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Original Research Article

Advanced maternal age - Perinatal outcome

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Abstract

Background: Pregnancy in older women is of great relevance. This study was undertaken to examine whether older women have higher rates of poorer perinatal outcome and whether any increased risk may be attributable to factors associated with advancing maternal age.
Method: It was a retrospective study done in a multi-speciality hospital. 57 elderly pregnant women more than 33 years of age coming for the delivery were taken.
Results: According to our data, 47% of patients were in 33-35 yrs age group and 42% were in group 36-40yrs. Maximum age of the patient was 46yrs. In our data Majority of the patients were housewives (61.40 %) and 38.59 % were employed. In our data 35% were conceived after assisted reproductive technology, Cerclage was done in 8.67%, 1.75% patients had previous history of anomalous fetus. 21.05% of patients had twin pregnancy. Majority of the patients (80.7%) were delivered by caesarian section. Preterm delivery rate was 49.1%. Normal Vaginal delivery rate was only 14%.
Conclusion: The study of complications with advanced maternal age is important. There are greater chances of developing adverse perinatal outcome. The neonate carries the risk of low apgar scores, low birth weight and neonatal death.
Keywords: Advanced maternal age, Assisted reproductive technology, multiple pregnancy, preterm delivery.

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1. Introduction

Ageing and reproduction are phenomenon of the human species. Advanced maternal age has traditionally been defined as age > 35 years at delivery. [1] Throughout the centuries maternal age has been an important factor in obstetrics. The trend of delaying pregnancy by women is worldwide, especially among more educated and financially secure women. Easy access to modern contraceptive methods has enabled women to achieve better fertility control [2] and with social environment promoting career; today's women have the option of delaying childbearing. As maternal age increases, fertility declines and the rate of spontaneous abortion increases. [3]

As delayed childbearing is becoming increasingly common, it is important to understand the implications of advanced maternal age and its effect on the baby. Foetal and neonatal risk is high due to increased incidence of chromosomal abnormalities (mainly Down's syndrome)[4], multiple pregnancy, IUGR, prematurity, higher NICU admissions. The study of complications and obstetric outcome in elderly gravidas is of prime relevance, as they form a separate subset of patients with important complication in obstetric history. Traditionally, pregnancies in women of advanced maternal age have been regarded as high-risk pregnancies with an increasing incidence of hypertensive disorders, diabetes, abortion, and maternal and perinatal complications. Even the rate of caesarean sections increases proportionally with the maternal age.[5] These medical co–morbidities can all influence fetal health and are likely to compound the effect of age on the risk of pregnancy in an older mother. However, after controlling for these co–morbidities, advanced maternal age is still found to be independently associated with an increase in antenatal and intrapartum stillbirth.[6,7] It is also associated with an increase in neonatal mortality.[8] In recent years, it was noted that when patients of advanced maternal age were followed and delivered their infants in a modern tertiary care centre, no increase in adverse outcome was noted.

In women aged 35 and over there is a greater multiple pregnancy rate, also because they are more likely to use assisted reproductive technology (Suzuki and Miyake, 2008)[9], and twin pregnancies are known to have a higher complication rate. A population-based cohort study in the UK found that women aged 40+ years at delivery had a significantly increased risk of stillbirth, preterm and very preterm birth, macrosomia, extremely large for gestational age, and caesarean delivery.[10] Advanced maternal age was also found to be associated with an increased risk of fetal death from intrapartum asphyxia at term.[7]

This study was undertaken to examine whether their newborns have poorer outcomes, and whether any increased risk may be attributable to factors associated with advancing maternal age.

2. Methods

The study was conducted in a multi-speciality tertiary hospital.The data was collected in a retrospective study of 57 elderly pregnant women 33years or older over a period of 18months.

Potential confounding factors included parity, occupation, history of medical problems, previous adverse pregnancy outcome, and history of assisted conception such as ovulation induction or ART (in vitro fertilization, donor embryo transfer).

Exclusion criteria were all pregnant women below the age of 33 years, Patients not willing for participation in the study, patients coming for medical termination of pregnancy even if they were more than thirty-three years of the age, Patients with chronic renal failure, severe cardiac disease, chronic liver disease, pulmonary tuberculosis and COPD, all pregnant women before 20 weeks of gestation.

