

The outcome of pregnancy in elderly primigravidas

Haifa A. Al-Turki, MBBS, Adel T. Abu-Heija, MB, FRCOG, Mohammed H. Al-Sibai, MB, Facharzt.

ABSTRACT

Objectives: To investigate the effect of advancing age of 35 years and more (elderly primigravida) on the outcome of pregnancy in nulliparous women and to compare the type of complications observed in this group of women to those in the age of 20-34 years.

Methods: This was a retrospective analysis of 2517 primigravidas delivered at King Fahd Hospital of the University, Al-Khobar, Kingdom of Saudi Arabia between 1996-2000. All were consecutive patients. The data were collected from the records of the labor room and the medical records were screened for maternal age, antenatal complications, gestational age, birth-weight of the neonate, sex of the neonate and the Apgar score.

Results: Three-hundred and sixty-two nulliparous were below the age of 19 years; hence, excluded from the study group. Between age of 20-34 years (Group A) there were 1950 patients with the mean age of 24.79 years (range 20-34) and in women over the age of 35 years (Group B) there were 205 patients with the mean age of 38.72 years (range 35-48 years). Group B had significantly less number of normal deliveries 59.9 compared to group A 81% with p

value of <0.001 . Diabetes mellitus was common in group B as compared to group A and was statistically significant at p value <0.001 . The gestational age in group B was 36.06 weeks and in group A it was 38.84 weeks (p value was markedly significant at <0.001). Women in group B had more deliveries by cesarean section (CS) 23.8% as in group A 12.6%, a significant p value <0.001 . The Apgar score at 1 and 5 minutes was significant at p value <0.001 and <0.004 . The birth-weight in group B was less compared to group A, p value of <0.002 .

Conclusions: Childbearing in elderly primigravidas does have higher rates of complications due to diseases such as diabetes mellitus and preeclampsic toxemia. They are liable to have more deliveries by CS than by other methods, in spite of lower gestational age and birth weight. The overall outcome however does not appear grim, as was once believed. This study suggests that women in the age group of >35 years should be informed of their pregnancy expectations and outcomes.

Saudi Med J 2003; Vol. 24 (11): 1230-1233

Pregnancy in different ages have specific complications affecting the outcome. Pregnancy after the age of 35 years has adverse consequences. Initially, in the western world, women who wish to become pregnant after the age of 35 years were discouraged due to the risk of complications to the mother and the baby.¹⁻⁵ It was believed that the risk of maternal and fetal morbidity and mortality was high in mature gravida. The impact of delayed child bearing

becomes more important as the phenomenon of late motherhood is becoming more prevalent in the educated and career oriented women. In the recent past, the trend has taken a turn after the realization that pregnancy >35 years had a limited risk if these women were regularly followed in the prenatal clinics. Due to these factors it was reported that the number of pregnancies >35 years of age in North America had increased.⁶ There are numerous complications both

From the Department of Obstetrics and Gynecology, King Fahd Hospital of the University, King Faisal University, Al-Khobar, Kingdom of Saudi Arabia.

Received 30th April 2003. Accepted for publication in final form 12th August 2003.

Address correspondence and reprint request to: Dr. Haifa A. Al-Turki, King Fahd Hospital of the University, PO Box 2208, Al-Khobar 31952, Kingdom of Saudi Arabia. Tel. +966 55869021. Fax. +966 (3) 8647176. E-mail: fofi_3000@yahoo.com

maternal and perinatal, that may develop in these women >35 years. A review of the literature did not reveal any studies on the outcome of pregnancy among the Saudi Arabian elderly primigravidas. This study was conducted with the following aims in mind: 1. To examine the impact of age on first pregnancy in Saudi women >35 years (elderly primigravida). 2. To compare the types of complications of elderly primigravidas (EP) with nulliparous women between the age of 20-34 years.

