Prevalence and outcome of macrosomic babies admitted to special care baby unit of a Nigerian teaching hospital.

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Original Article

ABSTRACT

Objective: Macrosomia has been defined as birth weight of 4.0kilogram and above. It is an important risk factor for perinatal asphyxia, birth injuries and fetal death. To determine the prevalence and outcome of management of macrosomic babies admitted to the Special Care Baby Unit (SCBU) of Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria.

Methods: This was a retrospective, cross sectional study. Data was extracted from the admission files of all macrosomic babies admitted to SCBU. Study period was January 2011 to December 2013. The data was analyzed using SPSS Version 20.0

Results: Total admission was 2928, of which 61 were macrosomic babies (prevalence of 2.1%). Thirty eight (62.3%) were males and 23 (37.7%) females, with male to female ratio of 1.7:1. The Mean birth weight of the babies was 4.38kg. Caesarean section accounted for 82.9% of all the deliveries in the study group, thirteen (21.3%) babies had perinatal complications; 3.3% had birth injuries and sepsis each, 13.1 % had perinatal asphyxia and, 1.6% had jaundice. Sixty babies (97.6%) were discharged home, 2.4% signed against medical advice but, none died. Mean duration of hospital stay was 1.85days.

Conclusion: The prevalence of 2.1% is comparable to some previous studies. Caesarean section was the major mode of delivery in women with macrosomic babies in this study. Accurate estimate of fetal weight in utero reduces the complications from fetal macrosomia.

Key Words: Large-for-gestational age babies, outcome, Sokoto

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La prévalence et le résultat des bébés macrosomies admis à l'unité de soins spéciaux pour bébés d'un hôpital d' enseignement, Nigeria

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Article Original

RÉSUMÉ

Objectif: Macrosomie a été défini Comme le poids de naissance de 4.0kg et au-dessus. Il est un facteur a risqué, important pour l'asphyxie périnatale, traumatismes à la naissance et de la mort foetale.

Objectif: Pour déterminer la prévalence et les résultants de la gestion des bébés macrosomies admis à l'unité bébé de soins spéciaux université (UBSS) du d'hôpital d'enseignement – Usmanu Danfodiyo, Sokoto, Nigeria.

Méthodes: Une rétrospective, etude traversable la donnée a été extraite des dossiers d'admission de tous les bébés macrosomies admis a (UBSS) la durée de l'étude était le janvier 2011 au Décembre 2013. Les données ont été analysées en utilisant SPSS, version 20.0.

Résultants: Admission totale était 2928, dont 61 étaient des bébés macrosomies de 2.1% 38 (62.3%) étaient des hommes et 23 (37.7%) femmes, avec ratio homme femme de 1.7:1, Le poids de naissance de moyen des bébés était 4.38kg.Césarienne a représenté 82.9% de toutes les livraisons/accouchements dans le groupe d'étude 13 (21.3%) bébés avaient des complications périnatales 3.3% avait des blessures à la naissance et la septicémie chacun 13.1% avait asphyxia périnatale et 1.6 avant la jaunisse. 60 bébés (97.6%) étaient libres de rentier à la maison, 2.4% signe contre avis médical mais, aucun est mort. Durée moyenne de séjour a l'hôpital était de 1.85 jours.

Conclusion: La prévalence de 2.1% est comparable à certaines étudesantérieures. Césarienneétait le principal mode de l'accouchement chez les femmes avec des bébésmacrocosmique dans cette étude l'estimation précise du poidsfoetal dans l'utero réduit les complications de macrosomiefoetale.

Mots Clés: Grande–pour-âge gestationnel bébés, résultants, Sokoto

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INTRODUCTION

Birth weight, is an important denominator of neonatal morbidity and mortality and average birth weight vary from one centre to another (1,3). The high neonatal morbidity and mortality observed in macrosomic babies has attracted considerable attention (3,4). The current acceptable definition of macrosomia is a baby with birth weight greater than 90th percentile after correction for gestational age and sex (5,6). Large-for-gestational babies (macrosomia) occur in 1-10% of all deliveries with factors including racial, ethnic, post maturity, diabetes mellitus and genetic being responsible for the observed weight in them (7,8).

