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Anomalous Origin of Umbilical Artery and Fetal outcome

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Objective

Umbilical cord usually consists of two umbilical arteries on either side of urinary bladder which runs downwards and posteriorly and appear to be arising from internal iliac arteries. Umbilical artery with anomalous origin and abnormal course in a fetus diagnosed at 16 weeks of gestation. Umbilical arteries were not visualised on either side of urinary bladder. The sagittal view of fetal abdomen showed an unknown vessel arising from descending aorta, coursing anteriorly towards umbilical cord insertion into the abdomen and continuing as the umbilical artery. Early and late anomaly scan, growth scan and fetal well-being scans were normal. Postnatal abdominal ultrasound of baby did not show any abnormality.

Methods

In SUA type 2, vascular supply for embryo is via vitelline system due to failure of development of allantoic vascular system. This is an inherent “fail-safe mechanism”. In this condition, there is one umbilical artery in the umbilical cord and it will course upward and posteriorly from the umbilical ring into abdomen. This artery originates from the abdominal aorta or superior mesenteric artery instead of internal iliac artery(2). Type 2 SUA is rarely associated with a normal development of the fetus and is rarely present as an isolated finding. In Type 2 SUA, entire blood from the abdominal aorta reaches placenta through the single umbilical artery and leads to vascular steal. As minimal amount of blood circulates through the distal aorta, it become hypoplastic. This lead to pathogenesis of caudal regression syndrome(2). Type 2 SUA can be associated with sirenomelia or defect of viscera and /or soft tissues or caudal regression syndrome or very rarely it may be present as an isolated finding as in our case(4).

Results

At the time of early anomaly scan, umbilical cord showed a single umbilical artery abnormal course. No other structural abnormality or chromosomal markers were detected. 2nd trimester downs risk was 1 in 4177 and Quadruple marker was low risk for trisomy 21, 18, 13 and neural tube defect. Targeted (TIFFA) scan was done at 22 weeks and detailed evaluation of origin and course of umbilical artery was examined. Other associated structural abnormalities were also ruled out. On sonographic examination, and color flow, there was absence of vessel on both sides of urinary bladder. On sagittal view of abdomen, with color flow, umbilical artery appeared to be arising from descending aorta just below the level of renal arteries. There were no other obvious structural defects seen. Growth scan at 28 weeks and fetal well being scan at 35 week of gestation showed normal growth, with normal liquor and normal umbilical artery doppler. At 36 week of gestation, patient delivered a 3.2 kg female baby with normal Apgar. Newborn was examined by paediatrician. NICU admission was not required and no other abnormalities in newborn was detected. Umbilical cord of newborn was examined which showed 2 vessel. On post operative day 2, ultrasonography of abdomen of newborn was done which showed normal intra-abdominal structures and normal descending aorta below renal arteries.

Conclusion

This is a very rare case report of an anomalous origin of umbilical artery (SUA type 2) as an isolated finding with structurally normal fetus. The postnatal outcome was also normal. The newborn is now 2 months old, is healthy and doing well.