Information related to patient's demographical information, previous obstetric history, and mode of conception was analysed.

All patients were analysed for Intrapartum and neonatal outcome: Mode of delivery, preterm babies, birth weight, NICU admission, perinatal mortality.

Birth outcomes: Assessed in relation to the Gestational age, weight of the newborn, Antepartum, intrapartum and postpartum fetal death, Apgar at 1 and 5 minutes. Perinatal death consisted of fetal death and early neonatal death in this study.

3. Results

Table 1: Age wise distribution of cases:

Age of the mother (years)	No. of patients (n=57)	Primigravidae (n=19)	Multigravidas (n=38)
33-35	27(47.36%)	10(37%)	17(62.9%)
36-40	24(42.10%)	6(25%)	18(75%)
41-45	5(8.77%)	3(60%)	2(40%)
>45	1(1.75%)	0	1
Total	57(100%)	19(33.3%)	38(66.6%)

According to our data- 47% of patients were in 33-35 yrs age group and 42% were in group 36-40yrs,maximum age of the patient was 46yrs.

Table 2: Causes of delay in pregnancy:

Causes	No. of women
Abortions	29(50.87%)
Ectopic pregnancy	5(8.67%)
Treatment for sterility	20(35.08%)
Late marriage	3(5.26%)
Preference for male child	5(8.67%)

In our data 50.8% of patients had history of previous abortions and 35% were conceived after treatment for sterility. Preference for male child was observed in 8.67% of patients.

Table 3: Mode of conception:

Mode of conception	Number of patients
Natural	37(64.91%)
IVF	19(33.33%)
With donor oocyte	3(5.26%)
IUI	1(1.75%)

64.9% of patients conceived spontaneously and remaining required assisted reproductive technology (35%), majority of patients (33.3%) required Invitro fertilization among them 5.2% of patients were conceived with IVF using donor oocyte.

Table 4: Labour outcome among the women:

Outcome	No. of patients
Normal Vaginal deliveries	8(14%)
Operative vaginal deliveries	1(1.75%)
Induction of labour	6(10.52%)
Preterm delivery	28(49.1%)
Caesarian section	46(80.7%)

Out of 14% of patients who had delivered vaginally almost all had required induction of labour (10.5%). In our study preterm delivery was as high as 49%. Operative vaginal delivery was required in only 1 patient.

Table 5: Gestational age at birth:

Gestational age at birth	No. of patients
≤34 Weeks	7(12.28%)
34-37Weeks	21(36.84%)
≥37Weeks	29(50.87%)

In our study 50.8% of cases delivered full term (>37 weeks) and rest were preterm deliveries. Most common cause for preterm delivery was twin gestation.12.2% of patients delivered very preterm (<34 weeks).

Table 6: Total no. of babies studied:

	No. of babies born	Percentage
Single	44	62.85%
Twins	26	37.14%
Total	70	100%

Total number of babies studied was 70. In this 26 babies were among the twins and rests were single.

Table 7: Perinatal outcome among the women:

Outcome	Total babies (n=70)
Still birth	1(1.47%)
Neonatal death	6(8.57%)
Low birth weight	21(30.88%)
Birth asphyxia	8(11.76%)
Hyperbilirubinemia	6(8.57%)
NICU admission	38(55.8%)

Very Preterm delivery and low birth weight was the cause for neonatal death. We found 8.57% of cases of neonatal deaths. 30.8% of cases were of Low birth weight due to preterm deliveries especially after twin births.

Special care baby unit (NICU) admissions were required for majority of babies (55.8%). Complications were higher among twins.

Table 8: Total no. of babies by birth weight:

Weight of baby (kg)	Total babies (n=70)
<1.5	10(14.28%)
1.5-2	14(20.28%)
2-2.5	13(18.84%)
2.5-3	20(28.98%)
3-3.5	13(18.84%)

Majority of babies were born with weight between 2.5-3Kg (28.98%), 20.28% of babies were of 1.5-2Kg weight. Maximum weight of the baby born was 3.4Kg.