Perinatal diagnosis of fetal macrosomia is often difficult due to unreliability of USS and also in obese mothers (2,7); methods used in utero for assessment of fetal weight include maternal risk profiles, abdominal examination and ultrasound examination.(3,6). Though, in the study area, there is a strong aversion for abdominal delivery (9) but, to avoid maternal/fetal complications, obstetricians in most centres often opt for either early induction of labor or Cesarean delivery in suspected macrosomic babies.(7,8,9,10). This study is therefore, to determine the prevalence and outcome of macrosomic babies admitted to special care baby unit of UDUTH Sokoto, Nigeria.

METHODS

This retrospective, cross-sectional study was conducted within a 3-year period (January 2011 to December 2013) at the paediatrics department of Usmanu Danfodiyo University Teaching Hospital, Sokoto: the capital of Sokoto State, Nigeria. This tertiary hospital serves as the referral centre to its three neighboring States and Niger Republic. Data from case folders of newborn infants admitted with diagnosis of macrosomia was consecutively documented into a proforma for the 3-year period. In this study, we defined macrosomia as babies with a birth weight of greater than 4000grams. We also included singleton macrosomic babies delivered in UDUTH with gestational age of or greater than 37 weeks and, had no associated congenital anomaly. Gestational age determination was by maternal dates and confirmation was by either an ultrasound scan early in pregnancy or postnatally using Ballard scoring system. All the women studied were those who booked at the Maternity unit of the Hospital and had random blood sugar testing. The information obtained from files included maternal age, parity and weight. Fetal complications were also recorded; they were perinatal asphyxia, Erb's palsy, jaundice and sepsis. Ethical approval was obtained from UDUTH's ethics committee.

Data was analyzed with SPSS version 20.0 and the results were presented as simple percentages and frequencies. Chi-square test, where applicable was used for comparison of categorical data and Student's t-test was used for comparison of means. The level of statistical significance was set at $p<0.05$

RESULTS

Total admissions during the study period were 2928. Of these, 61 were macrosomic babies giving a prevalence of 2.1%. Thirty-eight (62.3%) were males and 23 (37.7%) females; M:F ratio was 1.7:1. When we compared both, males were significantly more ($P = 0.001$). Table 1 shows the fetal characteristics and outcome. The Mean birth weight of the babies was 4.38kg (SD 0.42); with minimum of 4.00kg and maximum of 5.90kg. At delivery, their mean gestational age was 40.3±1.2 weeks. Cesarean section (82.9%) was statistically significant for the delivery rates in the study group ($P = 0.001$). Sixty babies (97.6%) were discharged home, 2.4% signed against medical advice due to financial constrains but, none died. The Mean duration of hospital stay was 1.85days.

Table 2 shows the maternal characteristics. The mean age of the mothers was 29.7±6.9 years (ranging from16 to less

than 42 years). The Mean parity of the mothers was 4.1±2.7. Most mothers were multiparous (81.1%, n = 50), while 18.9% (n=11) were primigravida (p = 0.002).

Thirteen of the study subjects (21.3%) had perinatal complications; 10 (76.9%) where delivered vaginally while Caesarean section accounted for the rest 23.1%. Of the fetal macrosomia with perinatal complications; 3.3% had birth injuries and sepsis each, 13.1 % had perinatal asphyxia and, 1.6% had jaundice (Table 3).

DISCUSSION

In this study, the incidence of macrosomia was 2.1% with a mean birth weight of 4.38kg amongst the study subjects. This is a hospital-based study and only babies delivered in UDUTH were studied; therefore it does not reflect the incidence in the community as this is influenced in other centers by race and other factors including altitude/sea level (11). Nordic countries reported the highest prevalence of 20%, while in the USA 1.5% of neonates weight $\geq$ 4.5 kg (6,12). Earlier studies in Eastern Nigeria and Saudi Arabia recorded similarity in incidences of 2.5% and 4.5% respectively (3,11). The observed decline in the incidence of delivery of macrosomic babies reported in the literatures were said to be due to higher rates of preterm delivery, induction of labor, multiple gestations and other interventions including health education about the risk of diabetes mellitus (7). It has been observed that ethnic variance and different fetal weights used to define macrosomia by authors has resulted in differences in the rates of macrosomia (11,13). However, it is difficult to explain the exact pathophysiology of rapid increase in fetal weight during pregnancy. Studies have shown male preponderance; the male fetus is usually heavier than their female counterparts irrespective of the gestational age (2,14). Compared to other method of deliveries, abdominal delivery (Caesarean section) was higher both in this study (82.9%) and also in the proportion of caesarean section in the general population (8.4%) in our delivery suite (9). Erbs palsy, clavicle fractures and other reported birth injuries are more frequent in macrosomic infants (12). In the study, perinatal asphyxia and birth injury (fractured clavicles) accounted for 12.2% and 4.9% of the complications respectively; infants of diabetic mothers are at greater risk of complications and/or birth injuries compared to infants of non-diabetic mothers even if the infants have similar birth weights (13,14,15). However, earlier researchers found no statistical difference between large-for-gestational (LGA) age infants and babies with normal birth weight (3,16,17).

