DOI: https://doi.org/10.53350/pjmhs2023176542

ORIGINAL ARTICLE

Maternal and Fetal Complications of Macrosomic Pregnancies

HAWA SARDAR[1], ZUBAIDA KHANUM[2], IRUM SHEHZADI[3], BEENISH SALAM[4], SHERMEEN KOUSAR[5], UZMA BIBI[6]
[1]*Medical Officer Gyn & Obs TDH, Haripur*
[2]*Associate professor, Department of Gynae/Obstetrics Khalifa Gulnawaz Teaching Hospital Bannu*
[3]*Medical officer, Obs and Gynae, King Abdullah Teaching Hospital Mansehra*
[4]*Gynaecologist, Department of Gyne & Obs, King Abdullah Teaching Hospital Mansehra*
[5]*Assistant Professor Gynae and Obstetrics Watim Medical College Rawalpindi*
[6]*Medical Officer, Obs and Gynae, King Abdullah Teaching Hospital Mansehra*
Correspondence to: Zubaida Khanum, Email: Zubedanajib@ymail.com

ABSTRACT

Objective: Aimed to determine the maternal and fetal complications among patients of macrosomic pregnancies.
Study Design: Descriptive/cross-sectional
Place and Duration: Department of Gyne & Obs King Abdullah Teaching Hospital Mansehra/Gulnawaz Teaching Hospital Bannuduring from the period August 2022 to March 2023.
Methods: 90 females diagnosed with macrosomic pregnancies were included. Gestational age and parity among females were recorded. Complications affecting both the mother and the baby are more common in pregnancies characterized by macrosomia (birth weight (BW) > 4000 g) or severe macrosomia (BW > 4500 g). The SPSS 20.0 was used for data analyzation.
Results: The pregnant females had mean age of 28.19±6.81 years. The mean gestational age of the cases was 40.07±1.38 weeks. Mean parity of the females was 3.6±5.27. The most common fetal complication was shoulder dystocia in 12 (13.33%) followed by birth trauma in 7 (7.78%), perinatal asphyxia in 4 (4.44%) and low Apgar score in 4 (4.44%) patients. Most common maternal complication was perineal tear in 48 (53.33%) followed by cesarean section in 30 (33.33%) and postpartum hemorrhage in 14 (15.56%) patients respectively.
Conclusion: We concluded that macrosomic pregnancies are highly associated with adverse maternal and fetal complications.
Keywords: Macrosomia, Cesarean section, Perineal Tear, Shoulder Dystocia

INTRODUCTION

In the field of obstetrics, the management of fetal macrosomia has been a difficulty for a long time. It is becoming an increasingly serious concern due to the increasing occurrence of the condition and the hazards that are connected with it for both the mother and the newborn. A number of distinct definitions have been proposed for fetal macrosomia. These definitions include birth weights that are greater than 3,600 g, 3,800 g, 4,000 g, or 4,500 g, or birth weights that are greater than the 90th percentile for gestational age. By a significant margin, the most common birth weight limit that is used to define macrosomia is 4,000 grams. In accordance with this criterion, the incidence has been reported to be between 10 and 20 percent in both Europe and North America. Some recent information suggests that the prevalence of macrosomia is growing at an alarming rate. According to the findings of a study conducted in Denmark, the prevalence of macrosomia rose from 16.7% in the year 1990 to 20.0% within the year 1999[1]. According to the data collected in North America, the percentage of newborns who were born with a birth weight that was greater than the 90th percentile rose by 5%–9% in the United States of America and reached 24% in Canada between the years 1985 and 1988[2]. A rise in maternal anthropometry, a decrease in cigarette smoking, and changes in sociodemographic characteristics were all factors that were related to this trend[3]. According to the ethnicity of the population, the incidence of macrosomia varies, with the Chinese population having a lower prevalence[4]. Research in the field of epidemiology has demonstrated that infants of Chinese and South Asian descent are smaller than average for their gestational age [5]. Because of the genetic variations and anthropometric variances that exist amongst populations, this difference in birth weight distribution is most likely the result of these disparities. According to a study that was conducted not too long ago, the incidence of macrosomia in the Chinese population was only reported to be 3.4%[4].

