Pregnancy and delivery in a group of Israeli teenagers. A case-controlled study

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Summary

Objective: To assess characteristics of an Istraeli group of nulliparous teenagers and to compare selected variables of their course and outcome of pregnancy with controls.

Methods: Hospital records of 46 consecutive nulliparous teenagers younger than 17.5 years who delivered during a ten-year period and 84 matched adult controls were reviewed.

Results: The majority of the teenagers were older than 15 years, married and most were born in Israel or in the former Soviet Union with no obvious socio-economical deprivation. The rate of prenatal follow-up, hypertensive disorders, type of analgesia during labor and mode of delivery were similar in teenagers and controls. A statistically non-significant higher rate of anemia (hemoglobin, 10 gr %), preterm delivery and low birth weight were observed in teenagers. Only the rate of induction of labor and the rate of a hemoglobin level higher than 12 gr % were significantly lower in teenagers.

Conclusions: The course and outcome of pregnancy were in most respects similar in this group of nulliparous teenagers and matched adult controls.

Key words: Teenage pregnancy; Teenage delivery; Complications.

Introduction

The rate of teenage deliveries varies in different countries, and ranges between a low of 0.9% in Denmark and Holland to 13% in the US and Germany [1]. In the US it is estimated that about one million teenagers conceive each year [2]. In Israel 1,834 parturients under the age of 19 delivered in 1993, representing 2.3% of the total number of deliveries [3]. Teenagers are considered to have a high rate of complications during pregnancy and delivery as well as considerable socio-economic problems [2]. But this issue has hitherto received little attention in Israel.

The purpose of the present study was to assess characteristics of an Israeli group of nulliparous teenagers and to compare the rates of selected pregnancy and delivery variables with older controls.

Materials and Methods

The hospital records of 46 consecutive nulliparous teenagers younger than 17.5 years who delivered during the 10-year period from January 1986 to December 1995 were reviewed. The upper age limit was chosen because it represents the draft age for obligatory military service.

For each teenage case two adult parturient controls were chosen: the closest who delivered prior and the closest who delivered after the case. In addition the controls had to be nulliparous, older than the case by at least 5 years but not older than 26 and with a singleton pregnancy. Of the 92 predetermined parturients, the records of 84 were available for review and they constitute the adult controls.

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Teenagers and controls were considered to have had adequate follow-up during pregnancy if they underwent the routine laboratory tests i.e., blood count, blood group typing, VDRL blood test, triple blood test, urinalysis, sonographic screening between 20 and 22 weeks of gestation and if they came for at least three prenatal care clinic visits.

The hemoglobin during the last prenatal visit in the third trimester was recorded and anemia was defined as hemoglobin less than 10 gr % during this visit. Hypertensive disorders included pregnancy-induced hypertension and preeclampsia.

Differences between cases and controls were calculated by chi square and Fisher's exact test.

Results

Characteristics of the nulliparous teenagers are presented in Table 1. The median age was 16.8 years. Only 3 teenagers were less than 16 years old and the youngest was 15 years and nine months old. Almost half of the parents originated from the former Soviet-Union. Half the teenagers were born in Israel and most of the remaining were born in the former Soviet-Union. The majority were married at the time of hospital admission but their marital status during conception is not known. Almost half were students or housewives. The teenagers were not questioned about socio-economic status and information regarding occupation was missing in more than half of the medical records. Socio-economic hardship or substance abuse was not recorded in the nurses' notes and was not apparent in any case.

