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Benign Neoplasm of Umbilical Cord: Sonographic Diagnosis and Short Review of Literature

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Abstract

Tumors of the umbilical cord are rare anomalies. Only two tumors occur in umbilical cord: angioma and more rarely, teratomas. Angiomyxoma is predominantly cystic tumor, associated with increased perinatal morbidity and mortality. When a solid and cystic lesion in umbilical cord is detected in prenatal ultrasound, the possibility of teratoma should be considered. Several cord abnormalities have to be considered in the differential diagnosis of umbilical cord tumor. Amniocentesis or cordocentesis should be done to detect chromosomal aberrations. We present a rare case of teratoma of umbilical cord, detected incidentally as an isolated finding during prenatal sonography in a 20 years old primigavida who later on, underwent cesarean section.

Keywords: *Angiomyxoma, Antenatal Sonography, Benign Tumor, Teratoma, Umbilical cord,*

Case Report

A primigravida aged 20 years, para 0, during routine prenatal ultrasound assessment of 8 months amenorrhea (LMP not known), revealed a single live fetus of 32 weeks average gestational age in cephalic position. Fetal heart rate was 144/minute, regular. Sonographic evidence of congenital anomaly was not detected. The expected fetal body weight was 1938 grams .Placenta was attached to the fundus and anterior wall of uterus having maturity of grade II. The fetal movements were normal. Amniotic fluid assessment revealed marked polyhydramnios. The maximum vertical pocket (MVP) measured was 10 cm. Ultrasound examination revealed a mass of 4.4 x 3.8 cm in the cord near its abdominal entry. The mass was attached to the cord on one side facing the placenta (Fig. 1). The mass composed of solid and cystic areas. Two umbilical arteries and a vein were seen in the umbilical cord (3-vessel cord). Color Doppler of the umbilical cord mass revealed only two vessels (Fig.2) suggesting compression of one of the umbilical arteries. There was no history of vaginal bleeding or exposure to teratogens.

Histopathology reported findings consistent with teratoma of umbilical cord.

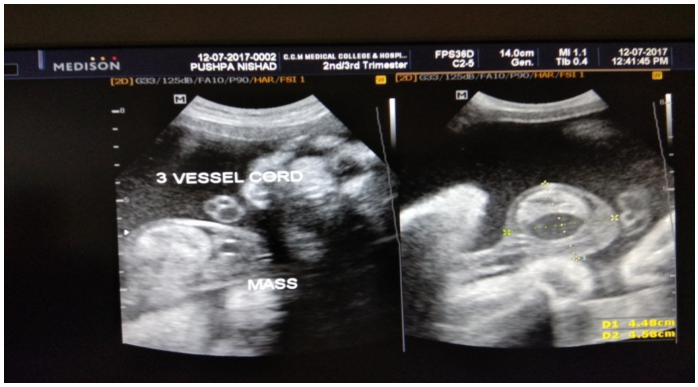

Fig 1. *Umbilical cord mass of 4.48 x 3.58 cm in 2-D ultrasound with three vessel cord seen proximal to the mass resulting in compression of one of the umbilical arteries.*

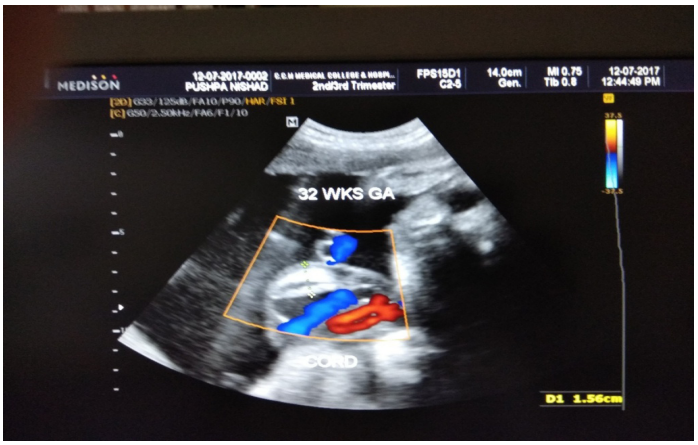

Fig 2. *Color Flow Imaging of the umbilical cord with visualization of only two vessels and 1.56 cm thick solid component of the mass on side of the cord facing placenta*

