

## Pregnancy outcome in nulliparous women at age >35 in comparison to younger nulliparous women

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**SUMMARY: Pregnancy outcome in nulliparous women at age > 35 in comparison to younger nulliparous women.**

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*Objective: in this retrospective study we investigate the pregnancy outcome in nulliparous women aged >35 years in comparison with nulliparous women aged <35 years.*

*Study design: we studied the Birth Registry of the Delivery Room in our department of Obstetrics and Gynecology in "Tzaneio" Hospital of Piraeus. The study included 1880 nulliparous women, who delivered single infants (>24 weeks of gestation or infants heavier than 500 gr) between January 1993 and December 2002. In the study we collected information about age and the nationality of the mother, gestational age, mode of delivery, the Gestational Diabetes Mellitus and Hypertension, birth weight, admission to NICU, Apgar Score, preterm labor and perinatal mortality.*

*Results: in the total of 6783 women we registered 1880 nulliparous women. There were 99 nulliparous > 35 aged years and 1781 nulliparous aged < 35 years. In the comparison of groups, we found statistical significant differences with respect to the rates of caesarean section, perinatal mortality and admission to NICU.*

*Conclusions: As women aged > 35 years, have fewer reproductive opportunities, "valuable pregnancies" increase significantly. The advanced maternal age should be considered as a risk indicator rather than a risk factor. So the high rate of interventions may result from traditionally held views by physicians that late maternal age poses significant risk.*

**RIASSUNTO: Gravidanza e parto in nullipare di età > 35 anni a confronto con nullipare più giovani.**

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*Abbiamo condotto uno studio retrospettivo sulla gravidanza e l'outcome materno-fetale in nullipare di età >35 anni (gruppo A) e li abbiamo confrontati con nullipare di <35 anni (gruppo B).*

*Nella divisione Ostetrica e Ginecologica dell'Ospedale Generale "Tzaneio" del Pireo (Grecia) abbiamo reclutato 1880 nullipare che hanno partorito a >24 settimane di gravidanza un feto di peso >500 g nel periodo tra Gennaio 1993 e Dicembre 2002. Sono stati rilevati i dati riferentesi a: età e nazionalità della partoriente, settimana gestazionale al parto, modalità del parto, presenza di diabete gestazionale ed ipertensione, Apgar score e peso del neonato, ammissione ad Unità di Cura Intensiva Neonatale (UCIN), parto pretermine e mortalità perinatale.*

*Tra 6783 partorienti sono state individuate 1880 nullipare, di cui 99 di età >35 anni (gruppo A) e 1781 di età < 35 anni (gruppo B). Nel confronto dei due gruppi sono state trovate differenze statistiche significative riguardo al taglio cesareo, alla mortalità perinatale e all'ammissione all'UCIN.*

*Le donne di età >35 anni hanno meno possibilità riproduttive, le "gravidanze preziose" aumentano in modo significativo. L'età materna avanzata dovrebbe essere considerata come un indice di rischio piuttosto che un fattore di rischio. L'alto tasso di interventi ostetrici può derivare dall'ottica tradizionale che l'età materna avanzata costituisce un rischio significativo.*

KEY WORDS: Pregnancy - Perinatal outcome - Women > 35 years.  
Gravidanza - Esito perinatale - >35 anni.

### Introduction

The major social and economic changes that occurred in the last four decades, gave women the opportunity of being involved in prolonged training and

professional employment. This had an unquestionable impact on women's relationship with motherhood. As women pursue educational and career goals, they are more likely to delay childbearing. This delay in childbearing is more common in women from higher social-economic stratum. The availability of safe, elective contraception and the legalization of termination of pregnancy have enabled women to have greater control over their reproductive lives. The prolonga-

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tion of educational activities (57% of boys and 63% of girls continue their education after high school) (1) and the difficulties in finding a proper job as well as a proper husband, became essential issues in women's life. In 1980, men's middle age during the first marriage was 28.7 years and women's 24.7 years. In 2002 were respectively 30.3 and 26.5 years (1). The middle age of nulliparous women in USA raised 3.5 years from 1970 to 2000 (21.4 years and 24.9 years respectively) (2). Data from Europe confirm this tendency, although differences exist between the several countries (in Slovakia the middle age raised 1.6 years while in Island it raised 4.2 years) (3). The aim of this study was to analyze the perinatal outcome of pregnancy in nulliparous women aged at least 35 years, comparing to nulliparous women younger than 35 years old which gave birth in our department from January 1993 until December 2002.

## Material and methods

We studied the Birth Registries of the Delivery Room in the Obstetrics and Gynecology department of "Tzaneio" General Hospital of Piraeus between January 1993 and December 2002.

The study included 1880 nulliparous women, who delivered single infants (> 24 weeks of gestation or infants heavier than 500 g), and we separated them to nulliparous aged > 35years (group A) and nulliparous aged < 35years (group B).

In the study we collected information about age and the nationality of the mother, the gestational age [(in days) using the last menstrual period as basis for the calculation], the mode of delivery (caesarean section, vaginal birth, vacuum extractor delivery), Gestational Diabetes Mellitus and Hypertension, birth weight, admission to NICU, Apgar Score, perinatal mortality and preterm labor.

Statistical analysis was performed by  $\chi^2$  analysis and the Fisher's exact t-test when needed. Significance was determined by  $p < 0.05$  and results were expressed by odds ratio with confidence limits of 95%.

## Results

During the years 1993-2002, 6783 women were registered that delivered single infants. 1880 pregnant women delivered their first child over this period. There were 99 in group A (1,46% of all deliveries) and 1781 in group B (26,2% of all deliveries). When these two groups were compared there were significant differences with respect to rates of caesarean section, admission to NICU and perinatal mortality (Table).