The comparison between teenagers and controls is presented in Table 2. No significant differences were found with regard to the rate of follow-up during pregnancy, the rate of hypertensive disorders, distribution of type of analgesia during delivery and the mode of delivery. The rate of

Table 1. — *Selected characteristics of nulliparous teenagers.*

Characteristics	No.	%
Total	46	100.0
Age		
Average	16.8	—
Range	15.8-17.5	—
Distribution		
<16	3	6.5
16-17.5	43	93.5
Origin of parents		
Soviet Union	21	45.7
Africa	10	21.7
Asia	12	26.1
Europe	3	6.5
Country of birth		
Israel	23	50.0
Soviet Union	18	39.1
Other	5	10.9
Marital status		
Married	38	82.6
Single	8	17.4
Occupation		
Student	11	23.9
Housewife	9	19.5
Other	2	4.5
Unknown	24	52.1

teenagers who delivered prior to the 37th week of gestation and who had newborns weighing less than 2,500 grams was higher than in controls (13.1 and 17.4 vs. 4.8 and 5.9, respectively) but the difference was not statistically significant (p=0.16 and 0.08, respectively). There was also a higher rate of teenagers than controls with anemia (6.5% vs. 3.6%) but this difference was also not statistically significant (p=0.66). Yet, hemoglobin higher than 12 gr % and rate of labor induction were significantly lower in teenagers than in controls (p<0.01 and p=0.009, respectively). The indication for induction in controls was obstetric in 18 and elective in 4. None of the teenagers had elective induction. Stillbirths did not occur in teenagers nor controls.

Discussion

Although the number of teenage parturients in Israel is not negligible, local studies dealing with this issue are scarce [4, 5].

We compared the course and outcome of pregnancy in a consecutive group of Israeli nulliparous teenagers under the age of 17.5 years to a two-to-one case control group of older parturients. In this study the great majority of the teenagers were older than 16 and none was younger than 15. Other series contain much younger teenagers [6-8]. The percentage of teenagers and their parents who originated in the former Soviet-Union seems to be higher than the proportion of these immigrants in the community. It has been found that some reproductive patterns in this immigrant population differ from those of older Israeli residents [9]. In the US, 61% of pregnant teenagers are unmarried [10]. The great majority of our teenagers were married but it is not clear if they were married before or after conception. The teenagers were not probed about socio-economic background. Although the occupation of about half of them was unknown and almost 40% were new immigrants from the former Soviet-Union, the nurses' records did not indicate socio-economic deprivation or substance abuse.

Our data indicated no statistically significant differences between teenagers and controls with regard to the rate of adequate follow-up during pregnancy, hypertensive disorders, type of analgesia during labor and mode of delivery. The rate of adequate follow-up was very high and that of epidural anesthesia and cesarean section very low in both groups. Data with regard to these variables in other case series of teenagers are inconsistent. Some investigators found that teenage mothers are less likely to have received early prenatal care than older mothers [8] but others found, as we did, a similarly high rate of prenatal care in teenagers and controls [7]. Likewise, no excess of hypertensive disorders have been reported by some authors [11, 12], while several other studies have quoted a high incidence of such disorders in teenagers [13, 14], particularly in those aged 16 years or less [15].

Interestingly, only one-third of our teenagers had epidural analgesia during labor. One could have expected a more frequent use of this type of analgesia in teenagers than in controls because of the natural empathy of the staff with adolescents in labor. On the other hand, it's use may have been hampered by the reluctance to use invasive interventions in this age group. Lubarsky *et al.* [6] also reported a

Table 2. — *Comparison between nulliparous teenagers and adult controls.*

Variable	Teenagers		Controls	
	No.	%	No.	%
Total	46	100.0	84	100.0
Prenatal follow-up				
Adequate	43	93.5	82	97.6
Inadequate	3	6.5	2	2.4
Hemoglobin				
<10	3	6.5	3	3.6
12+	9	19.6	42	50.0
Hypertensive disorder				
Present	3	6.5	8	9.5
Absent	43	93.5	76	90.5
Initiation of labor				
Spontaneous	43	93.6	62	73.8
Induced	3	6.5	22	26.2
Analgesia				
Intravenous	24	52.2	43	51.2
Epidural	15	32.6	30	35.7
None	7	15.2	11	13.1
Week of delivery				
<37	6	13.1	4	4.8
37≥	40	86.9	80	95.2
Mode of delivery				
Normal vaginal	37	80.4	69	82.2
Instrumental	4	8.7	8	9.5
Cesarean section	5	10.8	7	8.3
Weight of newborn				
<2500	8	17.4	5	5.9
2500≥	38	82.6	79	94.1

similar rate of epidural anesthesia in their teenagers and controls but it was higher than in our study, being about 45% and 50%, respectively.

