Grandmultiparity, Fetomaternal and Neonatal Outcome

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Abstract: Grand multiparous women [Para ≥5] have been considered to be at a higher risk to develop maternal, fetal and neonatal complications compared to women of lesser parity. However, this relationship between grand multiparity and obstetrical complications has been controversial. Saudi population has been found to have a fertility rate high enough to stigmatize it as a high risk population. There hasn't been any previous study targeting the Saudi population. OBJECTIVE: To identify the association between different feto-maternal and neonatal outcomes and presence of maternal grand multiparity. METHODS: The medical records of 151 grand multiparous women [parity >5] and 212 women with parity of 2 to 4 was chosen were reviewed. RESULTS: Grand Multipara group tended to have a significant higher age [P<0.001], a significant higher tendency to abortions [P=0.02], a significant higher tendency to iron deficiency anemia with [P=0.03] and a boarderline significant higher tendency to hypertension [P=0.07], more multiple pregnancies [P=0.005]. Multipara women neonates tended to require more initial resuscitation effort with P=0.001. CONCLUSION: This study suggests that grand multiparity had only a significantly higher incidence of multiple pregnancies. Taking into account past medical history and fair antenatal care, grand multiparity should not be considered as an individual risk factor.

Keywords: Grandmultiparity, maternal, neonatal, fetal, complications, Saudi Arabia, abortions, hypertension.

I. INTRODUCTION / BACKGROUND

Parity is defined as the number of births of at least 20 weeks of gestation that a woman has experienced, taking into account both born infants and stillbirths. Nulliparous women has never experienced any birth, primiaras and multiparas have experienced one or more such births[1].

Different investigators have defined grand multiparity differently. Multiparous women may be identified based on being with previous five, six, seven or eight deliveries. On the other hand, grand multiparity had a clear definition of being with parity equal to or more than five[1].

Grand multiparous women [Para ≥5] have been considered to be at a higher risk to develop obstetric complications compared to women of lesser parity[1-8]. These include an increased risk of gestational hypertension[3, 4, 6, 7, 9]. low birth weight[6], placental complications - previa and abruption[4, 5, 8], postpartum hemorrhage[2, 5], antenatal anemia[2], fetal macrosomia[2], multiple pregnancy[2], perinatal mortality[2, 5] and fewer cesarean sections[2, 5].

However, this relationship between grand multiparity and obstetrical complications has been controversial. Some literature has excluded grand multiparity from being an independent risk factor by itself[10-14]. On the other hand, Brunner published a case-control study which concluded that grand multiparity should be considered as an obstetrical risk factor, however, good health care should prevent both maternal and neonatal complications[4]. done Taking into account the socioeconomic status of the studied group, two studies by Seidman DS concluded that grand multiparity is not an individual risk factor by itself for feto-maternal or neonatal complications[10, 11].

Saudi population has been found to have a fertility rate of 3.1.[15] This rate is considered high enough to stigmatize our population as a high risk population. Having reviewed many international publications worldwide on grand multiparity and its relation to feto-maternal outcomes, we did not find any similar research that has targeted our population.

We conducted a case control study aiming to compare the feto-maternal and neonatal outcomes of grand multiparous women [≥5] with the outcomes of multiparous [<5] women in King Abdulaziz Medical City, Riyadh. The aim of our study was to identify the correlation between the different feto-maternal and neonatal outcomes and the presence of grand multiparity. Moreover, we were working to identify the most important complications and risk factors contributing to these complications occurrence[10, 11].

II.   METHODOLOGY

This study was conducted at King Abdul-Aziz Medical City in Riyadh [KAMC], in the Obstetrics and Gynecology department [OB-GYN] under the supervision of Dr. Hanan Al-Kadri, Consultant Obstetrician and Gynecologist. The medical city is a 900 beds tertiary care center where more than 8000 deliveries occur every year in its OB-GYN department. The department of OB-GYN is a very busy department with 110 beds for both obstetrics and gynecology patients.

