

Research Article

Fetal Macrosomia, Its Prevalance and Complications during Child Birth

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ABSTRACT

OBJECTIVE: Frequency determination of obstetrics and macrosomia with additional complications such as caesarean section and shoulder dystocia at third level of healthcare was the objective for the research paper.

STUDY DESIGN: Design of the research paper was cross-sectional prospective.

PLACE AND DURATION: The study was held at Nishtar Hospital Multan in the time span of one year extending from January – December 2017.

METHODOLOGY: Women were included in the research paper when they were suspected and diagnosed for macrosomia through USG scan. Demographic information and deep clinical investigation including maternal age, related parameter and BMI samples were collected on the prescribed and pre-defined Performa.

RESULT: Babies reflected 7.3% of macrosomia prevalence. Maximum cases of women reflected a BMI range above twenty-six. Twenty to thirty-two was the mental age of the women included in the research paper. Macrosomia had no significant association with shoulder dystocia. It was also never associated with the pregnant women shoulder dystocia history. On the other hand, well-established relation was persistent in Caesarean section and fetal macrosomia cases of deliveries.

CONCLUSION: Our research observed higher frequencies of macrosomia. No association was established about the shoulder dystocia but rate of Caesarean section increases.

KEYWORDS: Frequency, Macrosomia, Complications, Shoulder Dystocia and Caesarean Section.

INTRODUCTION

After the adjustment of ethnicity and sex the more prevalent and significant persistent problem of clinical nature in ninety percent of the gestational weighing between 4000 – 5000 grams or even more is macrosomia[1]. Neonates birth incidencemore than four kilograms were observed as 10.9 percent and 1.8 percent neonates were above 4.5 kilograms. These figures were quoted in an American research in 1990[2]. Our country has cited a rate of 3 to 3.8 percent as stated by numerous research studies. The same prevalence was observed in Saudi Arabia as 8.30 percent, the shoulder dystocia frequency was observed in four cases (2.08%)[3]. In the countries of Asia, it ranges between 1%– 6.5%, higher risk pregnancies

are attributed to fetus macrosomia. Macrosomia has very close association with Diabetes with additional relation with maternal weight, fetal macrosomia, multi-parity & grand multi-parity and obesity[4]. Studies have also reported the increase of macrosomia during post-term pregnancy. Previously, neonates weighing above 4000grams was treated as risk[5]. Furthermore, male neonates are even at greater risk. Because the average weight of the males is more than the weight of female neonates by four times[6].

Adverse results are experienced by Macrosomia fetus during delivery including shoulder dystocia considered most complex in its consequences are soft tissue injury and bruises, fracture of humerus

and clavicle, brachial plexus injury, neonatal death and birth asphyxia[7]. Labor is prolonged at the second stage of the macrosomic fetus in the presence of maternal complications. Chances of caesarean section, traumatic vaginal delivery, instrumental delivery and postpartum hemorrhage are increased[8].

Macrosomic baby diagnostics during pregnancy is extended by history, risk factor prevalence due to mother's macrosomia, symphysio fundal height clinical estimation and USG[9]. USG has low value detection of macrosomia. Serial USG measurement is mandatory. Latest imaging through echo planner magnetic resonance is relatively new technological development can assess the weight of the fetal in case if the mother is affected by diabetes and at the risk of macrosomia. Finally, after delivery baby weight confirms macrosomia[10].

Fetal macrosomia; if suspected, is recommended for the inclusion early induction of labor and elective cesarean section. Mothers can be spared from traumatic vaginal delivery and non-productive labor through elective cesarean section[11]. Very scarce information is available in the form of literature about macrosomia and its complexities in the under-developed countries. It was also under determination that what number of women do suffer from macrosomic fetus and shoulder dystocia which leads to Caesarean section[12]. An obstetrician mind is full of doubts and confusions in the presence of macrosomia and its complications at the time of delivery and also in the decision making of mode of delivery. This aspect is less studied in the researches of the scholars in association to child birth[13].

Complications have been evaluated in the research paper about macrosomia. Macrosomia prevalence is targeted in this research study along with shoulder dystocia in fetus because it has become a challenge for caesarean section and obstetricians regarding mothers[14]. The research covers third-tier of healthcare for the determination of macrosomia with its related complexities including cesarean section and shoulder dystocia[15].

