

Advanced maternal age and obstetric outcome

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ABSTRACT

Advanced maternal age defined as age 35 years or more at estimated date of delivery is considered to have higher incidence of obstetric complications and adverse pregnancy outcome than younger women. The objective of this study was to compare the obstetric and perinatal outcome of pregnancies in women with advanced maternal age \geq 35 years with that of younger women $<$ 35 years. A prospective comparative study was carried out in department of obstetrics and gynecology at Nepal Medical College and Teaching Hospital over the period of one year from October 2012 to September 2013. The obstetric and perinatal outcome of 90 women with advanced maternal age (study group) were compared with those of 90 younger women aged 20-34 years (control group). Among antenatal complications, women of advanced maternal age had increased incidence of hypertensive disorder of pregnancy (26.6% vs 4.4%; $p=0.00009$) and breech presentation (8.8% vs 1.1%; $p=0.04$). There were no significant difference between two groups in incidence of antepartum hemorrhage, gestational diabetes mellitus, prelabor rupture of membrane and preterm delivery. The rate of caesarean delivery was significantly higher in advanced maternal age (28.8% vs 17.7%; $p=0.05$). In perinatal outcome, older women had significantly higher incidence of perinatal death (7.7% vs 0%; $p=0.01$). There were no significant differences in low birth weight rate and apgar score less than 7 at five minutes of life in two groups. Thus from this study, it can be concluded that advanced age women had higher incidence of hypertensive disorder of pregnancies and malpresentation, were more likely to deliver by caesarean section and had increased incidence of perinatal death.

Keywords: Advanced maternal age, obstetric outcome, perinatal outcome

INTRODUCTION

Advanced maternal age which is defined as age of mother as 35 years or more at the time of delivery has become increasingly common in last two to three decades. In the developed world, the changing pattern of becoming pregnant at an advanced age can be attributed to various reasons. The reason could be changes in the structure of family with more late marriages or remarriages, women's pursuit of higher education, carrier advancement, advances in assisted reproductive technique and availability of effective and safe contraceptives.^{1,2} But in developing countries like Nepal, the scenario is different. The women tend to become pregnant at advanced age due to concept of large family size, sometimes desire for male child and moreover due to lack of knowledge of availability of effective contraception.

Advanced maternal age beyond 35 years is considered to have more adverse pregnancy outcomes as compared to those in younger women.³ So for the management of pregnant women with age $>$ 35 years, it requires an understanding of the effect of age, pre-existing comorbidities which may lead to complication during pregnancy, delivery and thus prevent a healthy outcome.⁴ Any pregnancy at or more than 35 years of age are always at increased risk for antenatal complications

like preeclampsia, antepartum hemorrhage, gestational diabetes, preterm birth, intrauterine growth restriction and increased rate of caesarean section. The perinatal morbidity like low birth weight and birth asphyxia as well as perinatal mortality is increased in these women as compared to their younger counterparts.⁵

Most of the studies done on obstetric outcome in women with advanced maternal age are from western world and very few studies are performed in our part of world.

Thus the aim of this study was to evaluate the effect of advanced maternal age on obstetric and perinatal outcome in our settings.

METHODS AND METHODS

This is a prospective comparative study conducted at Nepal medical college and teaching hospital in department of obstetrics and gynecology over the period of one year from 1st October 2012 to 30th September 2013. During this study period, a total of 1986 women delivered. Advanced maternal age was defined as age of mother as 35 years or more at the time of delivery. The study group comprised of women of advanced maternal age who delivered during the study period. The control group taken were women aged 20-34 years who

delivered serially immediately after the woman included in the study group. The delivery occurring before 28 weeks were excluded from the study.

The women were enrolled for the study from labor ward after taking verbal consent. The demographic data of these women, gestational age at the time of delivery and complication during pregnancy were noted. They were followed till discharge and mode of delivery, perinatal outcome and any intrapartum and postpartum complications were also recorded in a specially designed research proforma. The study was approved by the ethical committee of the hospital.

