

Impact of Advanced Maternal Age on Perinatal Outcomes

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OBJECTIVES: To investigate the impact of advanced maternal age on perinatal outcomes.

STUDY DESIGN: In this retrospective study, pregnancy records of 616 singletons were reviewed. Subjects were divided into 3 age groups: Group 1; 20-29 years (n=386), Group 2; 30-39 years (n=171) and Group 3; 40 years and older (n=59). The groups were compared for maternal datas such as parity, pre and post-pregnancy body mass index and for obstetrics complications.

RESULTS: Pre and post-pregnancy body mass index, gestational diabetes mellitus, delivery <37 weeks, prevalence of cesarean section and proportion of babies admitted to neonatal intensive care unite were significantly higher in women above 40 years ($p<0.05$). Pregnants aged 40 and older had low birth weight babies than others (3270.8 ± 612.06 gr, $p=0.037$).

CONCLUSIONS: Increasing maternal age showed a significant increase in gestational diabetes mellitus and excess rate of cesarean section. Despite the increased risk of complications in women above 40 years they should have healthy babies by counselling for care in a specialised centre.

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Key Words: Advanced maternal age, Perinatal outcomes

Introduction

Many women today are delaying childbearing until the fourth or fifth decade in life and it has become a common phenomenon in the developed world as a result of social, educational and economic factors.¹ Women's decisions about the timing of child-bearing are influenced by many factors. In a qualitative study involving women aged 20-48 years, independence, motivation to have a family, declining fertility, chronic health problems and stable relationships were identified as personal influences on decisions about the timing of child-bearing.²

Traditionally, pregnancies in women of advanced maternal age have been regarded as high-risk pregnancies. Once the well documented increased risks of chromosomal abnormalities and spontaneous abortion are taken into account, it is unclear whether these pregnancies are truly at high-risk.³

This article examines the relationship between a woman's childbearing history and her later health and mortality, with primary focus on whether the association between them is due to early and later. This study aimed to determine the association between maternal ages and incidence of the maternal and fetal complications. Increasing maternal age and also abnormal

mal weight gain, obesity, gestational diabetes mellitus, chronic hypertension and pregnancy-induced hypertension and preterm labour have been associated with the complications. For these reason women who desired to become pregnant after age 35 often were discouraged from considering pregnancy because of the increase in both maternal and perinatal morbidity and mortality.^{4,5}

Material and Methods

We conducted a retrospective study in Fatih University Medical Faculty department of obstetrics and gynecology between 2003 and 2007. Singleton pregnant (n=616) who were followed up and delivered at our institution were reviewed. Subjects were divided into 3 age groups: Group 1; 20-29 years (n=386), Group 2; 30-39 years (n=171) and Group 3; 40 years and older (n=59). The control group comprised of 386 women who delivered between 20 and 29 years.

The groups were compared for maternal datas such as parity, pre-pregnancy and post-pregnancy body mass index. (shown in table I) and for obstetrics complications such as preeclampsia, gestational diabetes mellitus, hypertension, macrosomia (>4000 g). Also the groups were compared for birth trauma frequency of admission to NICU, induction of labor, operative vaginal delivery, gestation at delivery, cesarean delivery, birthweight. Pregnancy and neonatal outcomes were shown in table 2.

Data analysis was performed by using SPSS for Windows, version 11.5. Shapiro Wilk test was used in order to detect whether the continuous variables were normally distributed or not. Descriptive statistics were shown as mean \pm standard deviation for continuous data. Groups were compared using

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One-Way ANOVA post hoc Tukey test when the continuous variables were normally distributed; otherwise, groups were compared using Kruskal Wallis variance analysis. When the p-value from the Kruskal-Wallis test statistics are statistically significant, to know which groups differ from which others Kruskal Wallis multiple comparison test were applied. Categorical comparisons were evaluated by using Chi-Square or Fisher's Exact test, where applicable. A p value less than 0.05 was considered statistically significant

Table 1: Maternal data

	Group 1 20-29 years (n=383)	Group 2 30-39 years (n=174)	Group 3 40 and older (n=59)	P
Gravidity	1.6±0.87 (1-7)	2.7±1.40 (1-9)†	3.9±1.69 (1-8)†,‡	<0.001
Parity	0.5±0.78 (0-5)	1.4±1.06 (0-5)†	2.3±1.39 (0-5)†,‡	<0.001
Pre-pregnancy BMI (kg/m ²)	23.3±4.11	24.7±4.18†	25.0±3.31†	<0.001
Post-pregnancy BMI (kg/m ²)	29.0±4.38	30.3±4.18†	30.2±3.41	0.006
Gestational weight gain	15.0±4.40	14.6±4.18	13.2±3.82†,‡	0.002
Nullipara (%)	212 (55.4%)	25 (14.4%)†	3 (5.1%)†	<0.001

† The difference between Group 1 was statistically significant (p<0.05)

‡ The difference between Group 2 was statistically significant (p<0.01)