There are a number of risk variables that have been identified as being connected with macrosomia. These risk factors include the maternal body mass index, weight increase, advanced maternal age, multiparity, diabetes, and gestational age that is greater than 37 weeks[6]. On the other hand, it is common knowledge that a forecast that is only based on clinical risk factors has a very low positive predictive value[7]. It has also been attempted to screen for macrosomia using maternal factors and nuchal translucency during the first trimester, as well as biochemical markers (free beta-human chorionic gonadotropin and pregnancy associated plasma protein A), although the detection rate has been shown to be quite low[8].

In the field of obstetrics, the diagnosis and management of macrosomia are key problems since the condition can result in severe morbidity and mortality among both the mother and the newborn. The following is an overview and discussion of these issues that affect both mothers and newborns.

MATERIALS AND METHODS

This descriptive/cross-sectional study was conducted at Department of Gyne & Obs King Abdullah Teaching Hospital Mansehra/Gulnawaz Teaching Hospital Bannu during from the period August 2022 to March 2023. A total 90 patients were included in this study. The study did not include any instances that had a history of a previous Caesarean section, a short maternal stature, a maternal age that was greater than 45 years, or any other medical conditions (other than diabetes) that were causing complications during pregnancy. In every single patient, a comprehensive history was recorded, which included the patient's age, parity, and previous obstetric history. A complete physical examination, including a thorough inspection of the abdomen, was performed. In addition, routine investigations were carried out, which included taking a complete blood picture, analyzing urine, measuring blood sugar, and doing an ultrasound to determine the gestational age and approximate weight of the teen. In addition, a control was maintained on the increase in maternal weight, particularly in patients who were obese. On the proforma page, each and every finding was recorded. Menstrual history, ultrasound in early pregnancy, and abdominal examination were used to conduct a comprehensive investigation with the purpose of determining the correct gestational age of those women who were more than 40 weeks along in their pregnancy. Documentation and analysis were performed on the specifics of the labor and difficulties. As a macrosomic baby, any normal singleton infant that was delivered at term and weighed at least 4,000 grams was considered to be abnormal. The term "prolonged labor" refers to labor that lasts for more than twelve hours, and obstetrics intervention is defined as a caesarean section, whether it be elective or emergency, induced labor, forceps delivery, or vacum extraction. The attending physician arrived at the conclusion that PPH was defined as an estimated blood loss of more than 500

milliliters. A senior obstetrician performed the Mc Roberts procedure in order to diagnose and treat patients who were suffering from shoulder dystocia. Every single patient who had a fetus that weighed more than 3.5 kilograms was counseled against the possibility of having a cesarean procedure. The statistical analysis was carried out with the help of SPSS version 23.0. The presentation of all categorical variables was accomplished by the computation of frequency and percentages.

RESULTS

The pregnant females had mean age of 28.19±6.81 years. The mean gestational age of the cases was 40.07±1.38 weeks. Mean BMI was 26.38±2.46 kg/m^2. Mean parity of the females was 3.6±5.27. Majority 52 (57.78%) patients had rural residence while 38 (42.22%) patients had urban residence. Table 1

Table 1: Baseline characteristics of all the included patients

Variables	Frequency	Percentage
Mean Age (Years)	28.19±6.81	-
Gestational Age (weeks)	40.07±1.38	-
Mean BMI (kg/m)	26.38±2.46	-
Parity	3.6±5.27	-
Residence		
Rural	52	57.78%
Urban	38	42.22%

Regarding fetal complications, the most common fetal complication was shoulder dystocia in 12 (13.33%) followed by birth trauma in 7 (7.78%), perinatal asphyxia in 4 (4.44%) and low Apgar score in 4 (4.44%) patients. Figure 1