The major obstetrics parameters compared between these two groups were parity, presentation of fetus, obstetric complication (antepartum hemorrhage and prelabor rupture of membrane), medical disorder associated with pregnancy (hypertension in pregnancy and gestational diabetes) and mode of delivery (normal vaginal delivery, instrumental delivery and caesarean section). The perinatal information compared were birth weight, birth outcome (whether live birth or still birth) and apgar score at 5 minutes of life.

Antepartum hemorrhage (APH) was defined as any vaginal bleeding after 28 weeks of gestation and before delivery of baby. Prelabor rupture of membrane (PROM) was rupture of membrane before onset of labor. Women who were diagnosed as having preexisting hypertension was categorized as chronic hypertension whereas those who had new onset hypertension after 20 weeks of gestation with or without proteinuria were labeled as preeclampsia and pregnancy induced hypertension respectively. Eclampsia was convulsion occurring in women with hypertension. All these type of hypertension were collectively categorised as hypertensive disorder of

pregnancy. Women were classified as diabetic if they had a history of preexisting diabetes or that diagnosed first time during pregnancy (GDM). Pregnancy termination before 37 completed weeks of gestation was termed preterm delivery.

Mode of delivery was categorized as normal vaginal delivery, instrumental delivery (forceps or vacuum) or caesarean section.

Birth weight less than 2500 grams was termed as low birth weight. Perinatal death comprised of both fetal death occurring after 28 weeks of gestation and early neonatal death during first 7 days of life.

The chi-square test was used to find any association between categorical variables. P values less than 0.05 was considered significant. P-values reported to three decimal places with values less than 0.001 was reported as <0.001.

RESULTS

The study was conducted over the period of one year from 1st October 2012 to 30th September 2013. During the study period, 1986 women delivered in our institution of which 90 were of advanced maternal age. The incidence of pregnancy in advanced maternal age was 4.53%.

The baseline maternal characteristics and antepartum complications of women with advanced maternal age were compared with that of younger women and is shown in Table-1.

The mean age of the study group was 36.9 years and that of control group was 24.8 years. Parity was significantly associated with maternal age as only 15.5% of women with advanced maternal age were nulliparous as compared to 42.2 % of adult women. (p=< 0.001).

Table-1: Maternal baseline information and antenatal complications

Maternal baseline information	Study group n=90 (advanced maternal age)	Control group n=90 (adult women)	p value
Mean age	36.9 years	24.8 years	
Parity			
Nulliparous	14 (15.5%)	38 (42.2%)	< 0.001
Multiparous	76 (84.4%)	52 (57.7%)	
Antenatal complications			
Hypertensive disorder of pregnancy	24 (26.6%)	4 (4.4%)	<0.001
Preeclamsia/ PIH	20	3	
Eclampsia	2	1	
Chronic hypertension	2	0	
Diabetes in pregnancy	1 (1.1%)	1 (1.1%)	NS
Antepartum hemorrhage	5 (5.5%)	1 (1.1%)	NS
Prelabor rupture of membrane	5 (5.5%)	2 (2.2%)	NS
Breech presentation	8 (8.8%)	1 (1.1%)	0.04

NS: not significant

Among the antenatal complications, women aged 35 years or older had an increased incidence of hypertensive disorder of pregnancy as compared to women younger than 35 years (26.6% vs 4.4%; $p < 0.001$). Similarly the rate of breech presentation was significantly higher in women with advanced age than their younger counterpart (8.8% vs 1.1%; $p = 0.04$). There were no difference between two groups in other complications like GDM, APH and PROM.

Table-2 compares the obstetric outcome of women with advanced age with that of younger women. Younger women were more likely to have vaginal delivery and the rate of caesarean section was found to be significantly higher in advanced age women (28.8% vs 17.7%; $p = 0.05$). There was no difference in rate of preterm delivery, twin delivery and instrumental delivery.

Table-2: Maternal age and mode of delivery

Type of delivery	Study group n=90	Control group n=90	P value
Normal delivery	55 (61.1%)	68 (75.5%)	0.05
LSCS	27(30%)	16 (17.7%)	0.04
Instrumental delivery	6 (6.6%)	3 (3.3%)	NS
Preterm delivery	1 (1.1%)	3 (3.3%)	NS
Twin delivery	1 (1.1%)	0	NS

Perinatal outcome in women with advanced maternal age is discussed in Table-2. In perinatal outcome, there were no difference in low birth weight and apgar score at 5 minutes of life in two groups. However perinatal death was significantly higher in women with advanced age than women less than 35 years (7.7% vs 0%; $p = 0.01$).

