Prenatal Diagnosis of Intra-abdominal Lymphatic Malformation in a Fetus with Gorlin Syndrome

Neil Lester, MD; Gulraiz Chaudry, MD; Terry Buchmiller, MD; Judy Estroff, MD

Children’s Hospital Boston

Case

A 36-year-old G2P0 woman was referred to our institution for evaluation of her 37 week 2 day pregnancy. A prior diagnosis of Gorlin syndrome (GS) had been made in the fetus on the basis of chorionic villus sampling (CVS) showing a heterozygous G6505X (CAAG→TACG) mutation in the PTCH1 gene. This mutation had previously been identified in the father, who was not personally affected by GS, nor was he amenorrheic. Multiple lumps were noted to be present on the scalp and forehead of the fetus. The mother had a prior pregnancy in which the fetus was also affected by GS, with anomalies including Darier-White marfation, ventriculomegaly, and cystic facial lesions. Genetic testing of the affected fetus showed a de novo mutation in the FRAS1 gene.

In the current pregnancy isolated macrocephaly was seen by ultrasound at 32 weeks. Shorty thereafter, at 37 weeks, a “cystic lump” was seen in the right lower quadrant and thought to represent distal bowel. Under close surveillance, this was noted to progressively enlarge, and by 36 weeks 3 days, it had reached 20 mm in maximal dimension. Concern for colonic atresia was raised, and consultation was arranged.

On prenatal ultrasound examination at our institution at 37 weeks 2 days, the abnormality was again identified: an anechoic structure in the right lower quadrant (Fig. 1, 2). There was mass effect on adjacent bowel loops, but no bowel signature to suggest that the abnormality was related to colonic atresia. The findings were felt to be most consistent with an intra-abdominal lymphatic malformation, given the known, rare association of lymphatic malformations with GS.

The baby was born at full term via a normal vaginal delivery and at one month of age presented for a paraffin office visit and ultrasound for evaluation of the presumed lymphatic malformation. This postnatal ultrasound demonstrated a complex, predominantly macrocystic mass with smaller, microcystic areas measuring approximately 7 x 9 x 4.5 cm, occupying the right lower quadrant, which enveloped the right ovary (Fig. 3, 4). Some of the fluid contents were echogenic, suggesting proteinaceous debris. Thickened septations were noted, containing both internal and venous flow. The findings confirmed the prenatal diagnosis of intra-abdominal lymphatic malformation.

An MRI was performed for further evaluation, which demonstrated a 9.7 x 5.9 x 5.4 cm multiloculated predominantly macrocystic mass with thin, mildly enhancing septations and scattered fluid-fluid levels (Fig. 5, 6), consistent with a lymphatic malformation. At this point, the plan was to perform sclerotherapy of the macroscopic components with doxycycline, with subsequent surgical resection versus interventional therapy with thrombin of any remaining microcystic components.

Discussion

Gorlin syndrome, or nevoid basal cell carcinoma syndrome, is a rare autosomal dominant disease manifesting most commonly with multiple basal cell carcinomas of the skin appearing as early as the late teenage years. The hallmark features of GS include multiple basal cell carcinomas, bone cysts, dental anomalies, palmar pits, and a spectrum of other cutaneous and skeletal anomalies including bifid ribs and scoliosis, facial anomalies including frontal bossing, midface hypoplasia, and cleft lip or palate, and cardiac fibromas (3,4). Interestingly, we can find no reference in the literature to an association of Dandy-Walker malformation with GS, as was seen in the patient’s first pregnancy. This may very well have represented an independent phenomenon, unrelated to the primary diagnosis. GS has been reported as presenting with prenatal chylothorax (5), given the known association of lymphatic malformations with GS, this was felt by the authors to fall within the spectrum of lymphatic malformations in GS.

Most examples of lymphatic malformations in GS are asymptomatic (1.2). Indeed, screening abdominal ultrasound has been suggested in routine follow-up in the care of these patients (7). Nonetheless, lymphatic malformations in GS rarely do become symptomatic, likely secondary to mass effect. One surgical case reported a 41-year-old GS patient with three pathologically proven lymphatic malformations measuring up to 7 cm which were associated with recurrent severe abdominal pain (7). Another case reported a 58-year-old GS patient with diffuse abdominal pain relieved by drainage of a surgically proven 27 cm maximal dimension right adrenal lymphatic malformation; the same patient had a 4 cm left adrenal lymphatic malformation as well (8).

Traditionally the treatment of choice for intra-abdominal lymphatic malformations is complete resection; however, incomplete resection is not uncommon and leads to recurrence. Sclerotherapy is also classically reported to have a high recurrence rate, although most of the literature utilizes sclerotherapy with OK432. A recent review of macrocystic intra-abdominal lymphatic malformations at our institution has demonstrated complete treatment with doxycycline sclerotherapy with no evidence of recurrence on cross-sectional imaging 6 months to 2 years later (unpublished data).

In conclusion, to our knowledge, this is the first reported case of an intra-abdominal lymphatic malformation diagnosed prenatally in a fetus with Gorlin syndrome. This case reinforces the imperative of a broad review of the medical literature in order to make diagnoses especially when dealing with extremely rare genetic syndromes with which the overwhelming majority of individual diagnoses cannot possibly have a breadth of personal experience.

References