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Original Research Article

Does advanced maternal age influence obstetric outcome: a study in a tertiary care centre

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ABSTRACT

Background: Advanced maternal age defined as age 35 years and older at estimated date of delivery has become increasingly common in last two to three decades. The International Federation of Gynaecology and Obstetrics in 1958 recommended that all women going through their first pregnancy over the age of 35 years should be considered high risk for pregnancy and included in this category 1.

Methods: A one-year prospective observational study conducted in a tertiary care hospital after institutional ethical clearance. All 165 women above 35yrs who delivered during this period were taken as Cohort 1. Same number of women aged between 20 and 34 years were randomly selected as comparison group (Cohort 2). Both the groups were compared in terms of preexisting medical disorders, obstetrical morbidities, antenatal complications, intrapartum complications.

Results: Older and younger women had similar antenatal booking, occupational and socioeconomic status. The main reason for pregnancy at advanced age group was late marriage. The risk of chronic hypertension, gestational diabetes mellitus, pre-existing medical disorders were higher in advanced maternal age.

Conclusions: Increasing maternal age is associated with elevated risks for pregnancy complications. They are at high risk for gestational diabetes, cesarean section and to have low birth weight babies. Since these women are at higher risk of complications, they should be advised to adhere to frequent antenatal visits and close supervision.

Keywords: Advanced maternal age, Close supervision, Frequent antenatal visit

INTRODUCTION

Having children later was not exceptional in the past, when families were larger, and women often continued bearing children until the end of their reproductive age. What is so radical about this recent transformation is that it is the age at which women give birth to their first child which is becoming comparatively high, leaving an ever more constricted window of biological opportunity for second and subsequent children, should they be desired.¹ Women should be supported in their decisions of whether to have children or not and when to plan childbearing. However, they also need to know how fertility and

pregnancy outcomes changes with age. Most of the complications associated with older age are caused by age-related confounders such as Type II diabetes, hypertension, and leiomyomas, leading to increased incidence of caesarean sections.² Studies have been conducted globally to analyse the effects of advanced maternal age on pregnancy outcome. Notwithstanding all this, the majority of these women, properly supervised are capable of safe and successful pregnancy.³ The objective of the present study was to study the obstetric outcomes in terms of antenatal, intrapartum, postpartum and in women aged 35 years and above and to compare the same with women aged less than 35 years of age.

METHODS

This was a one-year prospective observational study conducted in Government Medical College Thrissur, Kerala, conducted from 26/11/2014 to 25/11/2015 Institutional Ethical Committee clearance was obtained before the study was started. All women above 35 years who delivered during this period were taken as Cohort 1. There were 165 women in this group. Same number of women aged between 20 and 34 years were randomly selected as comparison group (Cohort 2). Consent was obtained from all the participants. Strict confidentiality of the data was assured to each patient.

Inclusion criteria

- Cohort 1: All 165 women ≥ 35 years who delivered in the study period.
- Cohort 2: 165 women randomly selected between 20-34yr who delivered in the study period.

Exclusion criteria

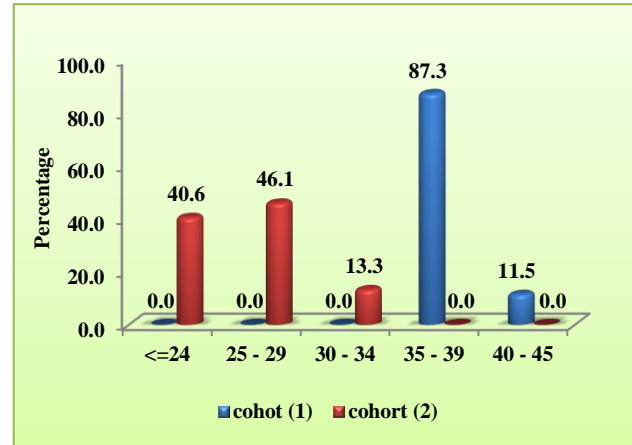
- Women with multiple pregnancies, IVF pregnancies, and patients not consenting for the study were excluded from the study.

Both the groups were compared in terms of pre-existing medical disorders, obstetrical morbidities, antenatal complications, intrapartum complications. Data was entered in excel sheet and analysed using SPSS software.

RESULTS

Among the 165 women in Cohort (1) -women of ages 35-39 years accounts were 146 (88.5%) and women above 40 years were 19 (11.5%). In Cohort (2) -women below

24 years were 67 (40.6 %) and in age group 25-29 years were 76 (46.1%). Women between 30-34 years were 22 (13.3%). Majority of women from both groups belonged to low income group. Nulliparous women above 35 years were 43 (26.1 %), nulliparous women below the age of 35 years were 62 (37.6%) (Figure 1).



Cohort 1: Age >35 year. Cohort 2: Age <35 year

Figure 1: Distribution of age based on groups.

