ARTICLE

Antepartum and intrapartum complications in grandmultiparous patients compared with multiparous patients at Tygerberg Hospital

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Objective. To examine whether grandmultiparous women in a modern setting with adequate health care are at greater risk of complications in the antepartum and intrapartum period than multiparous women.

Patients and methods. The labour registry and hospital files were used and all grandmultiparas were identified from 31 December 2002 retrospectively for a period of 18 months, with each grandmultiparous patient matched with a control patient selected by identifying the first multiparous patient to deliver within the same week.

Results. No statistical difference was noted in antenatal maternal medical disorders such as chronic hypertensive disease in multiparas versus grandmultiparas (7/97 v. 6/101, 7.2% v. 5.9%) and diabetes mellitus. The development of pre-eclampsia was also not significantly different. Although the difference in pregnancy-induced hypertension (PIH) was not significant, with PIH in the multiparous group 22/97 (22.7%) and in the grandmultiparous group 12/101 (11.9%) (p-value = 0.04398, odds ratio 2.18, confidence interval: 0.95 - 5.03), a trend was observed for more multiparas to develop PIH.

Conclusion. In the modern setting with adequate health care, properly trained nursing staff and doctors and well-designed protocols grandmultiparity is not associated with a significantly increased risk of the classic complications traditionally associated with it. We conclude that provided adequate health care exists, there should be no difference in the complications experienced by grandmultiparous and multiparous patients.

Grandmultiparity has long been classified as constituting a high risk factor in pregnancy. The higher mortality and morbidity in this group have been related to parity, hypertension, age and increased incidence of antepartum haemorrhage.[1]

The International Federation of Gynaecologists and Obstetricians (1993) defines grandmultiparity as delivery of the 5th to the 9th infant, whereas delivery of 10 or more babies would be considered great grandmultiparity.[2] The incidence of grandmultiparity has decreased in most countries, mainly because it constitutes a burden to the family and state.

As in the 1934 article by Bethel Solomons entitled 'The dangerous multipara',[3] traditional teaching has it that maternal mortality associated with multiparity increases 'steadily and speedily' from the 5th pregnancy, with women bearing their 10th child or more having a mortality rate 5 times as high as all women bearing children. A number of other authors have also reported that grandmultiparity increases both maternal and perinatal mortality and morbidity.[4] However, this may not be a simple cause-and-effect relationship but rather be due to the association of grandmultiparity with other factors such as raised maternal age and low socio-economic status.[5]

Historically the complications associated with the grandmultipara (GM) have been divided into antepartum, intrapartum and the puerperium. Antepartum complications or risk factors are thought to be anaemia, rhesus incompatibility, increased body mass index (BMI) and multiple pregnancies,[6] with GM women having low haemoglobin levels (< 10 g/dl) antenatally[1] compared with multiparas (MPs). This might be because women who

are frequently pregnant do not have time to replenish their iron stores before their next pregnancy. The significantly higher BMI in the GM is likely to be caused by the difficulty some women have in repeatedly losing the additional weight gained in pregnancy.

Intrapartum complications most commonly thought to be associated with GMs are uterine rupture, placental abruption, placenta praevia,[1,2,7] malpresentation (abnormal lie and presentation that could be because of the pendulous abdomen or hyperlordosis of the lumbar vertebral spine with an increased pelvic inclination or an increased incidence of placenta praevia) and dysfunctional labour. Tanbo and Bungum[2] noted an increased frequency of preterm delivery among GMs due to the increase in abruptio placentae and placenta praevia.[2]

A postpartum complication typical in the GM is postpartum haemorrhage,[8] although a slight reduction in the incidence of postmaturity is usual in the GM.[9]

The mode of delivery in the GM is a very interesting point of discussion. Fuchs *et al.*[4] documented a significant increase in the caesarean section (CS) rate while Bugg *et al.*[1] found that there were significantly fewer elective CSs but no significant difference in the incidence of emergency CS. The lower rate of elective CS in the GM group is likely to reflect women with a number of previous CSs being advised against having further pregnancies. However the most frequent indication for elective CS was breech presentation, which was also increased in the GM group.

The aim of this study was to examine whether GM women in a developing country at a tertiary hospital with adequate care are at increased risk of complications in the antepartum and intrapartum period compared with MPs, and if neonatal morbidity and mortality are increased.

Methods and setting

Labour registry and hospital files were used and all GMs were identified from 31 December 2002 retrospectively for a period of 18 months, with each GM matched with a control patient selected by identifying the first MP to deliver within the same week as the index case. Antepartum and intrapartum complications as well as neonatal outcome were compared. The setting was Tygerberg Hospital, a tertiary teaching hospital associated with the University of Stellenbosch, which drains a large part of the Western Cape and peninsula.

Statistical analysis

Categorical data were analysed using the chi-square test, and odds ratios and 95% confidence intervals (CIs) were calculated where applicable. Where an expected cell value was less than 5 Fisher's exact test was used. Continuous data were analysed using Student's *t*-test.

