Prenatal Sonographic and Magnetic Resonance Imaging Demonstration of a Right Midline Arachnoid Cyst Associated with Ventriculomegaly, Colpocephaly, Dilation of the Third Ventricle, Absence of Cavum Septi Pellucidi, Agenesis of the Corpus Callosum and Mega Cisterna Magna

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A 30-year-old, gravida 3, para 2, woman was referred to the hospital at 30 gestational weeks because of an intracranial cyst. Two-dimensional ultrasound revealed a 1.31 × 1.99 cm hypoechoic homogeneous lesion on the right side of the midline with wide splaying of the anterior horns of the lateral ventricles (Figure 1). The finding was consistent with the diagnosis of an arachnoid cyst. There were multiple central nervous system (CNS) malformations, including bilateral ventriculomegaly, colpocephaly, a dilated third ventricle, absence of cavum septi pellucidi, agenesis of the corpus callosum, and an enlarged cisterna magna (Figure 2). Prenatal magnetic resonance imaging (MRI) confirmed the sonographic diagnosis (Figure 3). Intrauterine fetal death was noted. A dead 1,904-g male baby was delivered subsequently. The karyotype was 46,XY.

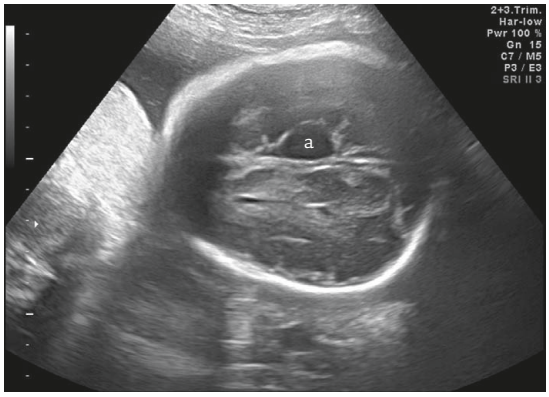

Figure 1. Prenatal ultrasound on the axial view at 30 gestational weeks shows a 1.31 × 1.99 cm hypoechoic homogeneous lesion on the right side of the midline. a = arachnoid cyst.

Arachnoid cysts represent about 1% of all intracranial masses in newborns [1]. Congenital arachnoid cysts result from accumulation of clear fluid between the dura and the brain substance throughout the cerebrospinal axis, in relation to the arachnoid membrane and without communicating with the subarachnoid space [2]. Arachnoid cysts are usually diagnosed in the third trimester [3]. Supratentorial sylvian fissure cysts are the most common. Arachnoid cysts may be isolated or associated with ventriculomegaly and dysgenesis of the corpus callosum [4,5]. Prenatal diagnosis of arachnoid cysts should include a differential diagnosis of porencephalic cysts, glioependymal cysts, aneurysms of the vein of Galen, schizencephaly, cystic teratoma, cystic astrocytoma, and cavitation of the cerebral hemispheres following infarction. The prognosis of fetal arachnoid cyst is dependent on presence or absence of the corpus callosum, presence or absence of other congenital malformations, parenchymal hemorrhages, growth rate of the cyst, and progression of ventriculomegaly. We have demonstrated the prenatal imaging findings of an arachnoid cyst associated with multiple