Concerning maternal age, mothers who had LGA babies in our study were significantly older as previously reported however, a published report in Ibadan, Nigeria (16,17) did not observe any significant difference for maternal age and height At term, the mean maternal weight in the mothers showed a significant higher value than that seen in other studies (18,19). Facts from the literature have shown a linear association between pre-conception maternal weight and fetal macrosomia (17) however, it was difficult to determine the pre-conception weight of mothers in early in pregnancy in our study because most bookings occur late in the second trimester (9) A woman with previous history of macrosomic delivery is often likely (5-10 times) to deliver a macrosomic baby in future pregnancies (8,17). This fact agreed with our study; 52.7% of women in our study had at least one macrosomic delivery in the past. Women with risk factor(s) for fetal macrosomia are better managed with good supervision if there was an early booking in pregnancy. Obstetricians still consider vaginal delivery safer in mothers in the absence of any contraindication and, only few evidences are available to support routine elective abdominal delivery for every suspected case of fetal macrosomia (6,9).

Limitations: This study is an initial report to determine the prevalence and outcome of

management of macrosomic babies admitted to the Special Care Baby Unit; there is an ongoing study using normal birth weight babies as controls for fetal gender, maternal socio-economic status, maternal age, weight and parity. This is study, also looked at babies delivered in our facility only and, therefore might not be a true reflection of the prevalence of fetal macrosomia in the North West region of Nigeria.

CONCLUSION

Post-natal clinical evaluation and intrapartum ultrasonography still remains a valuable guide to the choice of the best mode of delivery; though the sensitivity of ultrasound examination in predicting fetal macrosomia is limited. More researches focusing on better ways of estimating fetal weight in utero should be encouraged and funded.

Conflict of Interest: None declared.

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Table 1: Fetal characteristics and outcome

Characteristics	Number (n)	Percentage (%)	p-value
Gender			
Male	38	62.3	
Female	23	37.7	0.001
Total	61	100.0	
Birth weight(kg)			
4 < 5	56	92.7	
>5	5	7.3	
Total	61	100.0	
Mode of delivery			
Spontaneous vertex delivery	10	17.1	
Caesarean section	51	82.9	0.002
Total	16	100.0	
Duration of hospital stay (hours)			
< 24 hours	25	41.5	
24 < 72	19	31.7	
<72	16	26.8	
Total	61	100.0	
Outcome of admissions			
Discharged	60	97.6	
SAMA	1	2.4	
Died	0	0.0	
Total	61	100.0	

Table 2: Maternal characteristics and complications during pregnancy

Characteristics/complications	Number (n)	Percentage (%)	p-value
Maternal age			
15 – 20	1	2.4	
21 – 25	4	7.3	
26 – 30	20	31.7	
31 – 35	20	31.7	
36 – 40	15	24.4	
>41	1	2.4	
Total	61	100.0	
Birth Parity			
Primigravida	11	18.9	0.002
Multiparous	50	81.1	
Total	61	100.0	
Complications			
None	42	68.3	
Gestational diabetes	8	12.2	
Hypertensive disease	8	12.2	
Cardiac disease	1	2.4	
Diabetic/hypertensive	2	4.9	
Total	61	100.0	

Table 3: Fetal complications

Complications	Number (n)	Percentage (%)
None	48	78.7
Birth injuries	2	3.3
Jaundice	1	1.6
Sepsis	2	3.3
Perinatal asphyxia	8	13.1
Total	61	100.0