Methods. The study population consisted of 2517 consecutive patients delivered at the King Fahd Hospital of the University, Al-Khobar, Kingdom of Saudi Arabia (KSA). All patients who were nulliparous and delivered between 1996-2000, at the hospital were included. The data was drawn from the logbooks of the labor and delivery room and was cross checked with computerized medical records. Computer generated pre-set forms were filled, which gave detailed information with regards to age, antenatal complications, gestational age, mode of delivery, Apgar score of the baby and weight of the baby and sex of the new born. The forms were checked for accuracy of the data before being entered in the database. Studies in the literature report 35 and 40 years as the cutoff point to label a mother as an elderly primigravida. In this study 35 years was defined as elderly primigravida. For the sake of comparison and analysis, the patients were divided into 2 groups, those between 20-34 years as group A and the second group was >35 years of age as group B. The following pregnancy characteristics were analyzed: maternal age, gestational age, birth weight, Apgar score, sex of the new born, sickle cell disease, diabetes mellitus (DM), gestational DM, pregnancy-induced hypertension as defined according to the classification of Davey and MacGillivray,⁷ suspected intra-uterine growth restriction, hydramnios (amniotic fluid index 0.24 cm), oligohydramnios (amniotic fluid index <5 cm) and premature rupture of membranes. Very low birth weight (VLBW) is defined as the birth-weight of <1500 grams and moderately low birth-weight (MLBW) as of between 1501 to 2500 grams. The following labor characteristics and complications were assessed: induction of labor, placental abruption, placenta previa, prolapse of the cord, instrumental delivery such as cesarean section (CS), forceps and vacuum. Several birth outcomes were assessed in relation to the gestational age, weight of the newborn, antepartum, intrapartum and postpartum fetal death and Apgar at 1 and 5 minutes. Maternal age was defined as completed years at the time of the delivery and estimation of the gestational age was based on last menstrual period (LMP) and by routine assessment of the age on the basis of ultrasound examination. Elective CS means that a cesarean delivery was carried out before the onset of labor and emergency CS means that the decision of CS was taken after the onset of

labor. Once the patient was admitted, a thorough abdominal, vaginal examination and ultrasonographic examination were carried out in order to assess the maternal and fetal circumstances for a normal delivery. All newborns were examined by a neonatologist on duty to assess the general condition of the neonate and to identify any birth defects or birth injury.

Statistical analysis was performed with the Statistical Package for Social Sciences (SPSS Inc, Chicago, Illinois). To test the statistical significance of the results, the χ^2 test or the Fisher exact test was used as appropriate when the qualitative data was compared. For continuous variables the t-test was used. The data was expressed as mean \pm SD and p value <0.05 was considered as statistically significant.

Results. There were 2517 primigravida deliveries during the study period. The total primigravidas under the age of 19 years were 362, between the age groups 20-34 years there were 1950 and 205 women over 35 years delivered. Women in the age of ≤ 34 years were assigned as group A and >35 years of age were assigned as group B. The average age of group A was 24.79 years with SD \pm 3.51, whereas the mean age of group B was 38.72 years SD \pm 2.78. The comparison of antenatal risk factors between groups indicated that DM and preeclampsia toxemia of pregnancy was much higher in the elderly primigravida than the younger group. Nineteen patients had DM and 13 suffered from preeclamptic toxemia (PET). Patients in group A had twice the number of DM and was statistically significant p value <0.001. Chronic hypertension was more common in mothers of group B 5.9-1.1% (p value <0.001). The mode of delivery of group B was by normal vaginal delivery in 65% as compared to group A of 78%, whereas CS was nearly double of group A (23.8% to 12.6%) and very significant statistically at p value <0.001. The other modes were nearly comparative in both groups and were not statistically significant. The main causes of CS in groups were similar; elective 59% in group A and 56% in group B. Failure to progress was the cause of CS was 18-12% in group B. There were 63 (3.2%) fetal deaths in group A, and in group B the fetal deaths were 11 (5.3%). The mean gestational age for group A was 38.84 weeks (range 21-44) and for group B was 36.06 weeks (17-43 weeks) and it was highly significant at p value <0.001. The mean Apgar score at one minute was 8.22 and 7.67 and at 5 minutes it was 9.52 and 9.18 for groups A and B. For both the scores the p value was significant at <0.001 and <0.004. The mean birth weight of neonates in group A was 3015.35 grams whereas the group B neonates had lesser birth-weight at 2867.11 grams (p value <0.002). The majority of the neonates were in the range of 2000-4000 grams of weight in both the groups. Seventeen neonates (8.2%) in group B were VLBW and in group A there were 64 neonates (3.2%). In group A, MLBW neonates were 245 (12.5%) and in group B were 35 (17.5%).

