Influence of Maternal Age on Obstetric Outcome in Turkish Women

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OBJECTİVE: The aim of this study was to assess the influence of maternal age on obstetric outcomes in women aged 35 years and older.
STUDY DESIGN: This retrospective and descriptive study was performed by analysis of patient's files at a maternity hospital. The population of the study were 522 women aged ≥ 35 years who gave birth. Chi-square and t-test were used for statistical analysis.
RESULTS: The prevalence of delayed childbearing was 6.5%. The most common obstetric complications were anemia, pregnancy-induced hypertension, and diabetes mellitus. The rates of preterm birth and low birthweight were 18.5%, 15.9%, respectively. The rate of neonatal complications in pregnant women aged 40 years and older was significantly higher than 35-39 years (52% and 43.6%, respectively) ($p < 0.007$). In pregnant women aged ≥ 35 years the rates of preterm delivery, cesarean section and operative delivery were found significantly higher compared with control group of 20-34 years.
CONCLUSION: Obstetric and neonatal complications increased with age.
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Key Words: Delayed childbearing, Maternal age, Prevalence, Pregnancy outcomes, Risk factors.

Pregnancies in women of advanced maternal age have been accepted as high risk pregnancies due to it's maternal and neonatal outcomes.[1-3] In industrial countries, the incidence of advanced age pregnancies increases because of expanded role of women in workplace, pursuit of higher education, economical conditions, delayed marriage, developments in reproductive medicine, modern contraceptive methods and infertility while inadequate family planning methods, low socio-economic status and cultural reasons may influence delayed childbearing in developing countries.[4-6] It is reported that obstetric and perinatal complications such as pregnancy-induced hypertension, gestational diabetes and miscarriage, congenital anomalies, placenta previa, placental abruption, preterm labor, low birthweight and perinatal mortality tend to increase in delayed pregnancy, and that intensive care admissions for newborn babies also increase.[7-12] It is assumed that reduction in fecundity, impaired functional capacity of the uterus due to placental vascular failure and biological aging are responsible for adverse pregnancy outcomes.[13,14] However some studies have reported that maternal and perinatal morbidity and mortality doe not show any significant difference in early and late childbearing.[15-17] The discrepant results are due to differing definitions of older pregnancies (usually 35 or 40 years), differing in samples of hospital or community-based investigations and control of several confounding variables such as maternal weight gain during pregnancy, smoking, economic status, education, parity and obstetric history.

The purpose of this study is to define the risks in labor and the characteristics of women aged 35 years or older who gave birth at a maternity hospital, and to assess the effect of maternal age on obstetric intervention and pregnency outcome.

Material and Methods

A descriptive and retrospective study was performed by analysis of the patient's files and birth records of pregnant women. The population of the study were women aged ≥ 35 years who gave birth at a maternity hospital (Dr. Ekrem Hayri Ustundag Gynecology and Obstetrics Hospital) in year 2004. In same year, 26.1% of of the pregnant women at the Izmir metropolitan area, in the Aegean region of the Turkey gave birth in this hospital. The rate of high-risk pregnancy are same as in the general population. The hospital provides obstetric, gynecologic and family planning services, and covers management of women who are usually living in a low socio-economic status.

Variables were birth place of women, health insurance, marital status, education, occupation, obstetric history, symptoms in the present pregnancy, habits, type of labour, obstetric and neonatal complications, birth weight, gestational age of newborn, hematocrit values of mother during labor, and the 1st and 5th minutes Apgar scores. The older age group ≥ 35 years and control subjects aged 20-34 years were compared with some obstetric outcomes. Data were collected from the

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hospital records, and were analyzed using the SPSS 11.0 software. Chi-square, Fisher exact test and t-test were used for statistical analysis. Differences were considered significant at $p<0.05$ level.

Results

Five hundred twenty-two out of 8064 (6.5%) women who gave birth at maternity hospital in year 2004 were 35 years old and older. All obstetric records related with these women were evaluated. Mean age of older women was 37.1 years (range 35 to 46, standard deviation (SD): ±.2). Socio-economical characteristics of older pregnant women are shown in Table 1.

Table 1. Socio-demographic characteristics of older pregnant women

Characteristics	Number	Percentage
Age group (years)		
35–39	447	85.6
≥ 40	75	14.4
Place of birth		
Izmir	87	16.7
East-South East	232	44.4
Other	203	38.9
Marital status		
Official married	474	90.8
Cohabitation	45	8.6
Spouse dead-single	3	0.6
Education		
Never attended school	153	29.3
Primary school graduate	285	54.6
≥ High school graduate	84	16.1
Occupation		
Housewife	504	96.6
Worker-civil servant - retired	18	3.4
Health insurance		
Yes	200	38.3
None	322	61.7
Total	522	100

The prevalence of late childbearing was 6.5%. 85.6% of the women were at 35-39 years; 44.4% of women were born at East and South East Anatolia in Turkey; 34.7% of the women had no health insurance, and 96.6% were unemployed (housewives). 29.3% of the women never went to school and 54.6% were elementary school graduates. Mean gravidity and parity were 4.3 and 2.6, respectively. 37.5% of the women had more than four gravidity. Several problems were observed in 44.8% of the women during delivery.

