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Case Report

Twin-Twin transfusion syndrome: a case report

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ABSTRACT

Twin to twin transfusion syndrome is a rare but serious complication of monochorionic twin pregnancy. It is characterized by the development of abnormal placental vascular communication from one foetus (donor) to the other foetus (recipient). If left untreated it led to high rates of perinatal morbidity and mortality due to its poorly understood etiology and difficulty in diagnosing and treatment. Authors report a case of twin to twin transfusion syndrome in 24 years old primigravida with gestational age of 18 weeks 5 days diagnosed on ultrasound.

Keywords: Anastomosis, Discordant, Donor, Monochorionic, Recipient, Twin-Twin

INTRODUCTION

Twin to twin transfusion syndrome is a rare but serious complication of multiple pregnancies that affects 5-10% of all monochorionic diamniotic gestations.¹ It is caused by net intertwin transfusion of blood from one foetus (donor) to the other foetus (recipient) through abnormal placental vascular communication.

Overall incidence of perinatal mortality irrespective of gestational age is approximately 60%-70% and is almost 100% before 26 weeks.²⁻⁶ Its due to its poorly understood etiology and difficulty in diagnosing and treatment.

CASE REPORT

A 24 years old pregnant woman, primigravida with gestational age of 18 weeks 5 days came to this opd with complaint of backache for 2 days. She was an unbooked patient. She got her first ultrasound (level II) done at 18 weeks which revealed monochorionic diamniotic intrauterine live twins. Placenta was anterior with grade II maturity.

Twin A

Maturity 19 weeks 4 days with foetal weight of 850 grams. It had polyhydramnios with single deepest pocket of 12 cm. Foetal kidneys were normal with distended urinary bladder.

Twin B

Maturity 16 weeks with foetal weight of 300 grams. It had marked oligohydramnios. Foetal kidneys and urinary bladder were not seen. The diagnosis of twin to twin transfusion syndrome was made with twin A as donor twin and twin B as recipient twin as shown in Figure 1.

- On general examination
- Pulse rate - 88/min
- Blood pressure - 102/80 mmHg
- Pallor - absent
- Afebrile to touch

Per abdomen examination- uterus 28 weeks > period of gestation, tense to feel, foetal parts could not be palpable

Per vaginum- cervix soft, midposition, os 1 cm dilated, 70-80% effaced, tense bag of membranes present, presenting part high up, pelvis adequate.

All investigations were within normal limit.



Figure 1: Twin A (donor) and Twin B (recipient).

As per patient's request, augmentation of labour was done with oxytocin and patient delivered uneventfully. The donor twin (Twin B) was hypovolemic, anaemic, smaller in size (in comparison to recipient (Twin A) with thin cord. The recipient twin (Twin A) was much bigger in size with oedematous cord, had polycythaemia and hydrops fetalis. Twin A (recipient) weighed 700 grams and Twin B (donor) 200 grams. There was 71.4% discordancy in foetal weight between the twins.

DISCUSSION

Twin to Twin transfusion syndrome presumed to arise from unbalanced anastomotic connections in the single, shared cotyledons of the placenta and is usually arterio-venous but may be arterio-arterial.^{7,8} This imbalance results in a shunting of blood from the high-pressure arterial circulation of one twin called the donor, to the low pressure venous system of the other twin called the recipient.⁹ This causes the recipient twin to become fluid overloaded, whereas the donor twin becomes hypovolemic.

Due to chronic hypovolemia, the donor twin becomes growth retarded, anaemic and produce little urine. This results in oligohydramnios and bladder may not be visible on the ultrasound. The twin gets wrapped by its amniotic membrane known as a stuck twin. To compensate for the extra volume of blood, the recipient twin excretes large amount of urine and results in large bladder on ultrasound and polyhydramnios. Hence the clinician has coined the term poly-oligo twins to describe the syndrome.^{1-3,9,10} The twins described in this case study were like this. The diagnosis of the twin to twin transfusion syndrome is made prenatally by ultrasound.

(A) According to the Sebire and coworker the ultrasound findings in the first trimester are^{11,12}

- Presence of monochorionicity
- Increased nuchal translucency measurement > 3 mm between 10 and 14 weeks of gestation
- Poor crown-rump length of one fetus
- Membrane folding at 10-13 weeks of gestation.

(B) Diagnostic criteria for twin twin transfusion syndrome in second trimester are¹³

Monochorionic gestation

- Same gender
- Single placental mass
- Thin dividing membrane
- Lack of lambda or twin peak sign.

Abnormal amniotic fluid volume

- One sac with oligohydramnios
- Deepest vertical pocket < 2 cm
- One sac with polyhydramnios deepest vertical pocket > 8 cm.

Persistent urinary bladder findings

- Small or no bladder visualized in twin with oligohydramnios
- Large bladder visualized in twin with polyhydramnios.

Estimated fetal weight discordance (>20% of larger twins estimated weight)

Appearance of stuck twin

Hydrops fetal (presence of one or more of the following)

- Skin edema (> 5 mm thickness) of scalp skin
- Pericardial effusion
- Pleural effusion
- Ascites.

Doppler findings

- In the umbilical artery of the donor twin the diastolic flow can be either absent or reversed
- In the ductus venosus of the recipient twin the diastolic flow can be either absent or reversed.

The treatment of TTTS depends on ultrasound findings, the gestational age of the pregnancy and a couple's specific needs. The venous therapies are available like reduction, amniocentesis, septostomy (known as microseptostomy), selective laser ablation of the placental anastomotic vessels, radiofrequency ablation. If TTTS left untreated, it leads to the loss of one or both

twins and if it occurs at a very early gestational age, the termination of the pregnancy can be considered due to grim prognosis. That target either the unequal fluid between the twins sacs or interrupt the blood vessels of communication between the twin on the single placenta.¹⁴

CONCLUSION

Twin to twin transfusion syndrome is an uncommon and severe complication of monochorionic multiple pregnancies which results in high perinatal mortality. TTTS is unpredictable in progression. However due to emergence of modern therapeutic modalities like serial amnioreduction, fetoscopic laser photocoagulation of vascular anastomosis, septostomy, removal of one twin at hysterotomy, percutaneous ultrasound guided umbilical cord ligation and close antepartum surveillance, there is a potential to improve the mortality and morbidity outcome associated with TTTS and perinatal mortality can be reduced to a great extent).

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