CASE REPORT

Twin: A Friend or a Foe!

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About the Author

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Introduction

Twin reversed arterial perfusion (TRAP) syndrome is a very rare condition that occurs in monochorionic twin pregnancies, resulting in coexistence of a normal “pump” twin and an “acardiac” twin resulting in high-output cardiac dysfunction in the pump twin [1]. It affects 1 % of monozygotic twins or 1 in 35,000 births [2].

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There is a paired artery-to-artery and vein-to-vein anastomoses. Blood is pumped from the healthy twin to perfuse retrogradely the heart of the other twin which interferes with normal cardiac development and the acardiac fetus becomes dependent on the perfusion of the “pump” twin.

Case Report

A 25-year-old primigravida married for 2 years, hailing from Jodhpur, with spontaneous conception presented to our OPD at 26 weeks with fundal height more than period of gestation with a short cervix. Multiple fetal parts were palpable, but only a single heart sound was heard. She carried an ultrasound film and report which said that it was a single live intrauterine gestation with ? an accessory limb and she had been advised termination of this pregnancy in view of an abnormal fetus. With a suspicion of TRAP syndrome, an ultrasound was done at our hospital.

The ultrasound showed a monochorionic diamniotic twin pregnancy with a membrane seen in between a normal fetus with normal morphology and amniotic fluid at upper limit of normal, EFW 1275 gms and a second “acardiac” twin with a trunk and fused lower limbs but no cardiac activity with edema around the mass, oligohydramnios (Fig. 1). A single umbilical artery was seen supplying blood from the normal fetus to the acardiac twin. Acardiac/pump twin volume ratio had exceeded the volume of the normal twin, acardiac/pump twin AC ratio was $>50\%$ (type II) and there was no cardiovascular compromise in the pump twin (subtype a).

Hence, the diagnosis of monochorionic diamniotic twin with twin reversed arterial perfusion syndrome type IIa was confirmed.

Patient was sent to Chennai for laser photocoagulation of the abnormal supplying blood vessel. The procedure was abandoned in view of increased vascularity of anterior placenta and difficult approach to the feeding vessel, and a decision was made to manage her conservatively. Prophylactic betamethasone was given and serial ultrasounds were done to monitor for signs of cardiac decompensation of pump twin. There was satisfactory interval growth of normal twin with no cardiovascular compromise and mild polyhydramnios.

Emergency LSCS was done at 31 weeks in view of preterm premature rupture of membranes. The normal twin weighing 2 kg was shifted to NICU. Acardiac twin (Fig. 2) weighing 1.54 kg was sent for autopsy. Placenta showed that there was a single umbilical cord which divided into two cords and the acardiac twin had single umbilical artery with a direct communication between the two cords (Figs. 3, 4). Healthy baby was discharged on day 18 of life.

Discussion

TRAP is a very rare condition. Early diagnosis of TRAP in a twin pregnancy is very important.

Fig. 1 Ultrasound picture of acardiac twin showing absent upper segment (*translucent area*)

Management options include the following: No intervention but serial ultrasounds to monitor for signs of decompensation, management of polyhydramnios via serial amniocenteses, endoscopic clamping of the anomalous twin's cord, laser photocoagulation of the arterio-arterial and veno-venous anastomoses and embolization of the circulation of the anomalous twin [3, 4].

Fig. 2 Acardiac twin with fused lower limbs with placenta

Fig. 3 Placenta showed single umbilical cord dividing into two cords

Fig. 4 Umbilical cord base showing 5 lumina, 3 vessels of normal twin and 2 vessels of acardiac twin (shown by arrows)

Chang et al. [5] concluded that management options for TRAP should be individualized. Even with high acardiac/pump AC ratio, there is possibility that the communicating flow will cease without intervention.

Livingston et al. concluded that primary therapy with RFA is a successful modality for pregnancies complicated by TRAP sequence.

It seems that selective reduction in complicated monochorionic pregnancies with RFA does not carry a significant decrease in the overall survival and complication rates than the cases with bipolar cord coagulation. According to data, neurodevelopmental impairment of the co-twins is relatively seldom after selective reduction [6].

Sullivan et al. evaluated the patients with weekly serial ultrasonographies, fetal echocardiography, Doppler flow assessment, non-stress test and biophysical profile. They suggested that conservative follow-up methods have a lower mortality compared to invasive methods [7].

In conclusion, TRAP sequence is a complication that is seen in monochorionic twin pregnancies. Selection of the proper treatment by making the diagnosis with ultrasonography and Doppler findings is of great importance. TRAP sequence should be monitored by weekly USGs. Conservative treatment should be followed for milder cases with dominance of pump twin. Invasive intervention should be reserved for larger acardiac twins.

Compliance with Ethical Standards

Conflict of interest There is no conflict of interest between the authors.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from participant included in the study.

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