Prenatal diagnosis of vein of Galen aneurysm
Kirbas A, Biberoglu E, Daglar K, Erol N, Fitoz S, Uygur D, Danisman N
Zekai Tahir Burak Women's Health Education and Research Hospital, Ankara, Turkey

Objective
Aneurysm of vein of Galen (AVG) is a complex malformation characterized by multiple communications between the system of the Galen vein and the cerebral arteries are seen rarely. We present the prenatal diagnosis of AVG in a fetus at 31 weeks’ gestation.

Methods
A 31 year old pregnant woman gravida 1, para 0 was referred to our unit with a cystic mass in the midline of the brain evidenced in two-dimensional (2D) ultrasound realized at 31 week of gestation. There was a midline tubular anechoic structure located above the thalamus (Figure 1). Color Doppler imaging showed turbulent flow and blood draining into an enlarged straight sinus, suggesting a AVG (Figure 2).

Results
Ultrasound did not indicate any further structural brain abnormalities. The heart was considerably enlarged indicating intrauterine fetal cardiac insufficiency. The parents were counseled by a multidisciplinary team and considering the magnitude of the cerebral arteriovenous shunt, they were informed about the risks of serious mental and physical handicap and imminent cardiac failure. For further evaluation, fetal MRI was performed at 33 weeks’ gestation. Fetal MRI showed a grossly dilated vein of Galen with prominent choroid arteries as supplying vessels and significant dilatation of the straight sinus, the confluence of sinuses, and the transverse sinuses. There was no ventriculomegaly or structural brain damage (Figure 3). The patient was delivered by c-section at 36 weeks of pregnancy after lung maturity. The diagnosis was confirmed by post-natal sonography. Unfortunately the newborn died 48 hours after due to cardiac decompensation. The necropsy was not undertaken because the parents did not permit it. Figure 1. Midline cystic lesion (White arrow) suggestive of vein of Galen aneurysmal malformation at 31 weeks of gestation. Figure 2. Doppler color flow image demonstrates presence of prominent convoluted vessels and a turbulent flow in the lesion Figure 3. MRI image shows galen vein aneurysm at 34 weeks of gestation.

Conclusion
AVGs are abnormal connections between arteries and deep draining veins of the brain which develop before birth. They are formed between 6 and 11 weeks of gestation. AVG is not associated with chromosomal abnormalities but it can demonstrate signs of volume overload as cardiomegaly and hydrops, so the neonatal prognosis usually is poor with high incidence of morbidity and mortality. Prenatal diagnosis is usually make during the third trimester and ultrasound is usually sufficient to diagnose. A classic finding is an echo-poor structure in the posterior region of the midline (or nearly so) superior to the tentorium cerebelli and superior to the thalamus. Fetal magnetic resonance imaging (MRI) is important to confirm AVG to detect associated brain abnormalities and to rule out differential diagnoses including arachnoid, porencephalic or choroid plexus cysts, pineal tumors, choroid papilloma and intracerebral hematoma. Close follow-up and a thorough radiological search (ultrasound and MRI) for associated anomalies are the base of parental counseling. In most of the cases the lesion does not resolve spontaneously and postnatal treatment is required.