

## CASE REPORT

Birthweight Discordant Twins – A Case Report of a Distinct Clinical Entity.

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### Abstract

Globally, twin births have doubled in the past 25 years and currently, 3% of the world's newborns are twins. Twins with birth weight difference of 15- 40 % calculated from the weight of the larger twin are said to be discordant in weight. Documentation of it and its attendant morbidity and mortality is sparse in our environment. The objective of this report is to highlight birthweight discordance as a distinct clinical entity in multifetal gestation. We present a set of dichorionic female twins delivered to a 40-year old G<sub>17</sub>P<sub>11</sub><sup>+5</sup> via emergency caesarean section on account fetal distress, hypertension, grand

multiparity and poorly controlled diabetes. Twin 1 had APGAR score of 7<sup>1</sup>, 8<sup>5</sup> and 9<sup>10</sup> with a birth weight of 2.7 kg while Twin 2 had APGAR score of 8<sup>1</sup>, 9<sup>5</sup> and 10<sup>10</sup> with a birth weight of 4.0kg (weight discordance of 32.5%). While Twin 1 was stable at presentation, Twin 2 had respiratory distress and congestive cardiac failure which resolved after 48 hours on oxygen therapy and frusemide. The packed cell volume was 45 % and 47.9% for Twin 1 and Twin 2 respectively. Birthweight discordance should be recognized as a distinct clinical entity with attendant morbidity.

**Keywords-** Twins, discordance, birthweight, mono or dichorionic, macrosomia.

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### Introduction

Globally, twin births have doubled in the last quarter of the century attributable to increased maternal age at first delivery and advances in assisted reproductive technology <sup>1</sup>. Though Nigeria has the highest global twinning rate, there is a paucity of data on this entity<sup>2</sup>. Olusola *et al* found a twinning rate of 53.8% in South -western Nigeria, with 71.1% of the twins being dichorionic-diamniotic and 28.9% monochorionic-diamniotic<sup>3</sup>.

Compared to singletons, multifetal gestation is associated with a higher morbidity and mortality. Birth weight, a measure of intrauterine fetal growth, is a strong determinant of neonatal outcomes.<sup>4</sup> Twin birthweight discordance reflects a disparity in birthweight between the larger and smaller neonates of a twin set<sup>4</sup>. Growth discordant twins have not been well described in our environment and even in well developed countries, the entity has been poorly characterized suggesting a global paucity of data.<sup>5</sup> Cut off value difference of >15-30% <sup>6</sup> calculated from the weight of the larger twin is accepted as birth

weight discordance. However, an international consensus survey data suggests that a clear-cut value for discordance has not been conclusively defined.<sup>5</sup> Discordance ranging from 15-40% are predictive of adverse perinatal outcomes.<sup>6</sup> It has been classified as mild (discordance of between 15-25%), severe (>25% discordance)<sup>5</sup> and extreme (>35%)<sup>7</sup>. It complicates 15-29% of twin births<sup>1</sup>. The aetiology of birth weight discordance varies depending on the chorionicity of the twins/multifetal gestation.<sup>8</sup> It is usually related to factors that act asymmetrically on the two fetuses affecting the intrauterine growth of one of them<sup>1</sup>. In dichorionic twins, maternal, fetal and placental aetiologies are implicated. Maternal advanced age, excessive intrapregnancy weight gain, hypertensive disorders, cigarette smoking, uterine crowding and ovulation induction, foetal inherent genetic growth potential, sex discordant twins<sup>9</sup> and male sex<sup>9</sup>, placental pathologies and insufficiency, intrauterine growth restriction and congenital malformations are the risk factors implicated. The morbidity patterns differ in the discordant twins with the smaller twin at an increased risk of necrotizing enterocolitis, polycythaemia, hypoglycaemia, hypocalcaemia and a 20% increased risk of dying compared to the larger twin who incidentally is more prone to respiratory distress. Overall, both twins have a 2.5% increased perinatal morbidity.<sup>5</sup>

### Case Report

We report a pair of late preterm female twins delivered to a 40 year G<sub>17</sub>P<sub>11</sub><sup>+5</sup> via emergency caesarean section on account of foetal distress, grand multiparity, bad obstetric history and poorly controlled diabetes. Pregnancy was poorly supervised, she booked late for antenatal care at 30 weeks gestation with only two antenatal visits thereafter. She was diagnosed as hypertensive and diabetic seven years prior to index pregnancy and was placed on antihypertensives and insulin with poor compliance to therapy. Insulin injections

were erratic and was stopped four weeks prior to delivery. She had excessive third trimester weight gain with a weight of 120 kilograms at presentation. There was prelabour rupture of membranes of 17 hours before delivery with no features of chorioamnionitis. Her presenting blood pressure was 150/110 mmHg. Intra operatively, the twins were found to be dichorionic and diamniotic with no aberrant inter or intra placental vessels noted. The 2<sup>nd</sup> twin had a larger placenta though they were neither weighed nor subjected to histological analysis.