Table 9: Association between single/twins and birth weight:

Single/Twins	Birth weight				
	Less than 1.5 Kg	1.5 to 2 kg	2 to 2.5 Kg	2.5 to 3 Kg	3 to 3.5 Kg
Single	11.4%	2.3%	18.2%	38.6%	29.5%
Twins	19.2%	50.0%	19.2%	11.5%	0.0%
Total	10(14.3%)	14(20%)	13(18.6%)	20(28.6%)	13(18.6%)

4. Discussion

This study group comprised of elderly pregnant women 33years or Older coming for delivery, 57 women were assessed to determine the effect of age on perinatal outcomes after 20 weeks of gestation.

We found that pregnancies are associated with increased perinatal morbidities. Delayed childbearing has impact on maternal and perinatal outcomes become increasingly relevant as more and more women postpone having children.

In our study 47.3% women were in age group 33-35years, 42.1% in age group 36-40years, 1.7% in age group >45years. In the study of B. Luke and M.B. Brown in 2007, 59% women were in age group 30-34 years, 31% were in 35-39 yrs, 7.8% in 40-44yrs and 0.4% were >45 yrs.[11]

35% of patients in our study had history of infertility and required assisted reproductive technology for conception. Marzieh Nojomi and his associates in 2010 had 25.5% of patients with history of infertility.[12]

Associated risk factors such as hypertension and diabetes account for increased incidences of placental abruption, intra-uterine growth retardation and (pre-)eclamptic disease, all of them being associated with a higher risk for (emergency) Caesarean section.

The rate of multifetal gestations was higher in the study group, largely because of artificial reproductive technologies, which explains the higher rates of preterm labour and caesarian section delivery. Nowadays, biological limits to reproduction imposed by ageing oocytes have been largely overcome since the introduction of IVF techniques using donor oocytes.

In our study 5.2% of patients conceived with IVF techniques using donor oocytes, In vitro fertilization was required in 33.3% of cases and intrauterine insemination was required in 1.7% of cases. In our study 22.80% of women were with multiple pregnancies. In the study of Richard P. Porreco, Leslie Harden in April 2004, incidence of women conceived with assisted reproductive technology was 78% and the Rate of multiple pregnancies was 48%.[13]

The proportion of term births (<37 weeks) decreased significantly with advancing maternal age for both primiparas and multiparas. The research results Of Temmerman *et al*. (2004) indicate that there is a meaningful relation between the increasing mother's age and preterm labor.[14]

The rate of preterm delivery in our study was 49%. Yariv *et al* in 2010 found rate of 54% in 30-39years age group,42% in40-45 years and 15% >45 years age group.[15] In our study total caesarian section rate was 80% which was higher than Yariv *et al* in 2010 who found caesarian section rate of 78.5%.[15]

In our study we found 45% incidence of neonatal admission. Marzieh Nojomi, Ladan Haghighi in 2010 found 55.5% incidence of neonatal care admission.[12]

Fretts RC *et al* studied a relation between increased maternal age and the risk of fetal death and he concluded that even after controlling for recognized coexisting conditions that contribute to fetal death, older women continued to have a risk of fetal death that was twice as high as that among their younger counterparts.[16]

In our study rate of still birth was 1.47%. Awad Shehadeh in 2002 found rate of still birth of 1.2 %.[17] In our study incidence of neonatal death was 5.8%. Naheed, Tufail *et al* in 2009 found incidence of neonatal death of 4%,[18]

Forman *et al* suggested that there is always a risk of low birth-weight in every pregnancy but the risk in the

older mothers is quite significant.[19] In our study Low birth rate was observed in 30.8% of cases. Marzieh Nojomi and Ladan Haghighi in 2010 found low birth weight of 28.2% in their study.[12]

5. Conclusion

The study of complications and obstetric outcome in women with advanced maternal age is important.Modern woman is able to postpone childbearing to her own desire, even to the period in which reproduction normally ends leading to advanced maternal age, as more women delay childbearing, older gravida constitute a large and growing obstetric patient population.

We found that Elderly pregnant patients have higher rates of adverse perinatal outcome. There is significantly low gestational age and the neonate carries the risk of low Apgar scores, low birth-weight and neonatal death. Majority of these effects were due to higher incidence of preterm births.

In spite of the improved health services and better prospects of women of advancing maternal age, women should realistically appraise the risks of pregnancy in later life. The above findings are important to counsel elder women who like to be pregnant in prenatal care clinics; they can expect a good pregnancy outcome with careful and watchful antenatal care and delivery. Many of these risks can be successfully managed through preconception and prenatal care.

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