Results

The results of our study show that the study population with high parity tends to be older (Table I). Antenatal outcomes were compared between the two groups (Table II). No statistical difference was noted in the antenatal maternal medical disorders, such as chronic hypertensive disease in MPs versus GMs (7/97 v. 6/101, 7.2% v. 5.9%) and diabetes mellitus. The development of pre-eclampsia was also not significantly different. Although the difference in pregnancy-induced hypertension (PIH) was not significant, with PIH in the MP group 22/97 (22.7%) and in the GM group 12/101 (11.9%) (*p*-value = 0.04398, odds ratio 2.18, CI: 0.95 - 5.03) a trend was observed for more MPs to develop PIH.

Table I. General information on the study population

	Multipara (*N* = 97)	Grand-multipara (*N* = 101)	*p*-value
Age (yrs)	29.5	35.8	
Smoking (%)	34 (35.1)	27 (26.7)	NS

NS = not significant.

Table II. Antenatal complications in the two groups studied (%)

	Multipara (*N* = 97)	Grand-multipara (*N* = 101)	*p*-value
Booking Hb < 11 g/dl	33 (34.0)	27 (26.7)	NS
Chronic hypertension	7 (7.0)	6 (5.9)	NS
PIH	22 (22.7)	12 (11.9)	NS
Pre-eclampsia	6 (6.2)	5 (4.9)	NS

NS = not significant; Hb = haemoglobin; PIH = pregnancy-induced hypertension.

The incidence of intrapartum complications, namely abruptio placentae, placenta praevia, instrumental deliveries, etc., was also not statistically significant (Table III). Perinatal outcome in the two groups was not significantly different, with 1 death in the MP group and 4 in the GM group (1% v. 3.9%).

Table III. Intrapartum complications (%)

	Multipara (*N* = 97)	Grand-multipara (*N* = 101)	*p*-value
Abruptio placentae	2 (2.1)	2 (1.9)	NS
Placenta praevia	1 (1)	1 (0.9)	NS
Malpresentations	8 (8.3)	10 (9.9)	NS
Congenital abnormalities	1 (1)	1 (0.9)	NS
Instrumental deliveries	5 (5.2)	3 (2.9)	NS
Uterine rupture	1 (1)	2 (1.9)	NS
Elective CS	7 (7.2)	5 (4.9)	NS
Emergency CS	16 (16.5)	13 (12.9)	NS

NS = not significant; CS = caesarean section.

Discussion

Although this study can be criticised for the small numbers and for being retrospective, our data compare favourably with international data, and tendencies and management protocols also seem to concur. Recent studies[10] indicate that provided adequate antenatal care is available, no difference should exist in the outcome for GM pregnancies.

GMs were once considered to be at high risk for maternal and fetal complications,[1-3,5] but modern obstetrics, neonatology and intensive care methods have greatly contributed to an improvement in the outcome of these patients.[11,12] Historically it was believed that GMs would have more antenatal and intrapartum complications. Our data show no statistically significant difference regarding antenatal complications such as anaemia, smoking, PIH, pre-eclampsia and diabetes. There was also no statistically significant difference in the intrapartum complications such as abruptio placentae, placenta praevia, malpresentation, instrumental deliveries or uterine rupture when grandmultiparous patients were compared with MPs. The observation that no significant differences were encountered in medical conditions between the two groups can be attributed to fewer patients with medical conditions falling pregnant. There was also no statistically significant difference in the neonatal outcome between the two groups.

The CS rate in the GM group was not statistically significantly different from the CS rate in the MP group (Table III). Seven elective CSs were performed in the MP group and 5 in the GM group (7.2% v. 4.9%), which can be attributed in part to the excellent family planning programme currently being employed in the drainage area of this unit, ensuring that patients with a number of previous CSs are advised against having large families. The emergency CS rate in the MP group was 16/97 (16.5%) and in the GM group 13/101 (12.9%) (not significant). Fetal distress and poor progress were the main reasons for emergency CS. In the MP group 5 patients had had 2 previous CSs and in the GM group only 2 patients had had 2 previous CSs. This trend can also be attributed to family planning and older patients or patients with 2 previous CSs being advised against having another pregnancy.

In a recent study at Tygerberg Hospital, Odendaal *et al.*[13] demonstrated a 39% incidence of smoking in pregnant patients. However in our study at the same institution the incidence was 30.8%. There was also a non-significant difference in smoking incidence between the MPs and GMs, with 34/97 (35.1%) of the MPs and 27/101 (26.7%) of the GMs being smokers. The higher incidence of smoking seems to have had very little effect on the development of abruptio placentae, with the average incidence of abruptio in Odendaal *et al.*'s population being 1.4% and the incidence of abruptio in the present study 4/198 (2.0%). The so-called protective effect of smoking with regard to the development of pre-eclampsia also did not materialise, with 6/97 (6.2%) in the MP and 5/101 (4.9%) in the GM groups developing pre-eclampsia (not statistically significant). This also compares favourably with the general incidence of pre-eclampsia, viz. between 6% and 7%.[14]

Conclusion

In the modern setting with adequate health care, properly trained nursing staff and doctors and well-designed protocols, grandmultiparity is not associated with a significantly increased risk of the classic complications traditionally associated with it. We conclude that there should be no difference between the outcome of grand-multiparous and multiparous pregnancies in a developing country provided that adequate health care is available.

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