The cesarean section rate, even in teenagers less than 16 years old, was found to be in some series lower [6] and in others higher [16, 17] or, as in our series, similar [18, 19] to the rate in controls. A meta-analysis of pregnancy complications in adolescents indicated that teenage parturients are at a reduced risk for cesarean section in developed countries and at an increased risk in developing countries [12].

Prematurity and low birth weight are considered to be risk factors for teenage parturients [8, 11]. Satin *et al.* [11] found a significantly increased percentage of low birth weight infants in teenagers younger than 15 as compared with older teenagers and with parturients older than 20. Most of our teenagers delivered at term but the rate of deliveries before the 37th week of gestation was higher in teenagers than in controls (13.1% vs. 4.8%). In line with this finding is that the rate of newborns weighing less than 2,500 grams in our teenagers was also higher than in controls (17.4% vs. 5.9%). However, the diferences for both gestational-week of delivery and newborn birth weight were not statistically significant, possibly because of the small numbers. It is generally assumed that maternal weight gain during pregnancy correlates with infant birth weight in adolescents [20-22]. Regretfully, we have no data with regard to weight gain in our teenagers.

Unlike some other studies [7, 16], we observed no differences between teenagers and controls with regard to the rate of anemia (hemoglobin < 10 gr %) during pregnancy. Nevertheless, we did find hemoglobin higher than 12 gr % in a significantly lower rate of teenagers than controls. This may be due to a poorer compliance of teenagers with the routinely prescribed iron supplement intake. Again contrary to other investigations [11], induction of labor was used in a significantly lower percentage of our teenagers than in controls and none underwent elective induction. This may also be associated with a greater reluctance to intervene during the course of pregnancy in teenagers.

In the US, most teenage pregnancies are unintended and half of these pregnancies end in abortion [23]. In Israel, in 1993 for example [3, 24], the number of adolescents under the age of 19 who delivered was also similar to the number of those who underwent abortion (1,834 and 2,116, respectively). It is noteworthy that the abortion law in Israel allows unconditional termination of pregnancy in subjects younger than 17.

It is still controversial whether young age or unfavorable socio-economic background has a greater negative effect on the course and outcome of teenage pregnancies. Some recent reports seem to show that a younger age, i.e., less than 15 or 16 years, confers an increased risk of unfavorable pregnancy outcome that is independent of important confounding sociodemographic findings [8, 25]. It has been suggested that age alone adversely affects pregnancy due to biologic immaturity, namely a young gynecological age defined as conception within two years after menarche and prior to growth cessation [8]. On the other hand, some data do not support the hypothesis that ongoing maternal growth during adolescence is an obstetrical risk factor [26]. In addition, other studies have found that age as such is not necessarily a risk factor if good prenatal care is provided [25, 27, 28] and when adverse socio-economic factors are accounted for or amended [4, 12, 29]. Such factors may have a stronger effect on teenage pregnancy than age of the mother [11, 12]. Gale *et al.* [4] from Israel reported good pregnancy outcomes in teenagers from the ultra-orthodox Jewish community of Jerusalem, where pregnancy is encouraged and the parturients are supported. Even among parturients under the age of 15, no increased risk has been observed in one well-controlled study [6].

The disparity among the studies dealing with teenage pregnancy is quite confusing. It probably stems from the small number of cases in some investigations, different age distributions of teenagers, inappropriate controls and diversity of population groups and socio-economic conditions. Our study was not designed to resolve the controversy concerning the effect of young age versus socio-economic factors on teenage pregnancy.

Our teenagers are a selective group since they chose not to abort and since most were older than 16 years, had adequate follow-up during pregnancy, were married at the time of delivery and seemed not to be socio-economically deprived. The course and outcome of pregnancy was, in most respects, similar in this selective group of Israeli nulliparous teenagers and matched adult controls.

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