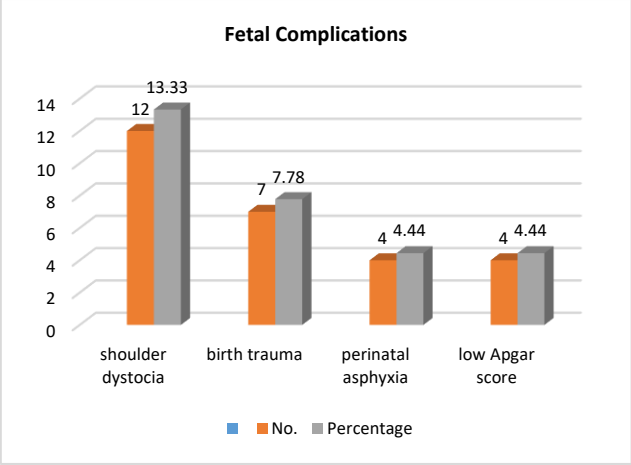

Figure 1: Frequency of Fetal Complications in all the included Patients

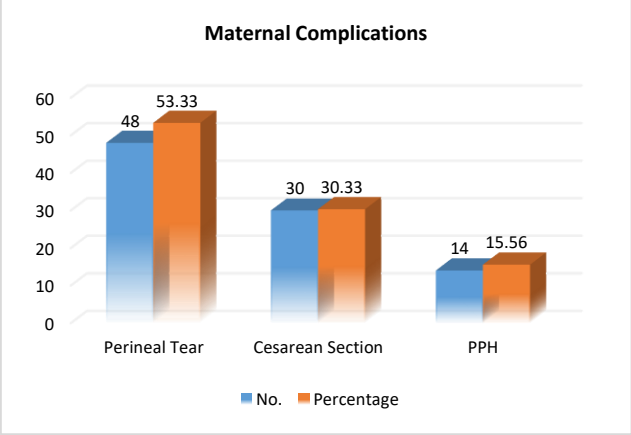

Figure 2: Maternal Complications Among all the Included Patients

Regarding maternal complications, the most common maternal complication was perineal tear in 48 (53.33%) followed by cesarean section in 30 (33.33%) and postpartum hemorrhage in 14 (15.56%) patients respectively. Figure 2

DISCUSSION

The condition known as macrosomia can be characterized as either a fetal weight that is larger than the 90th percentile for gestational age or a weight that is greater than 4000 grams[9]. It is estimated that the 50th percentile for growth is 3,619 grams at 40 weeks of gestation, while the 90th percentile is 4234 grams. A number of risk factors, such as maternal obesity, multiparity, a previous macrosomia newborn, maternal diabetes mellitus, postdatism, pre pregnancy weight / height, body mass index, advanced mother age, and so on, are among the factors that influence the likelihood of delivering a macrosomic infant. Shoulder dytocia, damage to the brachial plexus, bone injuries, muconium aspiration, neonatal asphyxia, hypoglycemia, and fetal death are all more likely to occur in macrosomic newborns[10]. There are a number of maternal issues that are associated with cephalopelvic disproportion. These consequences include extended labor, labor augmentation, caesarean section, postpartum hemorrhage, infection, thromboembolic events, and anaesthesia events. As a result of difficulties that can affect both the mother and the newborn, there are a variety of perspectives regarding management. Furthermore, decisions are frequently taken intrapartum because it is difficult to accurately predict macrosomia[11]. It is useful to have a margin of error of 10–15 percent while using ultrasound. We conducted present study aimed to examine the maternal and fetal complications in pregnant women presented with macrosomia. In this regard 90 pregnant women with macrosomia were included. Majority of patients were aged between 25 to 30 years. The mean gestational age of the cases was 40.07±1.38 weeks. Mean BMI was 26.38±2.46 kg/m^2. Mean parity of the females was 3.6±5.27. These results showed similarity to many of previous studies in which average age of macrosomic patients was 25 to 35 years. Women with increased BMI had higher risk for macrosomia[12-13].

In present study we found that the most common fetal complication was shoulder dystocia in 12 (13.33%) followed by birth trauma in 7 (7.78%), perinatal asphyxia in 4 (4.44%) and low Apgar score in 4 (4.44%) patients. A study conducted by Razia Iftikhar[14] reported that the most common fetal complication in macrosomic patients was shoulder dystocia found in 10% patients. Another study conducted by Habiba Sharaf Ali et al[15] demonstrated that shoulder dystocia was fpund in 27.7% patients. A large population based study demonstrated that out of 31026 patients shoulder dystocia found in 1% patients.

In present study we found that the most common maternal complication was perineal tear in 48 (53.33%) followed by cesarean section in 30 (33.33%) and postpartum hemorrhage in 14 (15.56%) patients respectively. Many of previous studies showed similarity to our study findings in which perineal tear was the most frequent complication ranging 40% to 65% followed by cesarean section[16-17].

Based on the prevalence of complications, the majority of the studies give absolute risks or unadjusted odds ratios (ORs). These ORs do not take into account other factors that contribute to the development of problems; just two of the studies report adjusted ORs[18-19]. The difference between studies and the biases that follow from such heterogeneity make it difficult to identify precise risks of pregnancy issues from the literature that has been documented. This is despite the fact that there is an appreciation for the higher risk of bad outcome in pregnancies that involve macrosomia. In this study, we examined maternal and neonatal risks in a large unselected screened population in a cohort study. A precise determination of maternal and pregnancy characteristics was made, as well as an accurate determination of the outcome measures of complications. Not only did we report unadjusted

risks, but we also reported multivariate odds ratios by adjusting for other factors through the use of regression analysis.