Our methodology included the performance of a retrospective cohort study. We studied two groups:

1. The at risk arm [G1] [100 patients] were patients with parity of ≥5.

2. The comparison arm [200 patients] delivered during the year 2010 at KAMC, Riyadh whose parity was ≤3 and ≥1.

Inclusion criteria: Patients above 19 years and below 35 years of age groups and all nationalities were included

Exclusion criteria: Primi-gravida patients were excluded.

Retrospective cohort study was conducted. Data was collected from the OB-GYN registry, KAMC. Patients charts were reviewed and the needed demographic and specific data were collected.

Due to the heterogeneity of the studied outcomes, purposive sampling of 100 grand multiparous women who delivered in 2010 at KAMC and 200 women with parity of ≥1 and ≤3 was taken. We have selected to go for purposive sampling to make this study suitable and doable for a medical student's project.

The data was collected retrospectively from the patients' charts who were delivered at KAMC, Riyadh during the year 2010. The 'at risk' arm [100 patients] was patients with parity of ≥5. These were compared with the 'comparison' arm [200 patients] delivered during the year 2010 at KAMC, Riyadh whose parity was >1 and ≤3.

The data collection sheet was designed based on literature review. We included important variables for both the mother and the baby and managed to arrange it according to the sequence of the pregnancy events.

The labor and delivery registry book was reviewed and all suitable cases were identified. Subsequently, the patients and their babies' paper files were checked in the medical record to complete the data collection sheet.

Included patients were identified from the labor room registry. Patients' medical records charts were reviewed and the data was collected as per the data collection sheet.

Continuous variables were categorized according to clinically relevant cut-off points. Descriptive analyses were carried out by calculating the number and percent for the categorical variables, and mean and standard deviation [sd] for continuous variables. Bivariate analysis for the association between different risk factors and development of different fetal and maternal complications were carried out, and p-values were calculated using the chi-square test or student's t-test, as appropriate. Relative Risk [RR] and 95% confidence intervals [95% CI] were calculated for categorical variables, as well as for categorized continuous variables. Multivariate logistic regression analysis with stepwise selection of risk factors were carried out to identify significant risk factors associated with grand multiparity fetal and maternal complication. Data management and analysis were carried out using SPSS Software.

As the research was purely retrospective data and there was no interference with patients management, there will be no need for informed consent. IRB clearance was not indicated. The investigators guaranteed confidentiality of patients data.

III.   RESULTS

In this work we have collected information on 212 women in the group of Multipara and 150 women in the group of Grand Multipara. In table 1, we have presented the data characteristics of the included women. As it is shown, the age of the patients was significantly higher in the Grand Multipara group P=<0.001, they tend to have more abortions with P=0.02, borderline tendency to hypertension P=0.07 and more iron deficiency anemia P=0.03.

We have presented the rest of the maternal outcomes that are related to the comparison between the Multipara women and the grand Multi para women. In this table we can note that grand multipara women tend to have more multiple pregnancies compared to the multipara women with P=0.005.

We have presented the various neonatal outcomes related to the comparison between multipara women and grand multipara women. In this table we can note that multipara women neonates tend to require more initial resuscitation effort P=0.001. However, there was no difference between the two groups concerning the advanced resuscitation effort or place of admission. Moreover 1st minute Apgar score found to be relatively lower for the Multipara women but 5th minute Apgar score was found with no significant difference.

IV. DISCUSSION

We conducted this study to compare both grand multiparous [GMP] women [n=150] and multiparous [MP] women [n=212] with regard to maternal, fetal and neonatal outcome. While comparing the characteristics of both groups, it was noted that the mean age of parity for both groups was in their 30's [GMP: 36.4 ± 4.6, MP: 30.3 ± 4.6] which agrees with some of the previous studies [2, 9]. Higher parity was associated with higher maternal age [GMP: 36.4 ± 4.6, MP: 30.3 ± 4.6; P<0.001]. Meanwhile, grand multiparous women tended to have a borderline higher incidence of abortions [GMP: 0.9 ± 1.2, MP: 0.6 ±0.9, P=0.02], essential hypertension [GMP: 8 [5%], MP: 4 [2%]; P=0.071], iron deficiency anemia [GMP: 4 [3%], MP: 0 [0%], 0.029] compared to multiparous women. There was no significant result noted when comparing other characteristics of both groups including BMI, previous history of cesarean section, ventose, forceps, diabetes mellitus, gestational diabetes, hemoglobinopathies, PET, ITP, HELLP syndrome, bronchial asthma and hypothyroidism.