The twins were presented to the newborn unit at the 20<sup>th</sup> minute after birth. (See Figure 1). Twin 1 had APGAR scores of 7<sup>1</sup>, 8<sup>5</sup>, 9<sup>10</sup> with a birthweight of 2.7kg and normal systemic examination findings at presentation. Her Packed Cell Volume (PCV) was 45%, she developed physiologic jaundice which resolved with phototherapy, was discharged six days after admission and has been stable on follow up. Twin 2 had APGARs of 8<sup>1</sup>, 9<sup>5</sup>, 10<sup>10</sup> with a birthweight of 4.0kg (macrosomia). Her PCV was 47.9%. She developed respiratory distress from the 3<sup>rd</sup> hour of birth and features of congestive cardiac failure which were retrospectively attributed to transient tachypnoea of the newborn. This resolved 48 hours into admission on oxygen and frusemide. Echocardiography and Chest X-ray (CXR) were not remarkable, was discharged eight days after admission and has been stable on follow up.

### Discussion

Twin gestation when compared to singletons is associated with a higher morbidity and mortality.

The birthweight discordance of the presented twins was 32.5% which places it in the severe category<sup>6</sup>. The trajectory of fetal growth in multiple gestation differs from that of singletons with twins being smaller as a result of normal adaptive mechanisms. As pregnancy advances, the uterus enlarges, however from the third trimester, it reaches its limits in volume and

nutritional capacity, subsequently growth is reduced in one or both fetuses thus an intertwin growth disparity of up to 10% difference is considered normal<sup>1</sup>. We infer from our case that maternal advanced age, severe uncontrolled hypertension with its attendant placental insufficiency, grand multiparity, poorly controlled diabetes and excessive intra-pregnancy weight gain were the maternal risk factors for birth weight discordance. The first twin was of normal weight whilst the 2<sup>nd</sup> was macrosomic, this was similar to findings by Giuseppe *et al*<sup>1</sup> where severe weight discordance was associated with one twin being small for gestational age (SGA) and the other being either appropriate for gestational age (AGA) or large for gestational age (LGA). Could Twin 2 have been more susceptible to maternal hyperinsulinemia due to the poorly controlled diabetes or was she genetically programmed to be macrosomic? Being dichorionic and diamniotic makes entities such as unequal placental sharing and vascular anastomosis [Twin-Twin Transfusion Syndrome (TTS) and twin anaemia-polycythemia syndrome (TAPS)] arising from monochorionicity highly unlikely<sup>1</sup>. The PCV difference of only 2.9% further lends credence to the implausibility of TTS. Lianne *et al*<sup>9</sup> have suggested that delayed cord clamping or inherent genetic modification in haematopoiesis could account for slight difference in haemoglobin levels noted in this entity.

Obstetric surveillance using ultrasonography is the standard diagnostic test for growth discordance<sup>10</sup>. The mother in this case had only 2 antenatal care visits, the first being at 30 weeks gestation was too far into the pregnancy, for optimum surveillance for growth discordance should start in the first through the third trimester of pregnancy the frequency of which depends on the chorionicity<sup>10</sup>. Crown rump length measurements in the first trimester, differences in biparietal diameter (BPD) >6mm with the smaller BPD <2SD below the mean, abdominal

circumference measurements diverging by 20mm or more, head perimeter discordance >5%, umbilical artery doppler systolic to diastolic (S/D) ratios discordant by >15% are obstetric scan findings diagnostic of birth weight discordance.<sup>6,8,10,11</sup>.

Both twins had a good outcome although the clinical course of T<sub>2</sub> was marked by the significant clinical morbidity of respiratory distress and congestive cardiac failure. This corroborates documentation from the literature where a weight discordance >25% is associated with a significantly higher morbidity and a higher risk of mortality when >30%.<sup>4,6,8</sup>

## Conclusion

We conclude that birthweight discordance in dizygotic twins should be recognized as a distinct clinical entity. It should be differentiated from twin-twin transfusion syndrome which occurs in monozygotic twins. Obstetric surveillance with adequate antenatal care, serial doppler ultrasonography and collaborative perinatal care is imperative to optimize perinatal outcomes.

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