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BRIEF COMMUNICATION

Prenatal Diagnosis of Persistent Right Umbilical Vein: Is It Significant?

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Abstract A case of Persistent Right Umbilical Vein (PRUV) is reported. Prenatal diagnosis was made on gray scale and color Doppler at the time of routine anomaly scan. The management is briefly discussed.

Keywords Persistent right umbilical vein · Prenatal · Ultrasound

Introduction

Persistent right umbilical vein (PRUV) is a pathology in which the right umbilcal vein persists instead of disappearing at the usual 7th week gestation and left vein becomes occluded. This does not prevent the formation of the ductus venosus and although the course of the blood within the liver is abnormal, it does not alter blood distribution to the fetus [1]. The overall incidence in prenatal studies is not well established but some studies quote it to be 1 in 217 to 1 in 526 [1, 2].

Prenatal diagnosis is established on Gray scale imaging by

(1) Portal vein is curved towards the stomach in a transverse section of the fetal abdomen
(2) Fetal gall bladder is located medially to the umbilical vein (between the umbilical vein and the stomach)

Types of the PRUV

1. Intrahepatic type, in which the aberrant right umbilical vein joins the portal system at the sinus venosus and proceeds to the ductus venosus (this type is not associated with other anomalies)
2. Extrahepatic type, in which the right umbilical vein drains to the right atrium, the inferior vena cava or the iliac vein [1, 3].

Case Report

A 40-year-old 2nd gravida (previous live born, normal male child) came to the centre for advanced maternal age and aneuploidy screening. The quadruple test done suggested intermediate risk for trisomy 21 (1 in 310). The routine targeted anomaly scan showed portal vein curving towards the stomach in axial section at the level of fetal abdominal circumference, and the fetal gall bladder was located medially suggestive of PRUV (Fig. 1). On tracing the PRUV, it further joined the portal system suggestive of intrahepatic drainage (Fig. 2). Ductus venosus was present and showed normal triphasic waveform. No other cardiac or structural anomalies were seen. Parents were explained about good prognosis and pregnancy continued till term and delivered a healthy female of 2.8 kg. Neonatal evaluation was normal.

Discussion

PRUV can be encountered in routine low risk targeted anomaly scans. It is imperative to prognosticate which is better in intrahepatic type due to lack of associated

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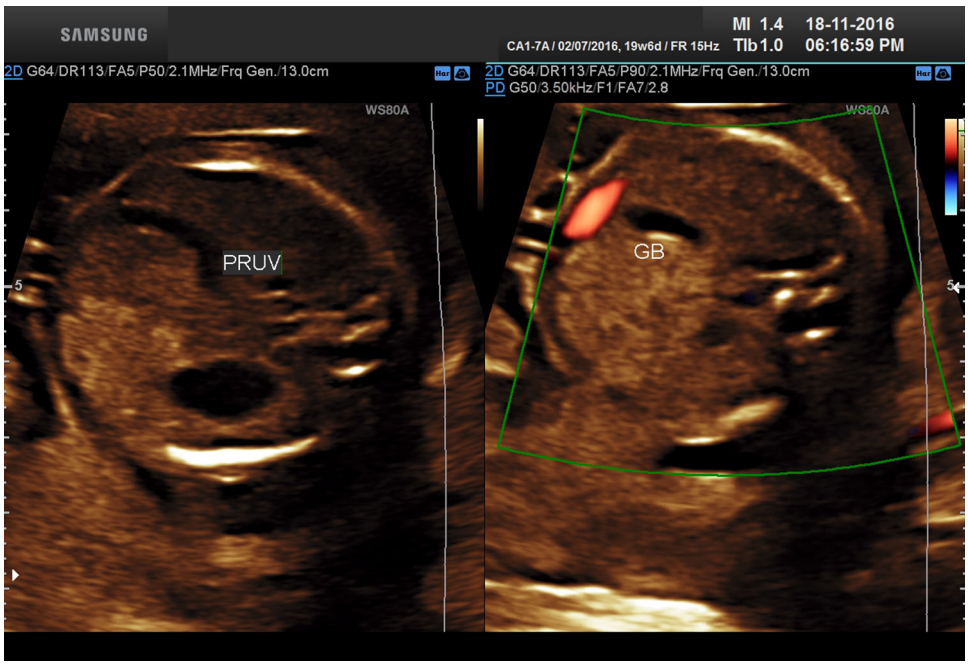

Fig. 1 Gray scale and Color Doppler image showing relation of PRUV to gall bladder at the level of fetal abdominal circumference

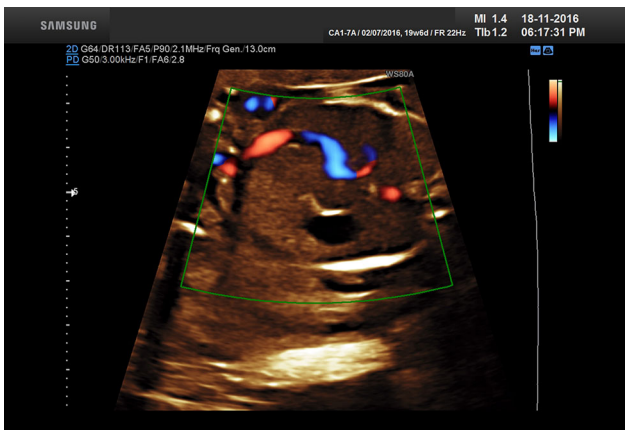

Fig. 2 Color Doppler image showing continuation of PRUV with the portal veins in the liver

anomalies, connection of umbilical vein to portal veins and presence of ductus venosus.

Among the different anomalies reported in association with PRUV, are gastrointestinal malformations, various cardiac anomalies, skeletal malformations, urinary tract malformations and single umbilical artery [1]. Cardiovascular malformations were the most frequently associated congenital anomalies followed by neurological malformations [4].

No chromosomal abnormality association is found so far, particularly in isolated cases [4].

The detection of this anomaly at routine ultrasound warrants a targeted anomaly scan in expert hands, review of aneuploidy screening and fetal echocardiography. Invasive testing for fetal karyotype is not warranted when PRUV is found in isolation [1, 4]. Parents should be counselled for excellent prognosis in cases of isolated PRUV. A regular follow-up and neonatal examination is recommended.

Differential diagnosis of PRUV include umbilical vein varix, gallbladder duplication, intrahepatic cyst, abnormal course of portal vein and its branches [5]. Careful assessment of location with use of Color and Pulse Doppler will help in the diagnosis.

Four vessel cord is another entity worth mentioning despite of its low incidence. This occurs when there is persistence of both right as well as left umbilical veins and is reported to be associated with other multiple congenital anomalies [6].

Conclusions

Prenatal diagnosis of PRUV, especially delineating the type helps in better counseling of the parents and deciding the management and fate of pregnancy.

Compliance with Ethical Standard

Conflict of Interest None.

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