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Case Report

Quadruplets Delivered at 26 Weeks Following in Vitro Fertilization of an Ovum: A Case Report

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ABSTRACT

The successful outcome of higher order multiple pregnancies depends on early diagnosis, clinical monitoring, early institution of bed rest to prevent preterm labour and premature rupture of the usually preterm newborn.
We report a case of quadruplet delivery by a 37-year old $G_4P_0+^3$ woman married to a senior civil servant with a history of subfertility. She had in vitro fertilization and embryo transfer done in a private facility. She subsequently developed a quadruplet gestation. There was drainage of liquor at 25 weeks gestation on account of which she was admitted into the obstetric ward of our facility. She was eventually delivered of quadruplets at 26 weeks of gestation, two males that died and 2 females that were managed and discharged.

Key words: Preterm, quadruplets, in vitro fertilization.

INTRODUCTION

During the past two decades, there has been an increase in multiple gestation, particularly higher order multiples as a result of use of assisted reproductive technologies.[1] Ninety eight percent of higher order multiples are born preterm and are the fastest growing segment of the preterm birth infant population.[2] The birth-weight is an important denominator of neonatal viability and it can be used to classify newborns into low birth-weight (LBW), very low birth-weight (VLBW) and extreme low birth-weight (ELBW). Low birth-weight accounts for 15.5% of five births worldwide [3] while, VLBW and ELBW infants accounts for 1.5% and 0.7% of all five births respectively. They contribute disproportionately to neonatal morbidity and to health care costs.[4] Preterm low birth weight newborns frequently have ongoing health problems such cardiovascular, respiratory and neuro-developmental challenges, requiring prolonged and frequent hospitalization.[5,6] Many of these births occur in poor resource settings where facilities and personnel may not be available to ensure their survival.[3]

We therefore, report and highlight the case of a set of quadruplets delivered at 26 weeks gestational age (GA) and managed in a tertiary facility in North Western

Nigeria; 2 female neonates that were successfully managed and discharged while we lost 2 male neonates.

CASE REPORTS

A 37 year old $G_4P_0+^3$ woman married to a medical practitioner with a history of subfertility, had in vitro fertilization and embryo transfer done in a private facility. She subsequently developed a quadruplet gestation confirmed at 16 months GA. There was drainage of liquor at 25 weeks GA on account of which she was admitted into the Obstetric ward of our facility. The neonatologist was duly informed for possible imminent delivery. Liquor drainage persisted with resultant oligohydramnios, and she was prepared for emergency lower segment caesarean section (LSCS). Dexamethasone was administered at onset of liquor drainage. Four live quadriamniotic, quadrichorinic quadruplets were extracted at 26 weeks GA with Apgar scores 5^1 8^5, 6^18^5, 6^17^5, and 5^17^5 for Quadruplets 1 to Quadruplets 4 respectively. They were subsequently admitted to our Special Care Baby Unit (SCBU) following moderate resuscitation.

Quadruplet 1(Q1) and Quadruplet 4 (Q4) were males weighing 930g and 1000g while, Quadruplet 2 (Q2) and Quadruplet 3(Q3) were females weighing 700g and 900g respectively. Q1, Q2 and Q3 were ELBW while Q4 was VLBW. Q2 was small-for-gestational age (SGA) while the others were appropriate-for-gestational age (AGA). They were all nursed in incubators.

Q1: Male, weighed 930 grams but AGA developed worsening respiratory distress soon after delivery. Intranasal oxygen therapy was instituted. Had one vial of surfactant injection postnatally on the 6th day of life because it was not readily available in the region and the cost (this male was the only one that had surfactant due to cost and availability). Subsequently, improvised nasal bubble Continuous Positive Airway Pressure (CPOP) was also commenced. His condition did not improve and he succumbed on the 9th day of life.