There was a significant increase in the incidence of multiple pregnancies in grand multiparous women when compared to the multiparous controls [GMP: 6 [4%], MP: 0 [0%]; P=0.005] as had been noted in other studies [2, 12, 13]. There was no significant difference in the gestational age or the incidence of cesarean sections, abruption placentae, postpartum hemorrhages, antenatal anemias, premature rupture of membranes, and preterm labours. These findings somehow agree with some previous studies where age-matched controls were used [2, 8, 11] although postpartum hemorrahage was reported by Akwuruoha, Nigeria [2] and others.

Although there was no significant higher incidence of cesarean sections in grand multiparous women compared to the controls [GMP: 26 [17%], MP:36 [17%], P=0.93], it was noted that our rates of cesareans are higher than of some of the previously studied populations [2, 4, 9].

There was a significant higher incidence of initial resuscitation need in babies of multiparae compared to grand multiparae [GMP: 7 [5%], 39 [18%], P<0.001]. In fact out of our research we can not explain this finding, however, subsequent outcome was found to be similar in both groups.

The average birth weight of babies of both groups were close enough [GMP: 3183.2 ± 497.1, MP: 3167.4 ± 545.1; P=0.78]. The incidence of low birth weight in both groups were also similar [GMP: 12[8%], 17 [8%]; P=1]. Our overall incidence of low birth weight was higher than Seidman's, Jerusalem overall incidence [7%] [9]. This might be explained by their limitation of grand multiparous women with parity between 5 and 7 while we included all women with parity above 5 in our grand multiparous group. Grandmultiparity had no significant difference in the incidences of congenital anomalies, fetal macrosomia, preterm birth, malpresentation or malposition, fetal distress, or birth weight when compared to multiparity. This study shows a better outcome when compared to previous studies which observed higher incidences of fetal macrosomia [2, 12].

V. CONCLUSION / RECOMMENDATION

This study suggests that grand multiparity had only a significantly higher incidence of multiple pregnancies. Taking into account past medical history and fair antenatal care, grand multiparity should not be considered as an individual risk factor.

REFERENCES

[1] Simonsen S VM. Obstetrical Issues in Grand Multiparity. 2010 [updated August 10, 2010]; Available from: http://www.uptodate.com/contents/obstetrical-issues-in-grand-multiparity.

[2] Akwuruoha E, Kamanu C, Onwere S, Chigbu B, Aluka C, Umezuruike C. Grandmultiparity and pregnancy outcome in Aba, Nigeria: a case-control study. Arch Gynecol Obstet. 2011 Feb;283[2]:167-72.

[3] Babinszki A, Kerenyi T, Torok O, Grazi V, Lapinski RH, Berkowitz RL. Perinatal outcome in grand and great-grand multiparity: effects of parity on obstetric risk factors. Am J Obstet Gynecol. 1999 Sep;181[3]:669-74.

[4] Brunner J, Melander E, Krook-Brandt M, Thomassen PA. Grand multiparity as an obstetric risk factor; a prospective case-control study. Eur J Obstet Gynecol Reprod Biol. 1992 Dec 28;47[3]:201-5.

[5] Nabeel Bondagji M, FRCSC. The Perinatal and Neonatal Outcome in Grand-Grand Multiparous Women, A Comparative Case control Study. Bahrain Medical Bulletin. 2005;27[4].

[6] Roman H, Robillard PY, Verspyck E, Hulsey TC, Marpeau L, Barau G. Obstetric and neonatal outcomes in grand multiparity. Obstet Gynecol. 2004 Jun;103[6]:1294-9.

[7] Sipila P, von Wendt L, Hartikainen-Sorri AL. The grand multipara--still an obstetrical challenge? Arch Gynecol Obstet. 1990;247[4]:187-95.

[8] Toohey JS, Keegan KA, Jr., Morgan MA, Francis J, Task S, deVeciana M. The "dangerous multipara": fact or fiction? Am J Obstet Gynecol. 1995 Feb;172[2 Pt 1]:683-6.