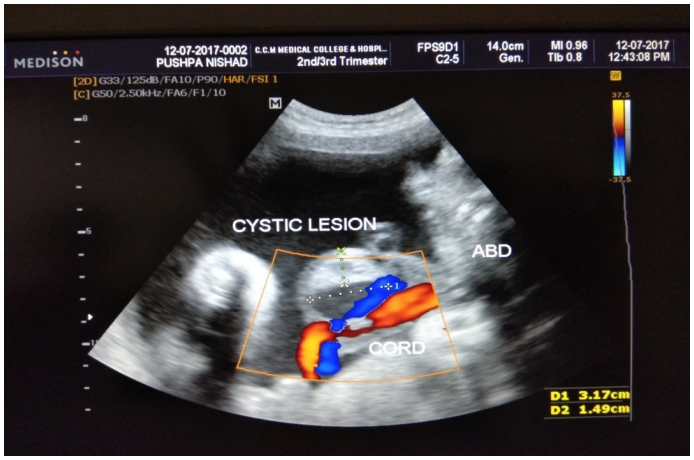

Fig 3. *Color Flow Imaging of umbilical cord showing only two vessels and presence of solid & cystic component in the tumor measuring 3.1 x 1.4 cm*

Introduction

A tumor of the umbilical cord is a rare event that can be diagnosed prenatally by ultrasound examination. Solid umbilical cord masses are incidental findings on sonographic examination. Most cord masses diagnosed on prenatal assessment represent angiomyxoas, hematomas or teratoas [1]. The clinical significance common to all anomalies is determined by their size which can potentially cause vascular compromise and affect fetal growth. Angiomyxoma is associated with increased perinatal morbidity and mortality. Close follow-up is recommended since some of the fetuses and newborns have fatal outcomes.

Discussion

Since the first description of an umbilical cord teratoma in 1878 [2], it has been a rare diagnostic finding. Although only 12 cases have been reported, a series of possibly associated malformations has been described including umbilical hernia,urinary defects [3,4] and omphalocele [5,6].

Umbilical cord teratoma can be solid or cystic observed along whole length of cord and have a very polymorphic presentation. Histology reveals tissues from the three germinal layers. Associated anomalies can be observed in nearly half the cases [6].

Only two vessels are seen within the mass suggesting that it is coming either from one umbilical artery or the mass has produced total compression of one of the umbilical arteries so that colour flow is not demonstrated (Fig.3). The entire length of the cord was screened by ultrasound.

Differential diagnosis of umbilical cord tumour includes teratoma, haemangioma and angiomyxmoma. Umbilical cord polyp, cyst, hernia into cord and

omphalocele can also be considered in differential diagnosis. All are mostly isolated finding except omphalocele [7].

These lesions should be considered when prenatal ultrasound is being done and solid and/or cystic lesion in umbilical cord is detected. Cord teratomas arise from totipotent stem cells and contain tissue from the three germ-cell layers.

Angiomyxoma is a rare tumour of the umbilical cord and is usually not associated with malformations in the foetus [8]. Tennstedt et al reported a case of angiomyxoma of the umbilical cord in one twin with cystic degeneration of Wharton's jelly. They usually present as solid heterogenous masses. On pathologic examination an angiomyxoma of the umbilical cord with massive degeneration of Wharton's jelly was revealed [9].

The umbilical cord haemangioma consist of an angiomatous nodule encompassed by oedema and myxomatous degeneration of Wharton's jelly. They are located toward the placental end of the cord. These tumours originate from the umbilical artery, rarely from the vein or both. Morbidity and mortality rate of umbilical cord haemangioma have been reported to be about 35% [10]. They are attributed to the presence of coexisting factors, such as non-immune hydrops foetalis, intrauterine growth retardation, severe fetal haemorrhage, and intrauterine fetal death as well as maternal obstetrical complications. Therefore, an early diagnosis of umbilical cord haemangioma is necessary [11]. When there is multicystic appearance of haemangioma, it may be impossible to differentiate it from a teratoma, haematoma, umbilical cord cyst.

By definition, a cord hernia is less than 4 cm in diameter, whereas an omphalocele is greater than 4 cm [12]. Umbilical cord hernias result from failure of the midgut to return to the peritoneal cavity at 10-12 weeks [12]. Cord hernias contain only midgut structures, whereas omphaloceles may contain other organs such as liver, spleen or gonads [12]. The detection of umbilical cord cysts in the second trimester warrants examination of fetal karyotype. More than 20% of cases are complicated by structural defects and/or chromosomal abnormalities such as trisomy 18 [13].

Jauniaux et al [14] describes a case of a suspected cord pseudocyst, located 5 cm from the fetal end, at sonography performed at 18 weeks' gestation for increased maternal serum alphafetoprotein.

MRI is helpful in evaluating solid component of cord tumor, while cystic components are easily seen in sonography.

Conclusion

Cord tumors are a rare finding. An early diagnosis of cord tumors is helpful to avoid the intrauterine and postnatal complications. High-resolution ultrasound and color Doppler is recommended as it can easily detect perfusion through the umbilical vessels.MRI may be advised to diagnose any other associated anomalies.

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