7.1% of the pregnant women had hemorrhages during pregnancy, while 17.4% had some symptoms such as vomiting, constipation and dysuria. 19.5% of women smoked cigarettes during pregnancy, 35.6% had anemia (hematocrit levels ≤ 33%). 47.3% of women gave birth by cesarean section. The obstetric complications were preterm delivery, hypertension, diabetes, oligo-polyhydramnios, placental anomalies (placental abruption, placenta previa and prolapse of the umbilical cord), premature rupture of membranes (PROM), and malpresentation (Table 2).

Table 2. Some findings during pregnancy and delivery in older women

Characteristics	Number	%
Antepartum hemorrhage	37	7.1
Clinical symptoms	91	17.4
Smoking during pregnancy1	02	19.5
Anemia	186	35.6
Cesarean section	247	47.3
Premature labor	91	17.4
Pregnancy-induced hypertension	35	6.7
Diabetes mellitus	27	5.2
Oligo-polyhydramnios	12	2.3
Placental complications	15	2.9
Premature rupture of membranes	18	3.4
Malpresentation	20	3.8
Total (≥ 35 years)	522	

Six twin babies born from older pregnants, 20 (3.8%) of births were stillbirth. The rates of preterm delivery (gestational age <37 completed weeks), low birth weight (less than 2500 g) and macrosomia (> 4000 g) were 18.5%, 15.9%, and 6.3%, respectively (n=508). 25.6% of babies had some neonatal complications after birth.

Fetal distress during labour developed in thirty-one newborns (6.1%). The cause of fetal distress in seven cases was umbilical cord prolapse. One newborn had Down syndrome and six newborns had cardiac abnormalities. Six newborns had birth traumas such as clavicula fracture, brachial plexus palsy and dislocated shoulder. 44 (8.7%) of babies had meconium aspiration and PROM.

To determine the effect of the mother's age on complications related with labor and newborns, older pregnant women were analyzed in two groups. The rate of neonatal complications in pregnant women aged 40 years and older was significantly higher compared with age group 35-39 years (52% and 43.6%, respectively) ($p < 0.007$). The rate of delivery complications was higher in pregnant women aged ≥ 40 years, but the difference was not significant ($p > 0.1$). Furthermore, average birth weight, 1st and 5th minute Apgar scores and maternal hematocrit values in pregnant women aged ≥ 40 years were lower compared with women 35-39 years, however the difference was not statically significant.

We did not find any records related with prenatal care in the files of older pregnant who gave birth at maternity hospital. However, some obstetric and neonatal data obtained from hospital records related with pregnant women 20-34 years and ≥ 35 years were compared in Table 3. In pregnant women ≥ 35 years of age the rates of preterm delivery, stillbirth, cesarean section, operative delivery and multiple pregnancies were

significantly higher compared with age group of 20-34 years.

Table 3. Comparison of some characteristics between older and younger women.

Characteristics	≥ 35 years (n = 522)		20-34 years (n = 6597)		p*
	Number	%	Number	%	
Preterm delivery	86	16.5	92	1.4	0.000
Stillbirth	20	3.8	86	1.3	0.000
Cesarean delivery	247	47.3	2410	36.7	0.001
Operative delivery	5†	1.0	218	3.3	0.003
Multiple pregnancy	6†	1.2	20	0.3	0.002

*χ^2.
†Fisher exact test.

Discussion

In this retrospective study the prevalence of late childbearing was 6.5%, and 85% of pregnant women were in the 35-39 age group. In a study carried out by Ozalp et al.[18] the proportion of pregnant women ≥ 35 years old was 11.6%. The causes of this lower rate in our study may be early marriage, satisfaction with the number of children, delivery outside the hospital or contraceptive interventions. In many industrial countries late childbearing prevalence is over than 10%.[19-21] While communities factors such as working of women, delayed marriage age, high educational level and effective contraception may effect the occurrence of delayed childbearing in developed countries, other factors such as low socio-economical level, inadequate family planning and cultural reasons have priority in advanced age pregnancies in developing countries.[5,6] According to the data obtained from the Turkish Population and Health Research Survey (2003)[22] the mean woman age for first birth is 22 years, and the rate of nulliparous women at 35-39 years was 8.3%. Furthermore 20% of adult women aged 20-34 years and 28% of older pregnant women gave birth at home.