Table 2: Pregnancy and neonatal outcomes

	Group 1 20-29 years (n=383)	Group 2 30-39 years (n=174)	Group 3 40 and older (n=59)	P
Preeclampsia	8 (2.1%)	2 (1.1%)	1 (1.7%)	0.722
Gestational diabetes mellitus	10 (2.6%)	17 (9.9%)†	7 (13.0%)†	<0.001
Hypertension	20 (5.2%)	16 (9.2%)	3 (5.1%)	0.187
Macrosomia (>4000 g)	53 (13.9%)	39 (22.4%)†	6 (10.2%)‡	0.017
Delivery <37 weeks	12 (3.1%)	8 (4.6%)	10 (16.9%)†,‡	<0.001
Birth trauma	31 (8.1%)	10 (5.7%)	1 (1.7%)	0.151
-Caput succadeum	26 (7.2%)	9 (5.4%)	-	0.093
-Cephal hematoma	5 (1.4%)	-	1 (1.7%)	0.129
-Fracture of clavícula	3 (0.8%)	2 (1.2%)	-	0.546
Frequency of admission to NICU	5 (1.3%)	4 (2.3%)	7 (11.9%)†,‡	<0.001
Operative vaginal delivery	10 (2.6%)	6 (3.4%)	-	0.173
-Forceps	3 (0.8%)	4 (2.3%)	-	0.192
-Vaccumn	7 (1.8%)	2 (1.1%)	-	0.365
Gestation at delivery (weeks)	39.4±1.42	38.8±1.66†	37.6±2.02†,‡	<0.001
Cesarean delivery	166 (43.5%)	80 (46.0%)	46 (79.3%)†,‡	<0.001
Birthweight (g)	3425.5±426.09	3477.1±515.37	3270.8±612.06‡	0.037

† The difference between Group 1 was statistically significant (p<0.05)

‡ The difference between Group 2 was statistically significant (p<0.05)

Results

The records of 616 pregnant patients who had been followed up and gave birth in the Obstetrics and Gynecology Department of Fatih University Hospital were reviewed. We

identify 59 pregnant aged 40 and above 40 years and 171 pregnant between 30-39 years. The control group comprised of 386 women who delivered between 20 and 29 years.

Pre-pregnancy and post-pregnancy body mass index were statistically higher in group 3 (p<0.001 and p=0.006 respectively). Gestational diabetes mellitus, delivery <37 weeks, prevalence of cesarean section and proportion of babies admitted to neonatal intensive care unite were significantly higher in women above 40 years (p<0.001). Pregnants aged 40 and older had low birth weight babies than others (3270.8±612.06 gr, p=0.037). Pregnancy and neonatal outcomes were shown in table II. Only one pregnant gave a birth with Down Syndrome in group 3 that was diagnosed in first trimester and was refused by the patient for evacuation.

Discussion

The impact that the decision to delay childbearing has on maternal and perinatal outcomes becomes increasingly relevant as more and more women postpone having children until they are over the age of 35.⁶ Traditionally, pregnancies in women of advanced maternal age have been regarded as high-risk pregnancies. Once the well documented increased risks of chromosomal abnormalities and spontaneous abortion are taken into account, it is unclear whether these pregnancies are truly at high-risk.³

Obstetric outcome in relation to age was studied in mothers categorized as follows: 20-24 years, 25-29 years, 30-34 years, 35-39 years, and 40 or more years. With advancing maternal age there was progressively increasing weight, decreasing height incidence of nulliparity and smokers and differences in the mean gestational age and birth weight which were inversely correlated with advancing maternal age.

Age was positively correlated with the prevalence of antepartum haemorrhage, preeclampsia, gestational diabetes mellitus, preterm birth at less than 32 weeks of gestation, caesarean section, macro-somic and low birth weight and infants with low Apgar score

at the first 5 minutes and admission to the neonatal intensive care unit.⁷

In a study Treacy et al analyzed the obstetrics outcomes of 10737 consecutive nulliparas in spontaneous term labour for 5 years. In a context of uniform labour management indices of dystocia increased progressively with maternal age. Total caesarean delivery increased significantly with maternal age.⁸ In another study Marpeau et al⁹ showed that women aged 40 and over were associated with high rates of cesarean sections and operative vaginal deliveries. Similar to these studies in our study cesarean section was found statistically higher in women above 40 years.

Some studies have found no difference in outcomes between younger and older women.^{10,11} In an other study they had not demonstrated increased risk of low birth weight or preterm birth in primiparous women of 35 years and more compared with women 20-29 years of age.¹²

Age is an independent risk factor in pregnancy. Complications in pregnancy and during delivery increase with maternal age. Some of these complications can be managed successfully.⁷ To conclude, our study showed that increasing maternal age showed a significant increase in gestational diabetes mellitus and excess rate of cesarean section. Despite the increased risk of complications in women above 40 years they should have healthy babies by counselling for care in a specialised centre.

İlerlemiş Maternal Yaşın Perinatal Sonuçlara Etkisi

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İlerlemiş maternal yaşın perinatal sonuçlara etkisini araştırmak.

Bu retrospektif çalışmada 616 gebe değerlendirildi. Hastalar 3 gruba ayrıldı. Grup 1; 20- 29 yaş arası (386 gebe), grup 2; 30-39 yaş arası (171 gebe); grup 3; 40 yaş ve üzeri (59 gebe). Gruplar, parite gebelik öncesi ve sonrası vücut kitle indeksi ve obstetrik komplikasyonlar açısından karşılaştırıldı.

Gebelik öncesi ve sonrası vücut kitle indeksi, gestasyonel diabetes mellitus, 37.ci gebelik haftasından önce doğum sıklığı, sezaryen ile doğum ve yenidoğan yoğun bakım ünitesine kabul oranı 40 yaş ve üzeri gebelerde istatistiksel olarak yüksek bulundu ($p<0.05$). Ortalama bebek doğum ağırlığı 40 yaş ve

üzeri gebelerde daha düşük idi (3270.8 ± 612.06 gr, $p=0.037$). Çalışmamızda, ilerlemiş yaşlardaki gebeliklerde gestasyonel diabetes mellitus, sezaryen ile doğum hızı daha yüksek bulunmuştur. Ancak ilerlemiş anne yaşına rağmen dikkatli bir gebelik takibi ile ilerlemiş yaşlarda da sağlıklı bebek sahip olunabilmektedir.

Anahtar Kelimeler: İlerlemiş maternal yaş, Perinatal sonuçlar

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