METHODOLOGY

Frequency determination of obstetrics and macrosomia with additional complications such as caesarean section and shoulder dystocia at third level of healthcare was the objective for the research paper. Design of the research paper was cross-sectional prospective. Research study was held at Nishtar Hospital Multan in the time span of one year extending from January – December 2017. Women were included in the research paper when they were suspected and diagnosed for macrosomia through USG scan. Demographic information and deep clinical investigation including maternal age, related parameter and BMI samples were also collected. Total 184 cases were included in the sample of the research with 10.9% macrosomia prevalence. Error boundary and confidence was taken as 5% and 95% with the help of WHO American software. 184 women with macrosomic babies were enrolled in the research paper. The age of the women was between fifteen to forty-five years. These women were having singleton pregnancy and the gestation age was 37 – 41 weeks[16]. All women having placenta previa, multiple pregnancy, pregnancy and preeclampsia with congenital irregularities (such as abdominal and thoracic, fetal ascites, hydropic baby, fetal tumors) were not included in the research paper. Women visiting the OPD after the 37th week were evaluated through USG and clinical investigations to ensure the presence of macrosomia through designated PG. With the help of amenorrhea duration gestational age was confirmed and it was also confirmed through early USG in the state of pregnancy. If the average height of the fetus was more than normal it was suspected for macrosomia when the gestational age was in the range of 37 – 40 weeks and weight was more than or equal to four kilograms. After the exclusion of ladies through exclusion parameters every woman was offered to be a part of the research after the provision of written consent. Labor room data was collected afterwards. Data was gathered through a questionnaire that was tested beforehand[17]. History of age, past and parity obstetrics was also documented. Maternal

weight and height including BMI was also noted. Labor complications were also noted such as fetal macrosomia, shoulder dystocia and Cesarean section. Fetal weight 4 kg and above were evaluated for cesarean section and shoulder dystocia after the completion of delivery. Every reading was documented.

SPSS-17 was used for the data analysis. Mean \pm SD was also calculated for height, weight, maternal age, baby weight and BMI. Percentage and frequency was also calculated for fetal macrosomia, parity, presentation, complications and lie (Cesarean section and shoulder dystocia). Stratification was completed through Diabetes Mellitus, age parity, presentation, BMI and lie. Chi-square test was applied as Post-Stratification. The significant p-value was ≤ 0.05 .

RESULT

A total of 184 women were participating in the research paper with a mean age of 20.9 years. Out of total 27 women had first experience of birth while remaining were multigravidas. Majority of them (71.7%) had a value of BMI over 26; whereas, 27.7% had the rate of BMI ranged from 21 – 25. One of them had a BMI value of 20. In

one-year time span a total 1200 births were counted in the hospital. More than four-kilogram babies were 184 which is why macrosomic baby's prevalence was 7.3%. Maternal and gestational age during deliveries was higher in the case of macrosomic fetus. History of shoulder dystocia was not observed in majority of the cases as it equals 97.8%. In the same way, 76.6% had no history of macrosomic babies in their deliveries. This history was observed in 23% percent of the women as their number was 43. Fetal weight was observed in the range of 4 – 4.2 kg in 141 cases (76.6%), 35 (19.0%) had the range of weight 4.3 – 4.5 kg, 6 (3.3%) had the weight in the range of 4.6 – 4.8 kg, 1 (0.5%) had the weight above 4.8 kg and only one case was (0.5%) weighing 5.0 kg. Shoulder dystocia frequency was observed in 13 (7.1%) cases, on the other hand, cesarean section frequency was observed in 70 cases (38.0%).

Association between Caesarean section and macrosomia and relationship of shoulder dystocia and macrosomia has been reflected respectively in Table-I & Table-II. Association was significant statistically significant among caesarean section and macrosomia deliveries.

TABLE – I: FREQUENCY OF MACROSOMIA WITH CESAREAN SECTION (N=184)

Parameter	Shoulder dystocia		Total	P value
	Yes	No		
Parity of patient	16 (8.7%)	11 (6%)	27 (14.7%)	0.014
Primigravidae	54 (29.3%)	103 (56%)	157 (85.3%)	
multigravidae				
Age of the patient	8 (4.3%)	8 (4.3%)	16 (8.7%)	0.007
20 and less than 20	38 (20.7%)	87 (47.3%)	125 (67.9%)	
21-30	24 (13%)	19 (10.3%)	43 (23.4%)	
More than 30				
Fetal weight. in kg	45 (24.5%)	96 (52.2%)	141 (76.6%)	0.01
4.0-4.2	18 (9.8%)	17 (9.2%)	35 (19%)	
4.3-4.5	5 (2.7%)	1 (0.5%)	6 (3.3%)	
4.6-4.8	1 (0.5%)	0 (0%)	1 (0.5%)	
>4.8	1 (0.5%)	0 (0%)	1 (0.5%)	
5				
BMI	1 (0.5%)	0 (0%)	1 (0.5%)	0.437
20 and less than 20	20 (10.9%)	32 (17.4%)	52 (28.3%)	
b/w21-25	49 (26.6%)	82 (44.6%)	131 (71.2%)	
26 and more than 26				