Many studies regarding pregnancy outcome in older women have reported conflicting results. Some studies have found no difference in obstetric outcomes between younger and older women, excluding miscarriage, chromosome abnormalities, diabetes and hypertension.[1,3,5,23,24] However, some authors have reported that biological aging increased the maternal and neonatal morbidity and mortality due to progressive vascular endothelial damage that occurs with aging.[1,14] In the present study nearly half of the older pregnant women had obstetric adverse outcomes, and one-forth had neonatal complications. The rates of preterm delivery and low birth weight were consistent with some studies.[5,9] Suzanne et al.[2] found the rates of preterm delivery and low birth weight among pregnant women ≥ 35 years as 9.2% and 7.6%, respectively. Ziadeh et al.[25] reported that the rates of preterm, low birth weight and small gestational age among pregnant women aged 40 years and older were similar to the rates found in younger women. We could not find any data related with antenatal care of the pregnant women in files of the patients (including adolescent and adult women). Therefore, we also did not have any information about age at marriage, contraceptive methods, intended or unintended pregnancies, weight gain and nutritional status during pregnancy and development of fetus. This condition clearly shows that the ordinary working system between the primary and secondary health care centers in Turkey are lacking. The record systems in maternity hospitals are also inadequate in general. Nevertheless, antenatal care of mothers is free in primary health facilities in Turkey. According to Turkish Demographic and Health Survey-2003[22] nearly one-fifth of the mothers failed to receive antenatal care (in Aegean region 12.2%). 63.7 percent of the mothers had more than four antenatal visits by trained health personnels (three-quarters of them received from doctors) during pregnancy. In Turkey younger women, women living in urban areas, women having low parity, women with at least primary school education, and women living in the regions other than the East Anatolia are more likely to have received antenatal care compared to other women. Overall, 78 percent of all births in Turkey (89.4% in Aegean) occured at a health facility (public or private sector). The majority of older pregnant women had low socio-economic status and low education, had not occupation, and nearly half of the women had immigrated from Eastern Anatolia and all of them had not any health insurance. 35% of the pregnant women had anemia and 19.5% smoked cigarettes during their pregnancies. We assume that low socio-economic status, absence of health insurance and lack of adequate antenatal care have an impact on obstetric and neonatal complications.

The rates of cesarean section and operative delivery in this study were significantly higher in women of advanced maternal age. Nevertheless these rates are similar to other reports.[7,9] The indications of cesarean delivery in older women are prolonged labor, fetal distress, malpresentation, placenta previa and multiple pregnancies. However, the most common indication for cesarean delivery in this older patient population is iatrogenic intervention (elective) secondary to both of physician and patient attitudes toward pregnancy. In the present study we determined that obstetric outcomes in women aged 35-39 years were not significantly different from outcomes observed in women 40-44 years; however neonatal complications were higher in 35-39 years of ages. Cleary-Goldman et al.[15] found that the rates of both obstetric and neonatal adverse outcomes were higher among women aged 40 years and older compared with women 35-39 years. Several studies have been reported that obstetric and perinatal complications in older nulliparous women were higher compared with older multiparous women.[1,7,25] It is assumed that the high rate complications in delayed childbearing may occur related with placental

failure due to advanced age. Pregnancy-induced hypertension and gestational diabetes which increase in older pregnant women also have significant adverse effect on the uterine functions. In the present study the rates of hypertension and diabetes were 6.7% and 5.2% respectively, among older pregnant women. We had not any comparison among older and younger pregnant women because of there was no any records about their ratios of hypertension and diabetes of younger pregnants. However, these rates are similar with previous studies.[7,15,23,25]

The older women aged 35 years and over and younger controls aged 20-34 yaers could not matched for confounding variables and also socio-demographic characteristics could not compared because lacking of patient's files. This was an important limitation of this study. However, the preterm and obstetric deliveries and stillbirth rate were significantly higher in older women, with consistent several reports.[2,9,11,15]

In spite of the reproductive technology, fertility and fecundity among older pregnant women are lower than younger pregnant women,and chromosome abnormalities, congenital anomalies, abortion and stillbirth increase with increased age. In the present study the rates of congenital abnormality and stillbirth among older pregnant women were significantly higher compared with younger control, however results are consistent with previous studies.[2,11,15]

Conclusions

Our study shows that the prevalence of delayed childbearing was high, and obstetric and neonatal complications increased with age. Older maternal age is considered to be at increased risk for complications of pregnancy and delivery. Therefore, it is needed to perform regular antenatal visits, to record healthcare records properly and completely, to realize labor at optimal conditions, to develop cooperation between healthcare organizations and to provide effective family planning services for maternal and child health.

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