

Twin-twin transfusion syndrome in preterm newborn twins: A Case Report from Gusau, Nigeria

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ABSTRACT: Twin-twin transfusion syndrome (TTTS) is a serious complication of monochorionic twin pregnancy resulting from unbalanced intertwin blood flow through placental vascular anastomoses. Severe untreated disease is associated with substantial morbidity and mortality. A 25-year-old primipara delivered male twins virginally at 35 weeks of gestation. The first twin weighed 1.4 kg and had a haemoglobin concentration of 10.7 g/dL, whereas the second weighed 2.0 kg and had a haemoglobin concentration of 19.7 g/dL. The twins had a 30% weight difference and haemoglobin of 9.0g/dL as the difference between the large and small twin. The diagnosis of TTTS was missed during antenatal care until the babies presented at the Neonatal Unit for preterm LBW. The twins were managed in the neonatal unit with phototherapy administered to the larger twin as he developed jaundice, and red cell transfusion administered to the smaller twin following a fall in haemoglobin level and clinical deterioration. Both infants were discharged on the 14th day of life. In order to minimise maternal and neonatal morbidity and mortality, any pregnant woman with twins should be evaluated for TTTS during Antenatal Care (ANC).

Keywords: Gusau, newborn, Nigeria, syndrome, transfusion, twin-twin.

INTRODUCTION

Twin–twin transfusion is a dangerous, rare complication of twin pregnancy, as it is associated with perinatal mortality of 50-70% in untreated severe disease. TTTS results from an imbalance in blood flow through placental vascular anastomoses in monochorionic twins (Sadler, 2023). The large twin is termed the recipient, while the small twin is the donor; the large twin usually appears plethoric while the small is pale. The prevalence of TTTS in twin gestation is 10-15% worldwide. In the United States of America, 2,500 pregnancies are complicated by TTTS annually (Sadler, 2023; Bliss *et al.*, 2017). TTTS is primarily diagnosed antenatally (2nd trimester) in monochorionic twin pregnancies by ultrasonographic evidence of

significant amniotic-fluid discordance, characterised by oligohy-dramnios in the donor twin and polyhydramnios in the recipient twin. Disease severity is commonly classified according to the Quintero staging system. Postnatal differences in haemoglobin concentration ($\geq 5\text{g/dL}$) and birth weight ($\geq 20\%$) may support the diagnosis of TTTS but should be interpreted alongside antenatal and placental findings (Bliss *et al.*, 2017; Carlo, 2024). There should be a high index of suspicion for twin pregnancy during ANC ultrasonography to ensure early detection and appropriate management to improve survival of the twins. To the best of our knowledge, the first TTTS case from Gusau, Zamfara State, Nigeria, is hereby presented.



Figure 1. Picture of the twins showing that the large twin is pink all over while the small twin is pale.

CASE SUMMARY

The case of a 3-hour-old male neonate from a same-sex twin pregnancy, referred from the labour ward due to prematurity and low birth weight (LBW), is presented. The larger twin exhibited respiratory distress. They were delivered by spontaneous vaginal delivery at 35 weeks gestation to a 25-year-old primipara. She had her ANC at Ahmad Sani Yariman Bakura Specialist Hospital, Gusau. During her antenatal period, three obstetrics ultrasonographic examinations were reportedly performed. The first examination identified a twin pregnancy and suggested that only one foetus was in cephalic presentation, for which Caesarean delivery was anticipated. A repeat scan performed when the mother presented in labour reportedly showed cephalic presentation of both foetuses, and vaginal delivery was subsequently undertaken. She was not told at any point in the pregnancy that any of the foetuses had problems. She claimed to be regular on her routine ANC drugs and had no serious illness during the pregnancy. She could not provide any of the scan reports for us to corroborate what she has told us, as she claimed she gave them to her doctor at ANC, who subsequently filed them in her medical record. Figure 1 shows clinical features of the recipient

twin being pink and plethoric, while the donor twin was pale. The important clinical and laboratory findings are shown in Table 1.