Previous history of shoulder dystocia	1 (0.5%)	3 (1.6%)	4 (2.2%)	0.587
Yes	69 (37.5%)	111 (60.3%)	180 (97.8%)	
No				
Previous history of birth of macrosomic baby	17 (9.2%)	26 (14.1%)	43 (23.4%)	0.818
Yes	53 (28.8%)	88 (47.8%)	141 (76.6%)	
No				

TABLE – II: FREQUENCY OF MACROSOMIA WITH SHOULDER DYSTOCIA (N=184)

Parameter	Shoulder dystocia		Total	P value
	Yes	No		
Parity of patient	0 (0%)	27 (14.7%)	27 (14.7%)	0.121
Primigravidae	13 (7.1%)	144 (78.3%)	157 (85.3%)	
multigravidae				
Age of the patient	1 (0.5%)	15 (8.2%)	16 (8.7%)	0.357
20 and < 20	11 (6%)	114 (62%)	125 (67.9%)	
21-30	1 (0.5%)	42 (22.8%)	43 (23.4%)	
>30				
Fetal weight in kg	6 (3.3%)	135 (73.4%)	141 (76.6%)	0.088
4.0-4.2	6 (3.3%)	29 (15.8%)	35 (19%)	
4.3-4.5	1 (0.5%)	5 (2.7%)	6 (3.3%)	
4.6-4.8	0 (0%)	1 (0.5%)	1 (0.5%)	
>4.8	0 (0%)	1 (0.5%)	1 (0.5%)	
5				
Body mass index(BMI)	0 (0%)	1 (0.5%)	1 (0.5%)	0.535
20 and<20	2 (1.1%)	50 (27.2%)	52 (28.3%)	
b/w21-25	11 (6%)	120 (65.2%)	131 (71.2%)	
26 and >26				
Previous history of birth of macrosomic baby	2 (1.1%)	41 (22.3%)	43 (23.4%)	0.48
Yes	11 (6%)	130 (70.7%)	141 (76.6%)	
No				
Previous history of shoulder dystocia	0 (0%)	4 (2.2%)	4 (2.2%)	0.577
Yes	13 (7.1%)	167 (90.8%)	180 (97.8%)	
No				

DISCUSSION

Both babies and mother face the issue of fetal macrosomia. Its association depends upon several maternal and fetal complications. They also enhance the rate of morbidity and mortality[18]. Our research reflected that the fetal macrosomia prevalence is 7.3 %. This reported prevalence is higher than the other researches. Tanzanian studies report a 2.3% whereas, in Africa it is observed as 3.4%[19]. Africa has lower weights of the pregnant ladies so the rate observed in Africa is low. Australian research study reflects that prevalence was 2.2%. In another research the prevalence was observed as 6.6%. American research studies reflect that macrosomia prevalence is 10%; whereas, Pakistani research studies reflect prevalence as 3-4%[19].

In hand research paper observed vaginal deliveries for macrosomic babies as 62 percent incomparison to other research studies. Because of obstructed labor reasons caesarean sections were carried out[20]. Saudi Arabia reflects the caesarean rate as 47.6%. 89 percent rate was observed in the research of Mahin Najaf. Cesarean section prevalence in Pakistan was 40.5% with a rate of 38% lower than the others[21]. Tanzanian research states 61% macrosomic births through caesarean section again more than the reported values. Unpredictable emergency is shoulder dystocia in obstetric which creates anxiety and fear in the mind of obstetrician[22]. Risk factor even increases in the presence of DM and gestational age. In the same way, past researches have also reflected higher cases of shoulder dystocia when birth weight was above four

kilograms[23]. This research paper did not observe any relation between shoulder dystocia with macrosomia. Shoulder dystocia rate was 13(7.1%) of the cases delivered babies through vaginal delivery. Vaginal deliveries were the reason behind shoulder dystocia, our research found caesarean section as safe and reliable method that causes minimum or no complications[24]. Several limitations were also in the way of our research such as very less sample for the conclusions, area of the research was limited as many of the cases belonged to same demographic situation of area, ethnicity and race. This kind of sample can cause similar results and generalization are same about complication and macrosomia[25].

CONCLUSION

New knowledge was added after this research about macrosomia and related complications. Macrosomia prevalence was 7.2 percent observed more than reported prevalence. Positive relation among Caesarean section, maternal age, maternal BMI and fetal macrosomia was observed. No increase in shoulder dystocia was observed in the case of macrosomic babies.

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