

Color Doppler ultrasound in prenatal diagnosis of umbilical cord angiomyxoma

Case report

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Summary: A pregnant woman, at 28 weeks' gestation, has been observed ultrasonographically. A complex mass arising from the umbilical cord was detected. Color Doppler imaging demonstrated the vascular nature of the mass and the strictly connection with the three umbilical vessels. Color Doppler ultrasound provides useful informations for a correct assessment of the masses arising from the umbilical cord.

Key words: Color Doppler; Angiomyxoma.

CONTENT

Color Doppler ultrasound provides useful information in the differential diagnosis of masses arising from the umbilical cord.

INTRODUCTION

The presence of an umbilical cord angiomyxoma is a rare event. We have been able to collect only six cases detected ultrasonographically before delivery, and one diagnosed by color Doppler imaging⁽³⁾. In the case we are reporting, ultrasound examination performed during the 2nd trimester revealed the presence

of a complex mass arising from the umbilical cord, which color Doppler imaging demonstrated to be a hemangioma.

CASE REPORT

A 28-year-old white woman, gravida 3, para 2, underwent an ultrasound scan, at 26 weeks gestation at another center, to monitor fetal anatomy and growth. The examination identified a complex mass arising from the umbilical cord at its placental insertion. The patient was referred to the Department of Obstetrics and Gynecology of the University of Parma for further evaluation and appropriate management.

Detailed ultrasonography, performed on admission, demonstrated the presence of a single fetus, without any anatomical abnormality, whose measurements were consistent with 28 weeks' gestation. A heterogeneous 50×70×90 mm mass,

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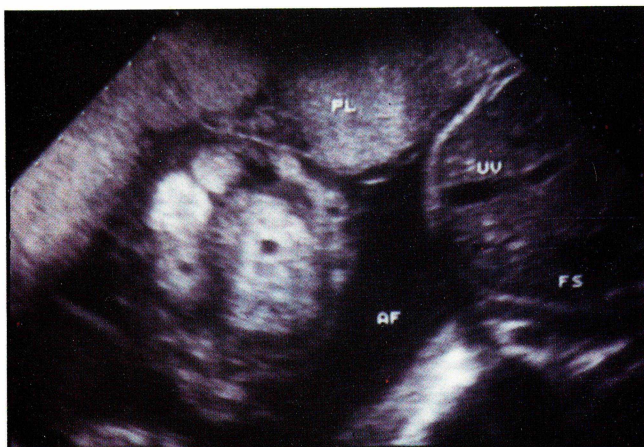


Fig. 1. — Ultrasound image of the umbilical cord hemangioma. A heterogeneous mass, composed of echo-dense and echo-poor zones, involves the placental insertion. PL: placental insertion; UV: umbilical vein; FS: fetal stomach; AF: amniotic fluid.

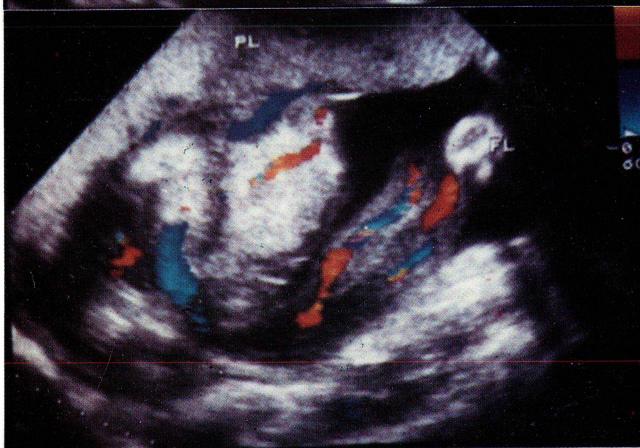


Fig. 2. — Color Doppler imaging of the umbilical cord showing the vascular nature of the tumor. PL: placenta; F: femur.

