MATERNAL AND PERINATAL OUTCOME IN ADVANCED MATERNAL AGE: A HOSPITAL BASED PROSPECTIVE STUDY

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ABSTRACT

BACKGROUND

The term 'elderly parturient' was defined in 1958 by the Council of International Federation of Obstetrics as one aged 35 years or more at the first delivery. Rising trend of pregnancy in advanced maternal age has raised serious concerns amongst health providers because pregnancy in older age is considered to be more hazardous both from material and foetal prospective.

The aim of this study was to evaluate pre-existing medical disorders, antenatal complication, mode of delivery and perinatal outcome in advanced maternal age.

MATERIAL AND METHODS

This hospital based prospective study was conducted in SMGS Hospital, Jammu. It included 140 patients each in 2 groups with study group comprising of women with age ≥ 35 years and control group comprising of women between 20-29 years of age. All the women who were fit in inclusion criteria underwent detailed history and examination and investigation. The study and control groups were compared according to the objectives.

RESULTS

Parity was significantly higher in the study group. Among antenatal complications, anaemia and hypertension were significantly higher in study group. There was no statistically significant difference in the incidence of malpresentation, preterm labour, antepartum haemorrhage and multiple pregnancies in the two groups. There was higher incidence of caesarean sections and instrumental deliveries in the study group. Among caesarean sections, rate of elective caesarean sections was significantly higher in the study group. No significant increase in the incidence of postpartum complications was seen in the study group. Patients of advanced maternal age were associated with adverse perinatal outcome in the form of higher incidence of babies with Apgar score <7 at 5 minutes and higher perinatal mortality.

KEYWORDS

Advanced Maternal Age, Maternal Outcome, Perinatal Outcome.

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BACKGROUND

The term 'elderly parturient' was defined in 1958 by the Council of International Federation of Obstetrics as one aged 35 years or more at the first delivery.¹

Rising trend of pregnancy in advanced maternal age has raised serious concerns amongst health providers because pregnancy in older age is considered to be more hazardous both from material and foetal prospective.²

Chronic medical conditions are more prevalent among elderly group, particularly in the multiparous patients. There is increased incidence of pre-existing hypertension, diabetes mellitus, thyroid disorders, asthma, mental depression and many others.³

Antenatal complications more frequently encountered are preterm labour, antepartum haemorrhage, intrauterine

growth retardation, multiple pregnancy, malpresentations, pregnancy-induced hypertension, placenta abruption and placenta praevia.^{4,5} Mode of delivery significantly differs in advanced maternal age. Operative or instrumental delivery is more common. Caesarean section is five times more common in elderly. Induction of labour is more common in older women who are also more likely to be delivered by caesarean section or have operative vaginal delivery. Higher rates of labour abnormalities are found in the older women.⁶

There is increase in the perinatal mortality in advanced maternal age due to antenatal complications and lethal congenital anomalies. Perinatal mortality increases from 25/1000 at 17-19 years to 69/1000 after age 39.⁷

However, many studies in the literature have yielded conflicting results and have found no difference in outcomes between younger and older women.⁶ No significant statistical differences regarding pre-maturity, low birth weight, hypertension, preterm labour, pre-eclampsia and operative vaginal delivery have been noticed between age <35 and ≥ 35 .⁴ This institutional study has evaluated maternal and perinatal outcome in advanced maternal age in our own setup where apart from the factors inherent to advanced maternal age, poor socioeconomic environment and practice of large family are still prevalent.

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MATERIALS AND METHODS

This was a hospital based study conducted on the patients reporting in the Department of Obstetrics and Gynaecology, SMGS Hospital, Jammu for a period of one year.

Two Groups were made

Group A: Study Group

Group B: Control Group

Study group included women ≥ 35 years of age at the time of delivery while control group included women between 20-29 years of age delivering serially immediately after the women included in the study group.

The Exclusion Criteria for Both the Groups Were

1. Referred cases.
2. Deliveries before 20 completed weeks of gestation and of babies weighing < 500 g.
3. Women giving birth to babies with congenital anomalies.

At the time of admission, a detailed history was taken. General physical, systemic and obstetric examinations were carried out. All investigations relevant to the particular case were done. Each patient was followed for seven days postpartum.

The study and the control groups were compared regarding:

Pre-Existing Medical Disorders

- (a) Diabetes
- (b) Hypertension
- (c) Cardiac Disease
- (d) Epilepsy
- (e) Hypothyroidism
- (f) Tuberculosis
- (g) Bronchial Asthma and others Found During Study Period.

Antenatal Complications

- (a) Anaemia
- (b) Pregnancy Associated Hypertension
- (c) Antepartum Haemorrhage
- (d) Multiple Pregnancies
- (e) Malpresentation.
- (f) Preterm Labour.

Onset of Labour

- (a) Spontaneous
- (b) Induced.

Mode of delivery

- (a) Vaginal
- (b) Caesarean
- (c) Instrumental.

