulation of fluid in the brain called hydrocephalus. MRI is better suited than Ultrasound for the prenatal diagnosis of schizenpecphaly with it being able to detect normal and abnormal brain cellular migration.

References

Hubbard MD, Anne MRI exam dictation, staff physician. University of NE Medical Center. 8 Feb. 2006

Healthlink.mcw.edu . Reports on Schizencephaly. Web site.

National Institute of Neurological Disorders and Stroke. Web site.

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