Q2: Female, SGA, weighed 900grams, had respiratory distress soon after birth and later stabilized on intermittent oxygen therapy and later the use of bubble CPAP. Nasogastric feeds were commenced at 7th day of life. She started gaining weight steadily after dropping to 510g from the 16th day of life. Her parked cell volume (PCV) was 31% at 18th day of life; she subsequently had blood transfusion. She had a normal transfontanelle USS. She was eventually discharged at chronological age of 92 days (actual age: 39/52 + 4/7) on haematinics with a weight of 1740g and PCV of 21%. At two subsequent follow up visits to the high risk neonate clinic, she weight 2350g and her PCV was 33%.

Q3: Female, weighed 700grams, AGA; bled from the cord profusely few hours after delivery. Her PCV was 30% thereafter, she had blood transfusion same day. She also had respiratory distress soon after birth and later stabilized on intermittent oxygen therapy and the use of bubble CPAP. Nasogastric feeds were commenced on the 7th day of life. She had a steady weight gain therefafter. Transfontanelle USS done for her was normal, and was subsequently discharged with a weight of 1670g at 88 days (12 weeks). At 2 subsequent follow up visits, her weight had improved to 2000g at 16 weeks.

Q4: Male, AGA, weighed 1000grams, had the highest birth weight and remained relatively stable with mild respiratory distress. He was subsequently commenced on nasogastric feeds on the 5th day of life. He developed fever, jaundice, and apneic

attacks on the 7th day postnatally. He had antibiotics based on clinical diagnosis of septicaemia (blood culture yielded no growth). He subsequently had bubble CPAP, and blood transfusion on account of low PCV of 29% on the 15th day of life. He initially improved but eventually deteriorated with worsening apneic attacks and died on the 17th day of life.

DISCUSSION

Spontaneous quadruplet pregnancy is very rare with an incidence of 1: 512,010 pregnancies. However the incidence is increasing as higher order multiple pregnancies are being associated with assisted conception techniques like ovulation induction and in-vitro-fertilization (IVF) techniques.[4] The successful outcome of higher order multiple pregnancies depends on early diagnosis, clinical monitoring, early institution of bed rest to prevent preterm labour and PROM, elective caesarean section delivery and experienced hands in the care of the usually preterm newborns.[5-8]

The age of viability in developing countries by the WHO is 28 week of gestation.[9] In his case, it is worth noting the GA of 26 weeks was accurate being an IVF pregnancy. Many deliveries before 28 weeks GA even among singleton pregnancies do not survive in developing countries.[10]

In this report, the two who survived were females despite their lower birth weights. It is known that male infants are more susceptible and have higher mortality.[11] The third quadruplet who was GA survived, despite the lower weight for GA compared to the two males who had a higher weight and were AGA. One of the males was the only one who received surfactant but his outcome was still poor. SGA preterm infants when compared with preterm AGA of the similar weights tend to have better respiratory prognosis probably from stress induced lung maturity.[12]

In India, a study comparing two cohorts of preterm ELBW neonates delivered with differing standards of care about ten years apart found that the use of surfactant improved survival.[13] In this report however, only one of these quadruplets received one dose of surfactant due to cost.[14] It is also not readily available in the country and needs a cold chain for transfer and storage to be of optimal use, this condition cannot be guaranteed in some poor resource countries with erratic power supply.

The quadruplets all had improvised nasal bubble CPAP when they had respiratory distress. Two of them survived the persistent apneic attacks with intermittent ambubagging and CPAP. Trials have shown the use of non invasive ventilation like CPAP could be very effective for ELBW neonates who have Respiratory Distress syndrome (RDS) without need for mechanical ventilation,[15] that is associated with risk for intraventricular haemorrhage (IVH).[16] IVH is common in the extreme preterm infants.[17] The two surviving females had normal tansfrontannelle unltrasound scan (TFUSS) at discharge. The absence of congenital heart disease like Patent Ductus Arteriosus (PDA) in them which is also a risk factor for IVH may have also conferred added survival advantage.[18]

CONCLUSION

Preterm deliveries still carry high morbidity and mortality, and therefore there is the need for improved perinatal care and appropriate timed decision for delivery especially in higher order multiple pregnancies.

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