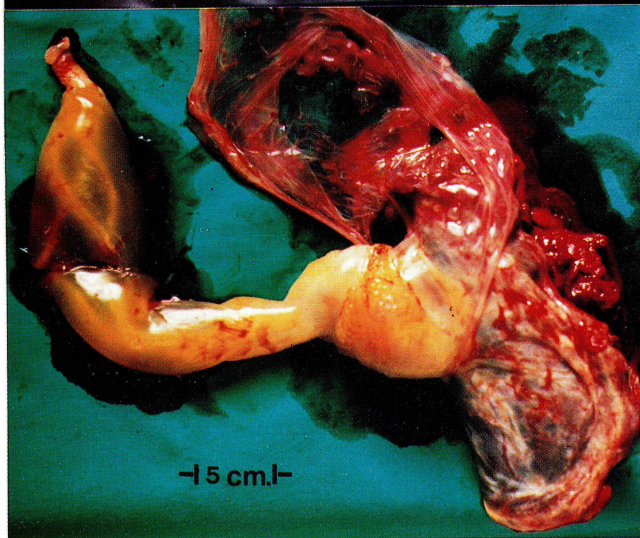


Fig. 3. — Macroscopic aspect of the umbilical cord. A solid mass can be seen close to the placental insertion. The umbilical vessels course throughout the tumor; a marked edema of Wharton's jelly interests most of the umbilical cord, except the 5 cm close to the fetal insertion.

composed of irregular echo-dense formations with adjacent echo-poor zones, was also noted at the placental insertion of the umbilical cord (Fig. 1). Color Doppler imaging showed the nodule to be closely associated with the three umbilical vessels coursing tortuously through the solid mass (Fig. 2). Marked edema was present throughout the entire length of the cord, except for a short portion close to the fetal abdomen. Such ultrasound findings were suggestive of an angiomyxoma of the umbilical cord. Doppler flow velocity waveforms from the umbilical vessels, middle cerebral artery and uterine arteries were found to be within normal limits. A rise in the volume of the amniotic fluid was noted. Gross fetal movements, fetal breathing, and NST were unremarkable. Frequent examinations were performed up to the end of pregnancy but no significant abnormalities of the fetal growth pattern or heart function were recorded. The fetus never showed any sign of hydrops.

Uterine contractions occurred at 36 weeks' gestation. As the length of the cord was estimated by ultrasound to be less than 30 cm, vaginal delivery was considered hazardous and a decision was made for cesarean section. A 2400 gm male infant was delivered, with Apgar score of 9 and 10 at 1 and 5 minutes, respectively.

During fetal extraction, a slight traction resulted in a laceration of the umbilical cord. On gross examination, this was found to be shorter than normal (29 cm), with marked edema of Wharton's jelly extending over most its length except for the 5 cm close to the fetal abdomen. At its placental end, the cord contained a solid $95 \times 75 \times 55$ mm mass surrounding the three umbilical vessels (Fig. 3). Microscopic examination was suggestive of a hemangioma, characterized by thin-walled vessels, lined by a single layer of benign endothelial cells and, located in an edematous and myxomatous stroma.

Sonographic studies of baby's abdomen and chest radiographs performed at the neonatal intensive-care unit were unremarkable. The infant was discharged 7 days after delivery.

CONCLUSION

True tumors of the umbilical cord are rare. Hemangioma is known to be one of the most common⁽¹⁾.

Traditionally, the prenatal diagnosis relies on gray-scale ultrasonography, which reveals the presence of one or more hyperechoic structures close to hypoechoic areas associated with edema, interesting partially or entirely the umbilical cord.

These findings have been reported at least six times before and were also visualized in the case under study (Fig. 2). The sonographic images of hemangioma, however, closely resemble those of cord hematoma and most likely of cord teratoma, (although we are not aware of any documented reports concerning prenatal diagnosis of teratoma). As reported by Janviaux *et al.*⁽³⁾, color Doppler ultrasound detects accurately the vascular nature of the mass, and the vascular imaging is strongly consistent with the diagnosis of umbilical cord angiomyxoma. Furthermore, early estimate of the umbilical cord length may be useful in preventing any spontaneous rupture (even during cesarean section, as in the present case) due to abnormal shortening of the cord associated with marked edema. In view of these findings, the use of color Doppler ultrasound appears to be of high clinical value any time a tumor of the umbilical cord is suspected, in that the method may prove crucial for distinguishing vascular from non-vascular forms.

At the same time, Doppler flow velocity waveforms can provide a reliable assessment of fetal haemodynamics. Both factors may ensure an accurate diagnosis, and a well-grounded prognosis as a result.

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