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POSTMATURITY AND FETAL MACROSOMIA IN JOS, NIGERIA

J. T. Mutihir and I. A. O. Ujah

Department of Obstetrics and Gynaecology, Jos University Teaching Hospital, Jos, Nigeria
Reprint requests to: Dr. Josiah T. Mutihir, Department of Obstetrics and Gynaecology, Jos University Teaching Hospital, Jos, Plateau State, Nigeria. E-mail:

Key words: Fetal macrosomia, maternal morbidity, fetal complications

Abstract

Background: One of the risk factors of post term pregnancy is fetal macrosomia. The excessively large infant presents a recurring and potentially serious obstetric problem.

Methods: This was a retrospective study of all consecutive births in the maternity unit, Jos University Teaching Hospital, Jos, Nigeria, between January 1998 and December 2001. The case records of all mothers of babies born with weight of 4000g and above were retrieved and data collated and analyzed for total deliveries, maternal and fetal characteristics, complications and outcome of pregnancy.

Results: Macrosomic infants (4000g and above) were 286 cases representing 2.9% of all deliveries. Ten (3.5%) of the infants with macrosomia were preterm, 90.9% were term, and 5.6% were post-term. The mean age and parity of the mothers with pregnancies at term was 29.2 years, and 3.2 respectively. The post term mothers had a mean age and parity of 32.7 years and 3.8 respectively. Maternal morbidity included increased caesarean delivery, and vaginal trauma (episiotomies, tears and bruises) in both groups. Caesarean section was the mode of delivery in 31.3% of post term and 27.6% term infants, while the indication for caesarean section was cephalopelvic disproportion in 80% and 87.3% for post term and term infants respectively. Fetal complications were birth asphyxia and stillbirth. There were no gross fetal abnormalities recorded in the series. Still birth rate was 8.1% and 12.5% in term and post term infants respectively.

Conclusion: Post term pregnancies account for macrosomic babies in our facility, posing an increased risk to the mother and fetus. Early diagnosis, intrapartum fetal monitoring and recourse to operative delivery may improve the fetal outcome of these infants.

Mots clés : Macrosomie fœtale, morbidité maternelle, complications foetales

Résumé

Introduction :- L'un des facteurs de risque de la postmaturité de la grossesse est la macrosomie foetale. Un enfant qui est excessivement grand provoque un problème obstétrique qui est récurrent et potentiellement grave.

Méthodes : Il s'agit d'une étude rétrospective de toutes des naissances consécutives dans le service d'obstétrique, centre hospitalier universitaire de Jos, Jos, Nigéria, entre janvier 1998 et décembre 2001. Les dossiers médicaux de toutes les mères des enfants nés avec 4000g poids et de plus ont été tirés et les données rassemblées et analysées pour accouchement total, des caractéristiques maternelles et foetales, complications et le résultat de la grossesse.

Résultats : Enfants macrosomiques (4000g et lus) étaient 286 soit 2,9% de tous accouchements. Dix soit 3,5% des enfants avec macrosomie étaient préterme, 90,9% étaient terme. Et 5,6% étaient post terme. L'âge moyen et la parité des mères avec des grossesses à terme étaient 29,2 ans, et 3,2 respectivement. Des mères post termes avaient un âge moyen et une parité de 32,7 ans et 3,8 respectivement. Morbidité maternelle comprend augmentation d'accouchement césarien, et traumatisme vaginal. (Épisiotomies, déchirures et des blessures légères) dans les deux groupes. La césarienne était la méthode d'accouchement en 31.3% des post termes et

27,6% des enfants à terme, tandis que l'indication pour la césarienne était céphatopelvien dispropotionel en 80% et 87,3% pour des enfants post termes et à terme respectivement. Complications foetales étaient la naissance asphyxie et mort à la naissance. Il n'y avait aucune abnormalité foetale grave notée dans la série. Taux de mort à terme et enfants nés à post terme respectivement.

Conclusion : Grossesses post termes constituent des bébées macrosomique dans notre centre. Ceci provoque une augmentation de risque pour des mères et foetus. Un diagnostique précoce, surveillance d'intrapatum foetal et recours au accouchement à travers l'intervention chirurgicale pourrait améliorer le résultat foetal chez ces enfants.

