Advanced maternal age and pregnancy outcome

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تقدُّم سن الأم وعلاقته بنتيجة الحمل

فيرا نجيب عمّارين وحَكَم فريد العكشة

الخلاصة: من أجل تقييم آثار تقدُّم سن الأم على المداخلات التوليدية ومحصول الحمل، تقارن هذه الدراسة الاستعادية بين المداخلات التوليدية، ومضاعفات الحمل ومحصول الحمل في 73 امرأة تزيد أعمارهن على 35 سنة و471 امرأة تتراوح أعمارهن بين 20 و25 سنة، ممن تردَّدن على مستشفى الأمير علي العسكري بالأردن، في الفترة بين حزيران/يونيو 1999 وأيار/مايو 2000. وقد تبيَّن أن معدلات حدوث المضاعفات الطبية مثل ارتفاع ضغط الدم والسكري أعلى بين النساء اللواتي هن أكبر سناً. وعلى الرغم من حدوث زيادة يُعتدّ بها إحصائياً في ولادة أطفال كبار الحجم، وتثلث الصبغي (21)، وحمل التوائم، والنزف قبل الوضع، فقد كانت النتائج الإجمالية مقبولة. ونخلص من ذلك إلى أن استخدام أساليب توليدية حديثة، في مراكز الرعاية الصحية الحديثة، يمكن أن يتوقع منه تحقيق نتائج حمل طيبة.

ABSTRACT To assess the effect of maternal age on obstetric intervention and pregnancy outcome, a retrospective study compared obstetric intervention, pregnancy complications and outcome in 73 women of age > 35 years with 471 women of age 20–25 years attending Prince Ali Military Hospital, Jordan from June 1999 to May 2000. Older women were found to have significantly higher rates of medical complications such as hypertension and diabetes mellitus. Despite significantly increased frequency of large babies, trisomy 21, twin pregnancy and antepartum haemorrhage, overall outcome was satisfactory. We conclude that older women. managed by modern obstetric methods and delivered in a modern health-care centre. can expect good pregnancy outcomes.

Age avancé de la mère et issue de la grossesse

RESUME Afin d'évaluer l'effet de l'âge de la mère sur l'intervention obstétricale et l'issue de la grossesse, une étude rétrospective a comparé l'intervention obstétricale, les complications survenant durant la grossesse et l'issue de la grossesse chez 73 femmes de plus de 35 ans par rapport à 471 femmes âgées de 20 à 25 ans qui consultaient à l'hôpital militaire Prince Ali (Jordanie) de juin 1999 à mai 2000. On a trouvé que les femmes plus âgées avaient des taux significativement plus élevés de complications médicales telles que l'hypertension et le diabète sucré. Malgré une augmentation importante de la fréquence des bébés corpulents, de la trisomie 21, des grossesses gémellaires et des hémorragies prénatales, l'issue globale était satisfaisante. Nous concluons que les femmes plus âgées, prises en charge par des méthodes obstétricales modernes et ayant accouché dans un centre de soins de santé moderne, peuvent espérer une bonne issue de leur grossesse.

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Introduction

Advanced maternal age is considered relatively more hazardous from both the maternal and fetal perspectives [*1*]. The optimal childbearing age is 20–25 years [*1*]. Increasingly however, women are delaying pregnancy until the fourth or fifth decades of life. The reasons for the delay are multiple, including late marriages, contraception techniques, higher education and career prospects [*2*]. In Jordan, many women continue to have children because of cultural attitudes towards large families, or because the decision is not theirs to make.

Although the impact of advanced maternal age and parity on pregnancy outcome has become increasingly important, the definition of what constitutes advanced maternal age in the obstetric literature is variable. Most authors have designated a lower limit of 35 years [*1,3,4*], while others have used 40 years [*2,5*]. A recent article by Dulitzki et al. proposed that women aged > 44 years be considered of advanced maternal age [6]. Regardless of the lack of agreement in defining advanced maternal age, pregnancies in women aged > 35 years are considered to be of high risk [*1*]. The aim of this study was to assess the effect of maternal age on obstetric intervention and pregnancy outcome in a modern health care centre.

Methods

In this retrospective study we compared obstetric intervention, pregnancy complications and outcome in two groups of women. Group I consisted of 73 women > 35 years of age (range: 35–46 years). A control group (group II) consisted of 471 women (age range: 20–25 years). All women whose ages fell within either of these ranges were included in the study, regardless of previous medical, surgical or obstetric history. All deliveries took place at Prince Ali Military Hospital from June 1999 to May 2000, and were conducted by midwives unless medical intervention was necessary.

Statistical analysis was carried out using the chi-squared and Fisher exact tests. $P \leq 0.05$ was considered significant.