Multiparous women constituted the majority in both groups. The most common reason for being pregnant at advanced maternal age in the study was late marriage. The occurrence of chronic hypertension was 5.5 % (9 women) at advanced maternal age whereas it was only 0.6 % (1 woman) with maternal age below 35 years (X^2 6.6* p 0.010). The relative risk for chronic hypertension at advanced maternal age is 1.85 (1.46-2.34) RR (95% CI). The relative risk for pre-gestational diabetes at advanced maternal age is 1.46 (1.03-2.07) RR (95% CI) (Table 1).

Table 1: Distribution of pre-existing chronic hypertension and pre-gestational diabetes based on groups.

		Cohort (1) Age > 35 year		Cohort (2) Age <35 year		RR (95% CI)	χ^2	P
		Number	Percent	Number	Percent			
Chronic hypertension	Yes	9	5.5	1	0.6	1.85 (1.46-2.34)	6.6*	0.010
	No	156	94.5	164	99.4			
Pre: Gest: DM:	Yes	10	6.1	4	2.4	1.46 (1.03-2.07)	2.69	0.101
	No	155	93.9	161	97.6			

*: Significant at 0.05 level

Table 2: Mode of delivery and maternal age.

Mode of Delivery	Cohort (1) n=165		Cohort (2) n = 165		χ^2	P
	Count	Percent	Count	Percent		
Normal delivery	55	33.3	95	57.6	19.72**	0.000
Instrumental delivery	9	5.5	7	4.2		
Caesarean section	101	61.2	63	38.2		

**:- Significant at 0.01 level

The onset of gestational diabetes was found to be higher (statistically significant) in advanced maternal age (p 0.003). In Cohort 1 (advanced age) there were 50 women (30.3%) who developed GDM, while in Cohort 2, only 23 cases were diagnosed with GDM (14%). Hypertensive disorders in pregnancy were also found to be increased in advanced age group. In the advanced age group (Cohort 1) 45 women had hypertensive complications (27.27%), while in Cohort 2 (Younger age group) 35 women (21.21%) had hypertensive complications. There were 22 women (13.33%) with preeclampsia in Cohort 1 (advanced age) and 24 women with preeclampsia in younger age group. In this study the occurrence of preeclampsia was slightly higher in younger age group though not statistically significant (p 0.125). Analysing other pre-existing medical disorders, it was found that in Cohort 1 (Advanced age) -there were 4 cases of heart disease (2.4%), 18 women had Thyroid disorders (10.9%), 2 women had Bronchial asthma (1.2%), 8 women had fibroid complicating pregnancy (4.8%). In Cohort (2) -3 women with heart disease (1.8%), 11 women with Thyroid disorders (6.7%), 1 woman had Bronchial asthma (0.6%), 1 woman with fibroid complicating pregnancy (0.6%). Advanced maternal age was found to significantly affect the mode of delivery. The relative risk for primary caesarean section at advanced maternal age is 1.35 (1.09 – 1.69) RR (95% CI). The relative risk for abnormal labor at advanced maternal age is 2.125 (95% CI) (0.94 –4.78). In Cohort 1(Advanced age)-101 women underwent caesarean section (61.2%), 64 women had normal delivery (33.3%), 9 women had instrumental delivery (5.5%). Whereas in Cohort 2 -62 women had undergone caesarean section (37.6 %), 95 women had Normal delivery (57.6%) and 7 women underwent, instrumental delivery (4.2%), (Table 2). Seven mothers aged 35 years and above had severe maternal morbidities, while only two mothers below the age of 35 years had the same (Table 3). Two maternal deaths with age above 35 years occurred during the study period.

Table 3: Comparison of maternal severe morbidities.

Maternal severe morbidities	Cohort (1) age >35 year		Cohort (2) age <35 year	
	No.	%	No.	%
Massive blood transfusions	2	1.2	2	1.2
Obstetric hysterectomy	2	1.2	0	0.0
Mechanical ventilation	2	1.2	0	0.0
Renal failure	1	0.6	0	0.0

DISCUSSION

Pregnancy at advanced maternal age is associated with increased maternal and fetal risks. This study was conducted to compare the obstetric outcome in this group with women aged less than 35 years of age. There were 165 antenatal women in each group.

Our institution is a tertiary care centre, 38% of women of advanced age and 25% below 35 years were referred to our institution as high risk for better care and expert management.