Discussion. This study demonstrates that elderly primigravidas are at higher risk of complications as compared to women in the younger age group of 20-34 years of age. Eighty-one percent of young mothers had no antepartum complications as compared to 59.9% in the older primigravidas. The positive association of increased maternal age with PET and DM is very well established in this study and is similar to that reported in the literature.⁸⁻¹⁰ It is difficult at times to separate antecedent hypertensive disease from pregnancy induced hypertension, but our patients with chronic hypertension were already on medication prior to conceiving. Tuck et al¹¹ observed an incidence of 12%. Yasin and Beydoun¹² reported an incidence of 16% compared to only 2% in the general population. Compared to these reports the incidence of hypertensive in the elderly primigravida was 5.9%. Chronic hypertension has a serious effect on any age group but in pregnancy it could lead to disastrous effects in the elderly primigravidas. The effect of hypertension on the pregnancy outcome is not clearly understood but hypertension may in itself be able to lead to pre-eclampsia. The incidence of as well as complications due to non-insulin dependent DM is well known. It has been suggested that in pregnancy in women >35 there is an increase in gestational diabetes. Kirz et al¹³ reported a 3-fold increase in the incidence of DM in pregnant women over the age of 35 years when compared with pregnancy in women in the age of 20-25 years. In this study there was a statistically significant difference between the women of <34 and ≥35 years of age 9.2% versus 2.4%. This could explain the hypothesis of Innes et al¹⁴ that insulin resistance precedes the clinical onset of hypertension in pregnancy as in women below the age of 34 years the number of patients with PET was less than that of over 35 years where DM and PET were common. In the recent past, it was noticed and concerns were raised that women with the advancing age were undergoing more CS than their counterparts of younger age groups. Studies which examined maternal age and risk of CS could not explain the increased incidence in pregnant women of high maternal age. The reported incidence of CS in elderly primigravidas is between 39-47%.^{8,15-17} Seoud et al¹⁸ recently reported that in their study 31.3% of elderly primigravidas underwent CS, whereas Abu-Heija et al¹⁹ found in their study, an incidence of 32.4%, which was a 3-fold higher as compared to the younger women. In this analysis, the incidence of CS was 23.8%, which is comparably lower than the reported studies. It has been suggested that there is a change in the trend of indications for CS, which are not really true indications per se, but due to the demands of the departmental policies rather than the need of the patients.²⁰ Such an attitude should be discouraged and delivery by CS should be carried out on the merits and absolute requirement of the safety of the mother and the child. For a long time, researchers have suggested an increased risk of delivery of a

low-birth neonates in older primigravidas.^{1,4,21} Forman et al²² suggested that there is always a risk of low birth-weight in every pregnancy but the risk in the older mothers is quite significant. Reports are also available in the English-language literature with regard to normal birth weight even in the elderly primigravidas.^{13,20,23} The report of Lee et al²⁴ lay to rest the doubt of increased incidence of low birth weight neonates born to women of ≥35 years. Their structured study with adjustments for parity, social, medical and socio-economic factors, revealed that in fact elderly primigravidas delivered low birth-weight neonates. Ziadeh and Yahya²⁵ recently confirmed that the birth weight was significantly lowered in older than younger nullipara (3,210 versus 3,320 grams). In contrast in this study, the difference in birth weights was quite marked. In the primigravidas of ≥35 years the birth weight was 2,867.11 grams compared to 3,015.35 grams in the younger women. Gilbert et al⁸ drew attention to the fact that older nulliparas had significantly lower gestational age at the time of delivery. In their group the difference was 39.1-39.8 weeks. Similar were the findings of Astolfi and Zonta.²⁶ The cause or causes of lower gestational age in the older nullipara are not known. It has been speculated that this could be due to underlying maternal diseases such as chronic hypertension and DM. The assessment of the neonate by Apgar score had the credentials of indicating the state of the newborn and the effectiveness of resuscitation and predicting future neurological deficit. Berkowitz et al²⁷ did not find any significant difference of Apgar score between the newborns of women between the age of <34 years and ≥35 years. In our study there was a significant difference of Apgar score at 1 minute between the newborns of younger and older nullipara but there was insignificant difference of the score at 5 minutes. Thorngren-Jerneck and Herbst²⁸ after studying one million term births found that there is strong influence on low Apgar score by birth-weight and gestational age. They concluded that many factors such as primiparity, maternal age, smoking, epidural analgesia, post-date pregnancy, male infant gender and born at night are all risk factors of Apgar score to be below 7 at 5 minutes.

In conclusion, although retrospective studies such as this one have substantial limitations and carry considerable risk of ascertainment of bias, unequal sample sizes but attempts were made to control the bias. This study confirms that there is considerable risk for the complications in the elderly primigravida. The risks are increased due to maternal diseases such as hypertension and DM among the elderly nullipara, leading to a high incidence of deliveries by CS. There is significantly low gestational age and the neonate carry the risk of low Apgar scores and birth-weight. In spite of the improved health services in the Kingdom of Saudi Arabia, and better prospects of women who

are >35 years of becoming pregnant, women should realistically appraise the risks of pregnancy in later life. We can extend the best obstetrical care however these pregnancies are fraught with complications and hence women should be counseled and their complications managed with utmost care.