We mark that the rate of the caesarean section in the group of older nulliparous women was higher than that of younger nulliparous women as well as the frequency of admission to NICU.

Also we see that the perinatal mortality was higher among the group A.

On the other hand there were not remarkable differences in the frequency of preterm labor, the 5 minutes Apgar Score < 3 and < 6, the birth weight and the incidence of Gestational Diabetes Mellitus and Hypertension.

## Discussion

Traditionally pregnant women older than 35 years are considered of advanced age (4,5) and at increased risk for complications during pregnancy and labour. The terms commonly used to describe older pregnant women are "elderly" or "premenopausal" gravida (6). Other newer terms include "older", "mature", "advanced" and "very advanced" maternal age. The earliest definition in the literature is that of "elderly primigravida", specifying an age of 35 years and over (7). The Council of the International Federation of Obstetricians and Gynecologists (FIGO) first coined this in 1958, in an attempt to highlight a perceived higher obstetric risk factor. There are obvious limitations with the continued use of this definition, as maternity at the twilight of a woman's reproductive life (or beyond) consists the newer aspect. With the advent of assisted conception techniques, including in-vitro fertilization (IVF), gamete intrafallopian tubes transfer (GIFT) and in particular ovum donation, pregnancies can now be achieved in women of any age.

During 2001, in the USA labors of women aged 35-39 years, 40-44 years, and 45-49 years, increased-compared with 1990- by 30, 47, and 190% for each age group, respectively (8). In our study, such an increase cannot be observed in our obstetric population. It can be observed only in the subgroup of Greek parturients, without though having any general impact, as through the decade of the study immigrant parturients became the majority of our obstetric population. Regarding the gestational age, we could not find any statistically significant differences between the studied groups, for the prevalence of preterm labor (<37 weeks). The incidence of preterm labor is a point of conflict among older studies in the literature (9, 10). Although the most significant risk factor for unexplained stillbirth is advanced maternal age, along with pre-pregnancy obesity and low socioeconomic status (11), we were not able to detect any correlation in our study.

The incidence of cesarean delivery was significantly higher in nulliparous women aged >35 years compared

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TABLE

Variable	Group A	Group B	Odds ratio	95% CI	P*
Age	37,41 years	24,82 years			
Immigrants	28,29%	51,99%			
Gestational age	262,5 days	272,86 days	1,1	1,04-1,12	0,08 (ns)
Vaginal birth	49,5%	74,06%	1,8	1,6-1,2	10-5
Instrumental delivery	4,04%	2,41%	1,1	1,0-1,3	0,0002
Caesarean section	46,46%	23,53%	1,98	1,7-2,3	10-5
Gestational diabetes	5,8%	4,4%	1,2	1,1-1,4	0,11 (ns)
Hypertensive disorder	2,6%	1,8%	1,5	1,2-1,7	0,07 (ns)
Birth weight	2842,6 gr	3099,85 gr	1,1	1,0-1,2	0,07 (ns)
Birth weight >4000 gr	3,03%	4,01%	1,4	1,0-1,3	0,06 (ns)
Birth weight <2500gr	8,1%	5,26%	1,8	1,2-1,7	0,07 (ns)
NICU admission	4,04%	1,4%	2,1	1,9-2,4	0,0002
5' Apgar score <3	1,01%	0,39%	1,9	1,5-2,1	0,06 (ns)
5' Apgar score <6	3,03%	0,62%	1,8	1,5-1,9	0,07 (ns)
Perinatal mortality	1,01%	0,28%	2,1	1,7-2,4	0,0003
Preterm labor	10,1%	6,51%	1,6	1,3-1,8	0,06 (ns)

p < 0,05= statistical significant

ns = non statistical significant

Group A = Nulliparae >35 yo (n=99) group B = Nulliparae <35 yo (n=1781)

to nulliparous women aged < 35 years. Many reports (12-14) confirm this observation, and very few (15) report a low incidence of cesarean delivery. The increased incidence of cesarean delivery in nulliparous women aged, > 35 years is thought to be due to selective labor induction in this age group (16) and the "urge" of physicians in diagnoses such as dystocia and intrapartum fetal distress. Nevertheless advanced maternal age is regarded as an independent risk factor for caesarean section (along with induction of labor and gestational age > 280 days) in nulliparous women (17, 18).

We did not find statistically significant differences regarding the incidence of Gestational Diabetes Mellitus and Hypertension although the literature is consistent in reporting a higher incidence of hypertension and diabetes (19, 20).

We did not find differences regarding the incidence of infants with birth weight > 4000 g, but we found

an increase in the incidence of infants with birth weight < 2500 g, among nulliparous women aged > 35 years, although not statistically significant. The poor placental function in these women is thought to be the pathogenetic mechanism for such an increase (21).

Perinatal mortality was statistically significant when we compared all women aged > 35 years with younger women although these data have a conflict with other studies (20).

NICU admission was higher in nulliparous women aged > 35 years, than that of nulliparous women aged < 35 years.

Older mothers tend to be better educated, have higher incomes, seek prenatal care early, and work outside the home. Educational level, generally higher in childbearing women > 35 years, has been found to be a significant predictor of health-promoting lifestyle across a variety of study populations, and may help to

explain this profile. Later childbearing women have been described as avid information seekers, expressing a greater readiness for pregnancy than younger mothers do. As women more than 35 years old have fewer reproductive opportunities, “valuable pregnancies” increase significantly. Although advanced mater-

nal age should be considered as a risk indicator rather than a risk factor, the high rate of interventions may result from traditionally held views by physicians that late maternal age poses significant risks, and the dominant factor in the decision for intervention is the physician and maternal anxiety.

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