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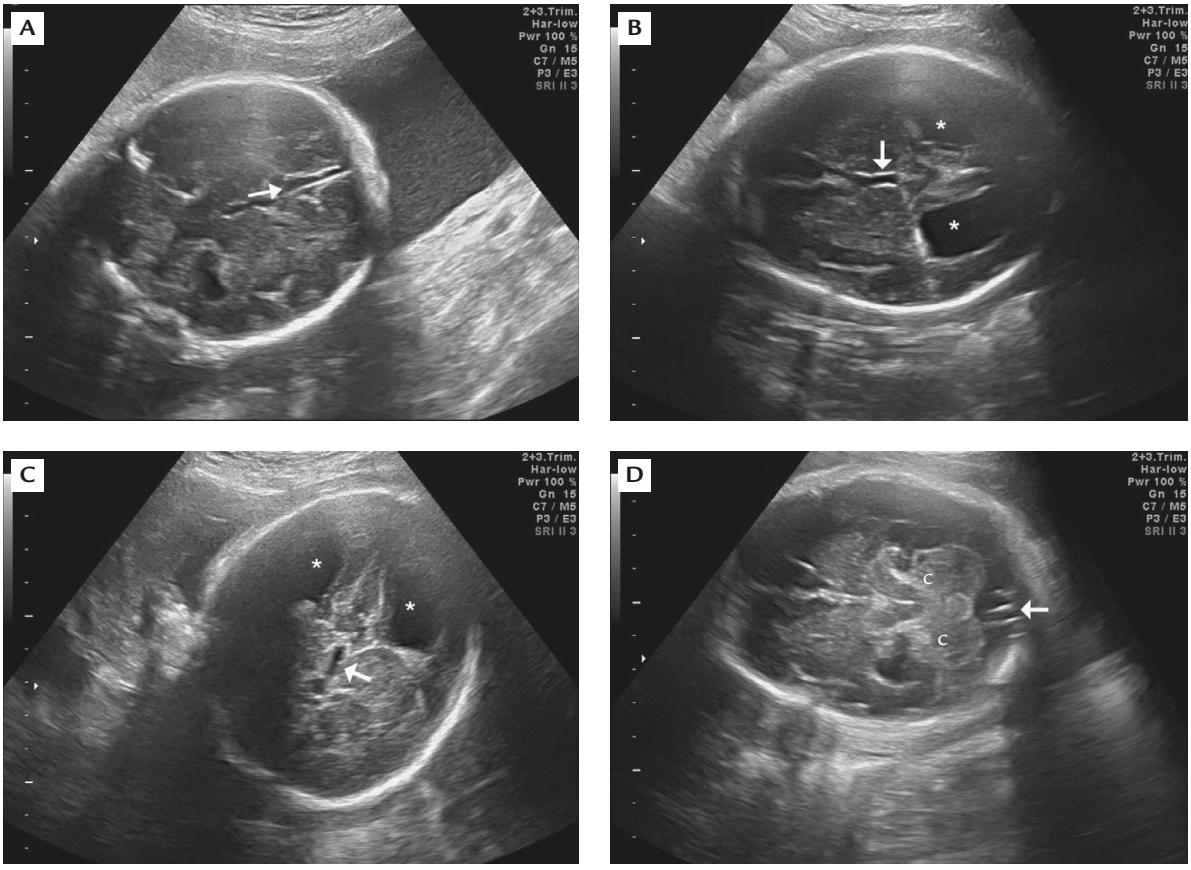

Figure 2. Prenatal ultrasound on the axial view at 30 gestational weeks shows: (A) communication of the third ventricle with the interhemispheric fissure (arrow); (B, C) dilation of the third ventricle (arrow) and colpocephaly (*); and (D) an enlarged cisterna magna (arrow). c = cerebellum.

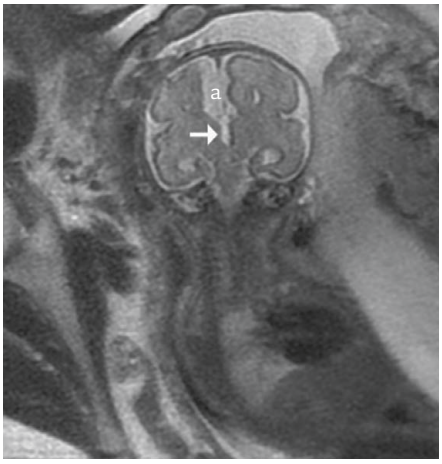

Figure 3. Magnetic resonance imaging on the coronal view at 30 gestational weeks shows an arachnoid cyst (a), and a dilated third ventricle (arrow) communicating with the interhemispheric fissure, suggesting agenesis of the corpus callosum.

CNS abnormalities, such as ventriculomegaly, colpocephaly, dilation of the third ventricle, absence of cavum septi pellucidi, agenesis of the corpus callosum, and mega cisterna magna. Prenatal ultrasound and MRI have led to the increased diagnosis of CNS abnormalities in fetuses with arachnoid cysts [5]. As in this case, prenatal ultrasound is able to help assess the sizes of the cyst and the ventricles, and fetal MRI can help delineate the anatomic details of the communication between the cyst and the ventricles and agenesis of the corpus callosum.

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