Table-3: Maternal age and perinatal outcome

Variables	Study group n=90	Control group n=90	P value
Low birth weight	8 (8.8%)	4 (4.4%)	NS
Perinatal death	7 (7.7%)	0	0.01
Still birth	4		
Neonatal death	3		
Apgar score < 7 at 5 mins of life	7 (7.7%)	4 (4.4%)	NS

The most common reason for being pregnant at advanced maternal age in our part of world was desire for male child and the second reason being husband working outside country in between leading to late conception.

Table-4: Reasons for being pregnant at advanced age

Reasons	n. (%)
Desire for male child	19 (21.1)
Husband outside country in between	15 (16.6)
Late marriage	12 (13.3)
Concept of large family	12 (13.3)
Lack of knowledge of contraception	9 (10)
Failure of contraception	5 (5.5)
Bad obstetric history	5 (5.5)
Pursuit of career	5 (5.5)
Remarriage	3 (3.3)
Death of previous child	3 (3.2)
H/O subfertility	2 (2.2)

DISCUSSION

In western world, the average age at which first time mothers give birth is continuously rising. From the year 1970-2007, live births among women with advanced maternal age in the US have increased from 5% to approximately 15%.^{6,7} The incidence of pregnancy at advanced maternal age was reported as 21% in US by GoldmenJ et al⁸, 33.4% in Norway by Wang Y et al⁵ and as 17.5% from South Africa by Hoque ME.⁹ This trend seen in many countries may be due to women’s choice but the scenario in our part of world is different.

The incidence of pregnancy at advanced maternal age in this study is only 4.53% which is very less than that mentioned in above studies. This maybe due to the fact that women here get married at early age and complete childbearing early. Few women who get pregnant at advanced age do so not by their choice but due to various social reasons where pressure to have male child remains one important cause.

Various studies have been carried out globally to identify and assess the complications of pregnancy with increasing maternal age.

In this study, the women aged 35 years or more had significantly higher incidence of hypertensive disorder of pregnancy. This is similar to that reported by Amarin et al,¹⁰ Goldman et al,⁸ Bobrowski et al¹¹ and Joseph et al.¹² This may be explained by the fact that as pregnancy progresses, maternal adaptation resulting in high flow, low resistance circulation and decrease in mean blood pressure is impaired in older women leading to development of preeclampsia and chronic hypertension.¹³

In this study, we found that the incidence of breech presentation was significantly higher in advanced age women than younger women. This is similar to that reported by Viegas et al,¹⁴ Gilbert et al¹⁵ Hoque⁹ where

the breech presentation was significantly higher among advanced age women. But Aghamohammadi *et al*¹⁶ and Sahu *et al*¹⁷ did not find any statistically significant difference in malpresentation when aged and young women were compared.

Caesarean delivery rate was significantly more common among advanced aged women as compared to adult women in this study.

Goldman *et al*⁸ from USA reported that odds of caesarean section among 35-39 years and > 40 years were 1.6 and 2 respectively. Seoud *et al*,¹⁸ Nojomi *et al*,¹⁹ and Verma²⁰ reported the rate of caesarean section to be significantly higher in advanced aged mother.

In this study, perinatal death (both still birth and neonatal death) was significantly higher in older women than the younger ones. This is similar to that reported from USA by Bahtiyar *et al*²¹ and by Bateman and Simpson²² where the odds of still birth among 35-39 years women were 1.45 and 1.28 respectively. Similarly Jacobsson *et al*²³ also reported increased rate of still birth in aged women.

However Nojomi *et al*,¹⁹ Amarii *et al*¹⁰ and Naheed *et al*⁴ did not find any increase in perinatal mortality rate in women > 35 years when compared to younger women. Though reported in many studies, association of low birth weight with advanced maternal age was not found in this study.

This study has shown that advanced aged women had higher incidence of hypertensive disorder of pregnancies and malpresentation, were more likely to deliver by caesarean section and had increased incidence of perinatal death.

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