References

1. Kane SH. Advanced age and the primigravida. *Obstet Gynecol* 1967; 29: 409-414.
2. Hansen JP. Older maternal age and pregnancy outcome: a review of the literature. *Obstet Gynecol Surv* 1986; 41: 726-742.
3. Kim DS, Dorchester W, Freeman RC. Advanced maternal age; The mature gravida. *Am J Obstet Gynecol* 1985; 152: 7-12.
4. Kessler I, Lancet M, Borenstein R, Steinmetz A. The problem of the older primipara. *Obstet Gynecol* 1980; 56: 165-169.
5. Naeye R. Maternal age, obstetric complication, and the outcome of pregnancy. *Obstet Gynecol* 1983; 61: 210-216.
6. Ventura SJ. Trends in birth to older mothers, 1970-1979. Washington (DC): National Center for Health Statistics Monthly Vital Statistics Report; 1982. Report No. 31 (Suppl).
7. Davey DA, MacGillivray I. The classification and definition of hypertensive disorders of pregnancy. *Am J Obstet Gynecol* 1988; 158: 892-898.
8. Gilbert WM, Nesbitt TS, Danielson B. Childbearing beyond age 40: Pregnancy outcome in 24,032 cases. *Obstet Gynecol* 1999; 93: 9-14.
9. Bianco A, Stone J, Lynch L, Lapinski R, Berkowitz G, Berkowitz RL. Pregnancy outcome at age 40 and older. *Obstet Gynecol* 1996; 87: 917-922.
10. Yuan W, Steffensen FH, Nielsen GL, Moller M, Olsen J, Sorensen HT. A population-based cohort study of birth and neonatal outcome in older primipara. *Int J Gynaecol Obstet* 2000; 68: 113-118.
11. Tuck SM, Yudkin PL, Turnbull AC. Pregnancy outcome in elderly primigravidae with and without a history of infertility. *Br J Obstet Gynecol* 1988; 95: 230-235.
12. Yasin SY, Beydoun SN. Pregnancy outcome at greater than or equal to 20 weeks gestation in women in their 40s. A case-control study. *J Reprod Med* 1988; 33: 209-212.
13. Kirz DS, Dorchester W, Freeman RK. Advanced maternal age: The mature gravida. *Am J Obstet Gynecol* 1985; 152: 7-12.
14. Innes KE, Wimsatt JH, McDuffie R. Relative glucose tolerance and subsequent development of hypertension in pregnancy. *Obstet Gynecol* 2001; 97: 905-910.
15. Edge V, Laros RK. Pregnancy outcome in nulliparous women aged 35 or older. *Am J Obstet Gynecol* 1993; 168: 1881-1885.
16. Spellacy WN, Miller SJ, Winegar A. Pregnancy after 40 years of age. *Obstet Gynecol* 1986; 68: 450-454.
17. Prysak M, Lorenz RP, Kisly A. Pregnancy outcomes in nulliparous women 35 years and older. *Obstet Gynecol* 1995; 85: 65-70.
18. Seoud MA, Nassar AH, Usta IM, Melhem Z, Kazma A, Khalil AM. Impact of advanced maternal age on pregnancy outcome. *Am J Perinatol* 2002; 19: 1-8.
19. Abu-Heija AT, Jallad MF, Abukteish F. Maternal and perinatal outcome of pregnancies after the age of 45 years. *J Obstet Gynaecol Res* 2000; 26: 27-30.
20. Grimes DA, Gross GK. Pregnancy outcomes in black women aged 35 and older. *Obstet Gynecol* 1981; 58: 614-620.
21. Israel SL, Deutschberger J. Relation of the mother's age to obstetric performance. *Obstet Gynecol* 1964; 24: 411-417.
22. Forman MR, Meirik O, Berendes HW. Delayed childbearing in Sweden. *JAMA* 1984; 252: 3135-3139.
23. Barkan SE, Bracken MB. Delayed childbearing: no evidence for increased risk of low birth-weight and pre-term delivery. *Am J Epidemiology* 1987; 125: 101-109.
24. Lee K, Ferguson RM, Corpuz M, Gartner LM. Maternal age and incidence of low birth-weight at term. *Am J Obstet Gynecol* 1988; 158: 84-89.
25. Ziadeh S, Yahya A. Pregnancy outcome at the age 40 and older. *Arch Gynecol Obstet* 2001; 265: 30-33.
26. Astolfi P, Zonta LA. Delayed maternity and risk at delivery. *Pediatr Perinatal Epidemiology* 2002; 16: 67-71.
27. Berkowitz GS, Skovron ML, Lapinski RH, Berkowitz RL. Delayed childbearing and the outcome of pregnancy. *N Engl J Med* 1990; 322: 659-664.
28. Thorngren-Jerneck K, Herbst A. Low 5-minute Apgar score: A population-based register study of 1 million term births. *Obstet Gynecol* 2001; 98: 65-70.