Postpartum Complications

- (a) Postpartum Haemorrhage
- (b) Subinvolution of Uterus
- (c) Puerperal Pyrexia
- (d) DVT and Others.

Perinatal Outcome

- (a) Foetal Weight.
- (b) Apgar Score.

- (c) NICU Admissions.
- (d) Perinatal Mortality.

Results were expressed as mean ($\pm$ standard deviation). All results were analysed statistically with the help of Chi-square test, Fisher's exact test and Student's t-test wherever applicable. The difference was considered significant at $p < 0.05$.

OBSERVATIONS AND ANALYSIS

The present study included 140 patients in the study group (group A) and 140 patients in the control group (group B).

Average age of women in the study group was 35.93 (± 1.42) years where as average age in the control group was 25.14 (± 2.28) years.

Average gravidity in the study group was 2.94 (± 1.45), as compared to 1.83 (± 0.97) in the control group. The difference in gravidity between the two groups was statistically significant ($p < 0.0001$).

Average parity in the study group was 1.42 (± 1.15) while in the control group it was 0.65 (± 0.81). The difference in the parity between the two groups was statistically significant ($p < 0.0001$).

Pre-existing medical disorders in the study and control groups are shown in Table 1.

Medical Disorders	Study Group n	Control Group n	p
Hypothyroidism	2	0	p=0.12
Heart Disease	1	0	
Seizure Disorder	1	0	
Renal Disease	1	0	
Total	5	0	

Table 1

The difference between the study and the control group in terms of these medical disorders was statistically insignificant ($p = .12$).

Antenatal complications in the study and control groups are shown in Table 2.

Complication	Study Group n (%)	Control Group n (%)	p
Anaemia	37(26.42%)	16(11.42%)	P=0.0014
Hypertension	35(25%)	18(12.85%)	P=0.0009
Antepartum Haemorrhage	6(4.28%)	1(0.71%)	P=0.12
Multiple Pregnancy	4(2.85%)	2(1.42%)	P=0.68
Malpresentation	13(9.28%)	7(5%)	P=0.24
Preterm Labour	14(10%)	8(5.71%)	P=0.18

Table 2

Among all these antenatal complications, the incidence of anaemia and hypertension was statistically significant in study group as compared to control group ($P = 0.0014$ and $P = 0.0009$).

Onset of labour in the study and control groups is shown in Table 3.

Labour Onset	Study Group n (%)	Control Group n (%)	p
Spontaneous	97(77.6%)	113(81.88%)	p=0.38
Induced	28(22.4%)	25(18.12%)	

Table 3

The difference between the study and the control group in terms of onset of labour was statistically insignificant (p=0.38).

Mode of delivery in the study and control groups is shown in Table no. 4.

Mode of Delivery	Study Group n (%)	Control Group n (%)	p
Vaginal	94(67.14%)	107(76.42%)	p=0.03
Caesarean	41(29.28%)	33(23.57%)	
Instrumental	5(3.57%)	0	

Table 4

The difference between the study and the control group in terms of mode of delivery was statistically significant (p=0.03).

The incidence of elective caesarean section was quite high in the study group. In the study group, out of 41 caesarean sections, 15(36.58%) were elective sections whereas only 2 caesarean were elective out of 33 in the control group. The differences between the two groups were highly significant (p=0.004).

Postpartum complications in the study and control groups are shown in Table 5.

Complication	Study Group n (%)	Control Group n (%)	p
Postpartum Haemorrhage	4(2.85%)	2(1.42%)	p=0.037
Retained Placenta	3(2.14%)	1(0.71%)	
Ruptured Uterus	1(0.71%)	0	
Vulval Haematoma	0	1(0.71%)	
Total	8(5.71%)	4(2.85%)	

Table 5

Average birth weight of babies in study group was 2.68 (± 0.58) kg as compared to 2.66 (± 0.35) kg in the control group. The difference in weight between the two groups was statistically insignificant (p=0.72).

Foetal and neonatal outcomes in the study and control groups are shown in Table no. 6.

Outcome	Study Group n (%)	Control Group n (%)	p
Apgar Score <7 at 5 Minutes	20(13.88%)	4(2.81%)	P=0.007
NICU Admissions	15(10.41%)	10(7.04%)	P=0.32
Perinatal Mortality	17(11.80%)	2(1.41%)	P=0.001

Table 6

Among foetal and neonatal outcomes, the incidence of Apgar score <7 at 5 minutes and perinatal mortality was statistically significant in study group as compared to control group (P=0.007 and P=0.001).

DISCUSSION

The present study included 140 women in the study group (≥ 35 years) and 140 women in control group (20-29 years). There was significantly lower number of nulliparas in the study group, 27 (19.28%) as compared to 73 (52.14%) in the control group. This is in accordance to study by Jolly M et al.⁸

Mean gravidity and mean parity, 2.94 (± 1.45) and 1.42 (± 1.15) in the study group were significantly higher than 1.83 (± 0.97) and 0.65 (± 0.81) respectively observed in the control group. This is similar to study by Sahu TM et al² who found the mean parity in the study group (≥ 35 years) to be 1.69 and in the control group (20-29 years) to be 0.73. The high parity and gravidity in our study probably reflects the increased family size in our setup.