A diagnosis of Preterm LBW Twin with TTTS was made. They were immediately admitted to the Neonatal Unit and commenced on treatment (IVF 10% dextrose at 60 mL/kg/day, IV Cefotaxime at 50 mg/kg every 8 hours, intranasal oxygen at 1L/minute for the large twin, IM vitamin K 1mg for the large twin and 0.5 mg for the small twin, cord care with 4% chlorhexidine gel and eye care with 0.5% erythromycin ointment). Both infants established effective direct breastfeeding by 72 hours of life. On the third day of life, the large twin developed jaundice, and he was placed under phototherapy. On day 10, the small twin developed clinical features of cardiac decompensation with a haemoglobin level of 9.3 g/dL; sedimented red cells were administered at 15 mL/kg in two divided aliquots under frusemide cover. Following transfusion, the haemoglobin level increased to 11 g/dL with corresponding clinical improvement. The babies were managed successfully, as the small twin weighed 1.5 kg with a haemoglobin level of 11 g/dL while the large twin weighed 2.2 kg and had a haemoglobin level of 15 g/dL at discharge on the 14th day of life. They were given a 1-week appointment to come back for follow-up.

Table 1. Clinical and laboratory findings.

S/No	Parameters	Small twin (Donor)	Large Twin (Recipient)
1	Colour	pale	Pink (plethoric)
2	Respiration	normal	In distress
3	Respiratory rate	46/min	82/min
4	Oxygen saturation	94%	75%
5	Temperature	36.6 ⁰ c	36.8 ⁰ c
6	Heart rate	138 bpm	142 bpm
7	Genital	Male genitalia	Male genitalia
8	OFC	31cm	31.5cm
9	Birth Weight	1.4kg	2.0kg
10	Haemoglobin level	10.7g/dL	19.7g/dL

Ethical consideration

Consent was obtained from the parent, and ethical approval was obtained from the ASYBSH's Research and Ethics Committee with code number: ASYBSH/SUB/205/002/Vol1.

DISCUSSION

The diagnosis of TTTS complicating twin pregnancies starts from the antenatal period when there are clinical signs and symptoms confirmed by ultrasonographic evidence and further strengthened by weight and haemoglobin differences between the twins at birth (Miller, 2021; Carlo, 2024). The diagnosis of TTTS in the present study was apparently missed during ANC due to lack of expertise and the quality of the ultrasound machines available at the private ultrasound centres where the first two scans were done. The mother of twin neonates was primiparous, and this finding is similar to reports from Nepal (Agrawal *et al.*, 2022), Sagamu, Nigeria (Oloyede *et al.*, 2022) and Lagos, Nigeria (Kehinde *et al.*, 2025), where they have demonstrated that TTTS is more associated with primiparous women carrying twin pregnancies than multiparous women. The weight difference of 30% and haemoglobin of 9 g/dL recorded between twins had significant implications for neonatal management in terms of prematurity and severe anaemia in the donor twin, while the recipient twin had high red cell mass that the liver can't cope with the conjugation of bilirubin, thereby leading to jaundice (Sadler, 2023; Carlo, 2024). These complications were promptly identified and treated. The good outcome of this case is likely to be early stage of Quintero classification, since it carries a good prognosis as the antenatal ultrasound findings required for Quintero staging were not documented (Sanchez *et al.*, 2025). The antenatal treatment of TTTS remains Foetoscopic Laser Therapy as the gold standard, but in most middle - and low-income countries, this mode of treatment is not readily available (Khalek *et al.*, 2013; Oloyede *et al.*, 2022). Since the diagnosis was missed during ANC, we were able to

salvage the twin with postnatal management in the Neonatal Unit. There have been few reported cases of TTTS from other parts of Nigeria, but to the best of our knowledge, this case is the first to be reported from Gusau, Zamfara State, Nigeria.

Conclusion

This case highlights the importance of systematic antenatal assessment of monochorionic twin pregnancies for TTTS, particularly through appropriate ultrasonographic surveillance. Early recognition may facilitate timely referral for specialist foetal therapy where available and improve perinatal outcomes. In resource-constrained settings, strengthened antenatal ultrasound assessment and referral pathways are particularly important.

Limitation of the report

This case report was limited by the unavailability of antenatal ultrasonographic reports, which restricted the assessment of fetal development and any abnormalities identified during pregnancy. Additionally, the placenta could not be examined immediately after birth in the labour ward, limiting the opportunity to assess placental characteristics that might have provided further insight into the clinical presentation of the twins.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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