CONCLUSION

In addition to providing estimates of risks that can be utilized for the purpose of making decisions on the management of pregnancy, this study provides confirmation that pregnancies related to macrosomia are associated with substantial poor outcomes for both the mother and the newborn.

REFERENCES

1. Ørskou J, Kesmodel U, Henriksen TB, Secher NJ. An increasing proportion of infants weigh more than 4000 grams at birth. Acta Obstet Gynecol Scand. 2001;80:931–936.
2. Ananth CV, Wen SW. Trends in fetal growth among singleton gestations in the United States and Canada, 1985 through 1998. Semin Perinatol. 2002;26:260–267.
3. Kramer MS, Morin I, Yang H, et al. Why are babies getting bigger? Temporal trends in fetal growth and its determinants. J Pediatr. 2002;141:538–542.
4. Cheng YK, Lao TT, Sahota DS, Leung VK, Leung TY. Use of birth weight threshold for macrosomia to identify fetuses at risk of shoulder dystocia among Chinese populations. Int J Gynaecol Obstet. 2013;120:249–253.
5. Wang X, Guyer B, Paige DM. Differences in gestational age-specific birthweight among Chinese, Japanese and white Americans. Int J Epidemiol. 1994;23:119–128.
6. Stotland NE, Caughey AB, Breed EM, Escobar GJ. Risk factors and obstetric complications associated with macrosomia. Int J Gynaecol Obstet. 2004;87:220–226.
7. Pates JA, McIntire DD, Casey BM, Leveno KJ. Predicting macrosomia. J Ultrasound Med. 2008;27:39–43.
8. Poon LC, Karagiannis G, Stratieva V, Syngelaki A, Nicolaides KH. First-trimester prediction of macrosomia. Fetal Diagn Ther. 2011;29:139–147.
9. Boulet SL, Alexander GR. Macrosomic birth in United States. Determinants, out comes, and Proposed Grades of risk. Am J Obstet Gynecol. 2003; 188:1372 – 1378.
10. Howlim J, Chongtan B, Essa A. Delivery of macrosomic babies. Management and outcomes of 330 cases. J Obstet. Gynaecol. 2002; 22: 370 – 374.
11. Rhodes JC, Kenneth C. Contribution of excess weight gain during pregnancy and macrosomia to the caesarean delivery rate. Br J Obstet Gynecol. 2003;111: 1181 – 1185.
12. Said AS, Manji KP. Risk factors and outcomes of fetal macrosomia in a tertiary center in Tanzania: BMC Pregnancy and Child birth 2016 ;16:243.
13. Zhang J, Dagvadorj A, Hirayama F, Shibuya K. Macrosomia in 23 developing countries: an analysis of a multicounty, facility-based, cross-sectional survey. Lancet 2013; 381(9):476–83.
14. Iftikhar R. Intrapartum complications of macrosomia fetus. J Liaquat Uni Med Health Sci.2007;6:52-5.
15. Ali HS, Majeed Z, Gul R. PREVALENCE OF MACROSOMIA AND ITS OBSTETRIC COMPLICATIONS. ISRA MEDICAL JOURNAL | Volume 9 - Issue 1 | Jan - Feb 2017.
16. Weissmann-Brenner A, Simchen MJ, Zilberberg E, Kalter A, Weisz B, Achiron R, Dulitzky M. Maternal and neonatal outcomes of macrosomic pregnancies. Med Sci Monit 2012; 18: 77–81.
17. Liu KC, Joseph JA, Nkole TB, Kaunda E, Stringer JS, Chi BH, Stringer EM. Predictors and pregnancy outcomes associated with a newborn birth weight of 4000 g or more in Lusaka, Zambia. Int J Gynaecol Obstet 2013; 122: 150–155.
18. Aberg K, Norman M, Pettersson K, Ekeus C. Vacuum extraction in fetal macrosomia and risk of neonatal complications: a population-based cohort study. Acta Obstet Gynecol Scand 2016; 95: 1089–1096.
19. Morikawa M, Cho K, Yamada T, Sato S, Minakami H. Fetal macrosomia in Japanese women. J Obstet Gynaecol Res 2013; 39: 960–965.