In our study, there was statistically no difference between the study and the control groups as far as pre-existing medical disorders were concerned. This is in contrast to study by Sahu TM et al² who reported a significantly higher incidence of diabetes in the study group (4.1%) as compared to controls (0.7%).

Anaemia was seen in 26.42% patients in the study group and 11.42% patients in the control group and the difference was statistically significant (p=0.0014). This is similar to studies by Jolly M et al⁸ and Kane SH et al⁹ who observed an increased incidence of anaemia with increasing maternal age. The incidence of hypertension in pregnancy was significantly higher in the study group, 25% as compared to 12.85% in the control group. This is in accordance to studies by Amarín VN et al,¹⁰ Ustun Y et al¹¹ and Sahu TM et al² who found higher incidence of hypertension in elderly gravidae. This increase is likely related to the underlying progressive vascular endothelial damage that occurs with ageing.¹²

Antepartum haemorrhage was reported in 4.28% of the women in the study group as compared to 0.71% in control group. Although number of women having antepartum haemorrhage was higher in study group, but the difference was statistically insignificant. This is similar to studies by Amarín VN et al¹⁰ and Sahu TM et al² who also found an increased yet insignificant incidence of antepartum haemorrhage. There was no statistically significant difference in the incidence of multiple pregnancies in the two groups in our study. This is in contract to study by Amarín VN et al¹⁰ who found statistically significant difference of incidence of multiple pregnancies among two groups. In our study, there was higher incidence of malpresentation, 9.28% in the study group as compared to 5% in the control group. The difference was statistically insignificant. This is similar to study by Sahu TM et al.²

In our study, the incidence of preterm labour was 10% in the study group as compared to 5.7% in the control group and the difference was statistically insignificant. This is in contrast to study by Sahu TM et al² who found significantly a higher incidence of preterm labour in the study groups. Labour was induced in 22.4% of the patients in the study group and 18.12% in the control group and the difference was statistically insignificant. This is in accordance to study by Luke B et al¹³ who found an increased incidence of induction of labour with increasing maternal age in primiparas.

In our study, there was statistically significant difference in the mode of deliveries between the two groups. Rates of caesarean sections and instrumental deliveries were higher in the study group. This is similar to study by Ustun Y et al¹¹ who

also found statistically significant difference in the mode of deliveries in the two groups. Among those delivered by caesarean section, our study found a significantly higher incidence of elective caesarean sections in the study group as compared to that in the control group. This is in accordance to studies by Edge VL et al⁶ and Jolly M et al⁸ who also found an increased incidence of elective caesarean in study group.

In our study, there was 100% increase in the postpartum complications in the study group (5.71%) as compared to the control group (2.85%) though the difference was statistically insignificant. Postpartum haemorrhage was twice as common in study group (2.85%) as in the control group (1.42%). This is similar to study by Amarin VN et al¹⁰ who also reported a higher incidence of post-partum haemorrhage in women aged ≥ 35 years. Retained placenta was seen in 2.14% of patients in study group as compared to 0.71% in control group. This is similar to study by Edge VL et al⁶ who also found increased incidence of retained placenta in women aged ≥ 35 years.

The average birth weight of babies was 2.68 ± 0.58 kg and 2.66 ± 0.36 kg in the study and control groups respectively and the difference was not statistically significant. Ustun Y et al¹¹ also did not find any significant difference in the birth weight of babies born to mothers < 35 years and those born to mothers ≥ 35 years of age. There was no difference in the proportion of low birth weight babies in the two groups. Amarin VN et al¹⁰ also did not find any significant difference in the incidence of low birth weight babies in women aged ≥ 35 years and in those aged less than 35 years.

In our study, the incidence of macrosomic babies was 3.47% in the study group as compared to 0.7% in the control group and the difference was statistically insignificant but Amarin VN et al¹⁰ found a significantly higher incidence of macrosomic babies in women aged ≥ 35 years (20.2%) as compared to that in < 35 years of age.

Apgar score < 7 at 5 minutes indicating foetal distress was observed in 13.88% of newborns in our study group as compared to 2.8% in the control group and the difference was statistically significant. This is similar to studies by Ustun Y et al¹¹ and Sahu TM et al² who also found significantly higher incidence of newborns with 5-minute Apgar score < 7 in women ≥ 35 years of age.

There was no significant difference in the NICU (neonatal intensive care unit) admissions between the two groups. Ustun Y et al¹¹ also did not find any significant difference in the incidence of NICU admissions in newborns born to mothers ≥ 35 years of age (7.8%) as compared to those born to mothers < 35 years of age. There was significantly high perinatal

mortality in the study group, 11.80% as compared to 1.4% in the control group. This is similar to study by Kessler I et al¹⁴ and Edge VL et al¹⁴ who also found increased perinatal mortality in primiparas ≥ 35 years of age.

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