Introduction

In nearly 10% of pregnancies, labour does not start until the 42nd week or later; and perinatal mortality is increased by about 1%.[1] Post term pregnancy is a gestation of 42 weeks or more (294 days or more from the first day of the last menstrual period).[2] With adequate placental function and favourable intrauterine conditions, the fetus continues to receive nutrients and grows. The principal risk of fetal macrosomia is trauma, both to the mother and fetus, during vaginal delivery. The word *fetal macrosomia* refers to an absolute birth weight regardless of gestational age or other demographic variables.[3] Macrosomia is generally defined as birth weight of at least 4000g.[4, 5] Babies that are of birth weight of 4000 g and above are therefore referred to as macrosomic babies. Fetal macrosomia poses a great risk to pregnancy particularly during labour and delivery, and is associated with increased maternal and perinatal morbidity, [6, 7] and rarely, mortality.

A number of factors have been advanced as associated with fetal macrosomia. Patients with these factors however deliver babies with normal birth weights in the majority of cases.[3] Some of the risk factors include post-term pregnancies, infants of women that are heavy weights even before pregnancy, multiparity, previous history of a macrosomic infant, the male sex, high pre-pregnancy maternal weight, maternal birth weight, and maternal diabetes.[3-5] Diabetic mothers yet un-diagnosed, or poorly controlled are believed to predispose to having macrosomic babies, hence antenatal screening in patients with history and physical features suggestive of diabetes mellitus. There has been no documentation of fetal macrosomia in preterm, term and post term infants; and the fetal and maternal morbidity and mortality in this facility or in the northern part of this country before this time. This prompted our study to find out the incidence, the maternal and perinatal morbidity and mortality in post term pregnancy compared with term macrosomic infants.

Patients and Methods

This was a retrospective study of all consecutive births in the maternity unit of the Jos University Teaching Hospital, Jos, Nigeria, between January 1998 and December 2001, a period of 4 years. The case records of all the mothers of babies born with weights of 4000g and above were recorded. Preterm infants were those delivered before 37 completed weeks of gestation, term infants 37 to 42 weeks of gestation and post-term infants 43 or more weeks of gestation. The outcome of the fetuses and mothers were also recorded and analyzed. The authors restricted themselves to estimating still birth rate as some discharged infants may have died at home or at other health care facilities in Jos making our estimate of perinatal mortality unreliable.

Limitations of the study

This being a retrospective study, the following were observed:

i. Maternal weight was not done or documented in all the mothers that booked elsewhere.
ii. The history of previous fetal macrosomia in the patients or their relations was not elicited or documented in most of the files of the patients.
iii. Not all women were screened for diabetes mellitus during the antenatal period by urine test for glucose.

Results

Nine thousand, seven hundred and twenty eight (9,728) babies were delivered in the facility during the period under review. Macrosomic infants were two hundred and eighty six (286) representing (2.9%). The birth weight of all the macrosomic babies ranged from 4000 to 6100 g with a mean of 4203 ± 468 g.

There were 260 (90.9%) term macrosomic infants, and 16 (5.6%) post term macrosomic infants. The age of the mothers of term macrosomic infants ranged between 16 - 25 years with an average of 27.6 years while that for mothers of post term macrosomic infants was between 25 - 45 years with an average of age of 32.7 years. The average age of mothers of post term infants was higher than that of term macrosomic infants.

The parity of mothers with infants at term ranged between 2 and 12 with a mean of 3.2, while that for those with post-term infants was 2-12 and 3.8 respectively.

The mode of delivery in post term pregnancies is shown in Table 1. Caesarean section rate in post term mothers (31.3%) was higher than that in mothers with term macrosomic babies (27.6%). The indication for

the caesarean was cephalo-pelvic disproportion in 80% of post term infants and 87.3% in term infants. Perineal trauma (episiotomies and first degree perineal tears) in the mothers of post term infants was higher than that for mothers of term macrosomic infants.

There were 2 stillbirths in post term infants, and 23 stillbirths in term infants (Table 2). This gave a still birth rate of 12.5% for post term infants and 8.1% for term infants. Other fetal injuries were not recorded. There was no record of shoulder dystocia, gross fetal anomaly or maternal death in the series.