Majority women of both groups belong to low socioeconomic status (66.1% Vs 67.9%).The main reason for being pregnant at advanced maternal age in the study is late marriage (n 73, 44.2%). The implication of this is that the age at which women give birth to their first child is becoming comparatively high, leaving a narrower window of biological opportunity for a second child . The risk of any autosomal trisomy increases steeply with maternal age, particularly after age 35.^{4,5} In the study one mother age of 38 years had a Down syndrome baby. The American College of Obstetrician and Gynaecologists (2012b) currently recommends that Cell-Free Fetal DNA Screening of maternal plasma may be offered to women 35 years or older at delivery.⁵ Hypertensive disorders remain among the most significant and intriguing unsolved problems in obstetrics. In this study hypertensive disorders of pregnancy were higher in women 35 years and above. A higher incidence of hypertensive disorders of pregnancy in older women was reported in various studies 4 This study showed slight increased incidence of preeclampsia in mothers of younger age group (7.3% Vs 6.7%), reason may be due to more nulliparas in younger age group. This is in accordance with Mayatt, that young and nulliparous women are particularly vulnerable to developing preeclampsia, whereas older women are at greater risk for chronic hypertension with superimposed preeclampsia.⁸ This study showed advanced maternal age is statistically significant with onset of gestational diabetes (p0.003). A Study by Fulopet al showed that the risk of GDM was higher in older women, even after adjusting for confounding factors.⁹ Advanced maternal age group was associated with increased labour abnormalities than younger maternal age group. In a UK study, Smith et al examined the association of maternal age on rates of intrapartum Caesarean section and outcome of labour using data collected in Scotland over a 25-year period.¹⁰ Older age in first pregnancy was associated with an increased risk of Caesarean section. The study noted Caesarean section rates significantly higher in older women (61.2% Vs 38.2%). The most common indication for Caesarean section in this study was previous Caesarean section, in 54 out of 101 cases. Other reasons were abnormal labour patterns and fetal distress Advanced maternal age and multiparty have been associated with an increased risk for placental abruption. In the First- and Second-Trimester Evaluation of Risk (FASTER) trial, women older than 40 years were 2.3 times more likely to experience abruption compared with those 35 years or younger.¹¹ The older woman who has a chronic illness or who is in poor physical condition usually has readily apparent risks. For the physically fit woman without medical problems, however, the risks are much lower than previously reported. Overall, the maternal mortality rate is higher in women aged 35 and

older. Compared with women in their 20s, women aged 35 to 39 are 2.5 times more likely and women aged 40 or older are 5.3 times more likely to suffer pregnancy-related mortality.^{12,13}

CONCLUSION

Increasing maternal age is associated with elevated risks for pregnancy complications. They are at high risk for chronic hypertension, gestational diabetes, cesarean section and increased maternal morbidities. Since these women are at higher risk of complications compared to the younger group, they should be advised to adhere to frequent antenatal visits and should be kept under the close supervision of a senior obstetrician.

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REFERENCES

1. Maternal age: The mature gravid Kirz DS, Dorchester W, Freeman RK. *Advanced Am J Obst Gynecol.* 1985;152(1):7-12.
2. Gilbert WM, Nesbitt TS, Danielsen B. Childbearing beyond age 40: pregnancy outcome in 24,032 cases. *Obstet Gynecol.* 1999 ;93(1):9-14.
3. Bobrowski RA, Bottoms SF. Underappreciated risks of the elderly multipara. *America J Obstet Gynecol.* 1995;172(6):1764-70.
4. Hook EB, Cross PK, Schreinemachers DM. Chromosomal abnormality rates at amniocentesis and in live-born infants. *Jama.* 1983 Apr 15;249(15):2034-8.
5. Bianchi DW, Platt LD, Goldberg JD, Abuhamad AZ, Sehnert AJ, Rava RP. Genome-wide fetal aneuploidy detection by maternal plasma DNA sequencing. *Obstet Gynecol.* 2012;119(5):890-901.
6. Cleary-Goldman J, Malone FD, Vidaver J, Ball RH, Nyberg DA, Comstock CH, Saade GR, Eddleman KA, Klugman S, Dugoff L, Timor-Tritsch IE. Impact of maternal age on obstetric outcome. *Obstet Gynecol.* 2005;105(5):983-90.
7. Jacobsson B, Ladfors L, Milsom I. Advanced maternal age and adverse perinatal outcome. *Obstet Gynecol.* 2004;104(4):727-33.
8. Myatt L, Clifton RG, Roberts JM, Spong CY, Hauth JC, Varner MW, Thorp Jr JM, Mercer BM, Peaceman AM, Ramin SM, Carpenter MW. First-trimester prediction of preeclampsia in low-risk nulliparous women. *Obstet Gynecol.* 2012;119(6):1234.
9. Fulop T, Larbi A, Douziech N. Insulin receptor and ageing. *PatholBiol (Paris)* 2003; 51(10):574-80.
10. Smith GC, Cordeaux Y, White IR, Pasupathy D, Missfelder-Lobos H, Pell JP et al. The effect of delaying childbirth on primary cesarean section rates. *PLoS medicine.* 2008;5(7):e144.
11. Cleary-Goldman J, Malone FD, Vidaver J, Ball RH, Nyberg DA, Comstock CH, Saade GR, Eddleman KA, Klugman S, Dugoff L, Timor-Tritsch IE. Impact of maternal age on obstetric outcome. *Obstet Gynecol.* 2005;105(5):983-90.
12. Reddy UM, Laughon SK, Sun L, Troendle J, Willinger M, Zhang J. Prepregnancy risk factors for antepartum stillbirth in the United States. *Obstet Gynecol.* 2010;116(5):1119.
13. Geller SE, Cox SM, Callaghan WM, Berg CJ. Morbidity and mortality in pregnancy: laying the groundwork for safe motherhood. *Women's health Issues.* 2006;16(4):176-88.

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