Table 1: Maternal outcome and morbidity following delivery of macrosomic infants

Parameter	Post term macrosomic infants (%)	Term macrosomic infants (%)	P value
Mode of delivery			
Spontaneous vaginal delivery	10 (62.5)	176 (67.7)	< 0.001
Caesarean section	5 (31.3)	72 (27.7)	< 0.001
Vacuum delivery	1 (6.2)	9 (3.5)	0.0190
Others	0 (0.0)	3 (1.1)	-
Total	16 (100)	260 (100)	
Indications for caesarean section			
Cephalo-pelvic disproportion	4 (80.0)	63 (87.5)	< 0.001
Fetal distress	0 (0.0)	4 (5.5)	
Failure to progress in labour	1 (20.0)	3 (4.2)	0.0126
Others	0 (0.0)	2 (2.8)	-
Total	5 (100)	72 (100)	
State of the perineum after vaginal delivery			
Intact after vaginal delivery	3 (27.3)	85 (45.2)	< 0.001
Episiotomy	6 (54.5)	72 (38.3)	< 0.001
First degree perineal tear	2 (18.2)	22 (11.7)	< 0.001
Others	0 (0.0)	9 (4.8)	-
Total	11 (100)	188 (100)	

Table 2: Fetal outcome and morbidity of macrosomic babies

Parameter	Post term macrosomic infants (%)	Term macrosomic infants (%)	P value
Stillbirths	2 (12.5)	21 (8.1)	< 0.001
Severe asphyxia with immediate NND(Apgar 0-3)	2 (12.5)	10 (3.8)	0.0023
Moderate asphyxia (Apgar 4-5)	1 (1.6)	34 (13.1)	0.1528
Mild asphyxia (Apgar 6-7)	5 (31.2)	87 (33.5)	< 0.001
Active baby (Apgar 8-10)	6 (37.5)	108 (41.5)	< 0.001
Total	16 (100)	260 (100)	

NND: Neonatal death

Discussion

Fetal macrosomia in post term infants in our population constituted 5.6% of all macrosomic babies, or 1 in 608 deliveries. This is lower than 10–20% of all macrosomic babies in other studies in the developed world.[8] Fetal macrosomia in the population was about 3%. This was again much lower than the reported 10% of infants delivered and expected to weigh 4000 g or greater in Canada.[9] These infants are surprisingly difficult to accurately identify before birth.[10-13] Large babies are more likely to be injured during the birth process than are smaller infants although the large majority will be delivered easily and atraumatically.[14] All (100%) the mothers of term and post term infants were multiparous women. Parous women are disproportionately represented and macrosomic infants are 2-3 times more likely than control babies to be born to parous women.[8, 15]

Maternal weight before pregnancy has been found to be an important determinant of fetal weight when gestational weight and fetal weight are controlled for.[16] Heavy women have a greater risk of giving birth to excessively large infants.[3] Maternal weight prior to pregnancy was not documented in these patients, a drawback of a retrospective study. The labour of macrosomic infants is often marked by slow progress, mal-presentations or disproportion. Not surprising, various fetal injuries and a higher incidence of caesarean delivery characterize the population.

The modes of delivery in suspected macrosomic pregnancies include caesarean section, spontaneous and operative vaginal deliveries.[17, 18] Maternal morbidity related to the birth of a macrosomic fetus is predominantly that associated with operative/caesarean delivery. The caesarean section rate in mothers with post term infants was 31.3%; which is higher than that for mothers with term macrosomic infants (27.6%) and much higher than 15.7% for the general population in the same facility.[15] A two- to three-fold increase in the rate of caesarean delivery has been reported.[3] The increased incidence of caesarean section seems to be primarily related to dystocia (cephalopelvic disproportion or failure to progress in labour). The indication for caesarean section was cephalopelvic disproportion in 69 (87.3%) in term macrosomic infants and 80% in post term infants in the study.

Elective caesarean section and labour induction have been proposed as interventions to prevent maternal and perinatal complications in pregnancies in which macrosomic babies are suspected, and in particular, post term pregnancies.[18]

Macrosomic infants have an increased risk of both perinatal morbidity and mortality, attributable mainly to their large size. Fetal death may result from birth injuries. Still birth rate in the post term macrosomic infants was 12.5%, which was higher than the still birth rate of 8.1% in term macrosomic infants. Perinatal mortality (stillbirths, immediate neonatal deaths) and mild to moderate asphyxia may be probably related to delay in effecting delivery of macrosomic infants trapped in the birth canal.[19]

Shoulder dystocia, one of the main perinatal difficulties with the delivery of macrosomic babies was not noted in this study. Shoulder dystocia continues to represent the infrequent, unanticipated, unpredictable nightmare to the obstetrician.[20] It occurs infrequently with an incidence ranging from 0.2–9.5% of all vaginal deliveries.[19,21] The wide range has been attributable to the inherent subjectivity of the clinician's definition of shoulder dystocia, the degree of reporting and differences in the study population.[21]

Post term pregnancy is a risk factor for macrosomia and is associated with maternal and perinatal morbidity and mortality. Caesarean delivery may be indicated if fetal macrosomia is suspected or detected in post term pregnancies prior to labour or when fetal distress occurs during labour.

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