Results

There were 1482 deliveries conducted at Prince Ali Military Hospital during the study period. Table 1 outlines their age distribution. Table 2 shows that the incidence of caesarean section and instrumental deliveries did not significantly differ between the two groups selected for our study. Table 3 shows the serious obstetric and medical complications occurring during the second and third trimesters of pregnancy and la-

Table 1 **Total deliveries at Prince Ali Hospital, Jordan, June 1999–May 2000 by age and mode of delivery**

Variable	No.	%
Age group (years)		
< 20	182	12.3
20–25	471	31.8
26–30	464	31.3
31–35	292	19.7
> 35	73	4.9
Mode of delivery		
Normal	1186	80.0
Caesarean	192	13.0
Forceps	13	0.9
Vacuum	80	5.4
Breech	11	0.7

Table 2 **Mode of delivery of the two groups, Prince Ali Hospital, Jordan, June 1999–May 2000**

Mode of delivery	Group I (n = 73)		Group II (n = 471)		χ^2 (P-value)
	No.	%	No.	%	
Normal	51	69.9	371	78.8	2.66 (> 0.05)
Caesarean	14	19.2	57	12.1	2.79 (> 0.05)
Forceps	0		4	0.9	1.00 (> 0.05[a])
Vacuum	8	11.0	37	7.9	0.80 (> 0.05)
Breech	0		2	0.4	1.00 (> 0.05[a])

[a]*Fisher exact test.*

Table 3 **Complications during pregnancy and labour, Prince Ali Hospital, Jordan, June 1999–May 2000**

Complication	Group I (n = 73)		Group II (n = 471)		χ^2 (P-value)
	No.	%	No.	%	
Twin pregnancy	6	8.2	10	2.1	8.08 (< 0.01)
Hypertensive disorders	11	15.1	24	5.1	10.95 (< 0.01)
Diabetes mellitus	9	12.3	12	2.6	16.29 (< 0.01)
Premature labour	2	2.7	6	1.3	0.29 (> 0.05[a])
Antepartum haemorrhage	12	16.4	36	7.6	6.08 (< 0.05)
Postpartum haemorrhage	7	9.6	26	5.5	1.78 (> 0.05)

[a]*Fisher exact test.*

Table 4 **Classification of hypertensive disorders, Prince Ali Hospital, Jordan, June 1999–May 2000**

Hypertensive disorder	Group I (n = 73)		Group II (n = 471)		χ^2 (P-value)
	No.	%	No.	%	
Pre-eclampsia	1	1.4	21	4.5	0.34 (> 0.05)
Eclampsia	0		1	0.2	1.00 (> 0.05)
Gestational non-proteinuric	2	2.7	2	0.4	0.09 (< 0.05)
Essential	8	11.0	0		0.00 (< 0.01)
Total	11		24		

Table 5 **Antepartum haemorrhage, Prince Ali Hospital, Jordan, June 1999–May 2000**

Condition	Group I (n = 73)		Group II (n = 471)		χ^2 (P-value)
	No.	%	No.	%	
Placenta praevia	7	9.6	18	3.8	4.66 (< 0.05)
Abruptio placentae	3	4.1	15	3.2	0.72 (> 0.05[a])
Local causes	2	2.7	3	0.6	0.14 (> 0.05[a])
Total	12		26		

[a]*Fisher exact test.*

Table 6 **Neonatal outcome, Prince Ali Hospital, Jordan, June 1999–May 2000**

Outcome	Group I (n = 79)		Group II (n = 481)		χ^2 (P-value)
	No.	%	No.	%	
Birth weight > 4 kg	16	20.2	39	8.1	11.30 (< 0.01)
Birth weight < 2.5 kg	3	3.8	21	4.4	1.00 (> 0.05[a])
Gestational age > 42 weeks	9	11.4	32	6.6	2.25 (> 0.05)
Gestational age < 37 weeks	4	5.1	26	5.4	1.00 (> 0.05[a])
Chromosomal abnormality	6	7.6	6	1.2	13.04 (< 0.01)
One minute Apgar < 4	2	2.5	12	2.5	1.00 (> 0.05[a])
Five minute Apgar < 7	0		4	0.8	1.00 (> 0.05[a])
Congenital malformation	4	5.1	19	3.9	0.55 (> 0.05[a])
Intrauterine fetal death	1	1.3	4	0.8	0.53 (> 0.05[a])

[a]*Fisher exact test.*

Table 7 **Chromosomal abnormalities, Prince Ali Hospital, Jordan, June 1999–May 2000**

Abnormality	Group I (n = 73)		Group II (n = 471)		Fisher exact test
	No.	%	No.	%	(P-value)
Trisomy 21	5	6.8	2	0.4	0.00 (< 0.01)
Turner syndrome	1	1.4	3	0.6	0.44 (> 0.05)
Klinefelter syndrome	0		1	0.2	1.00 (> 0.05)

bour in the two groups. The occurrence of multiple pregnancies, hypertensive disorders, diabetes mellitus and antepartum haemorrhage were significantly higher in group I than in the control group. Table 4 classifies the various types of hypertension encountered. The occurrence of pre-eclampsia and eclampsia were not significantly different, whereas gestational non-proteinuric hypertension and essential hypertension were statistically higher in group I. The types of antepartum haemorrhage encountered are summarized in Table 5. Placenta praevia in group I was significantly higher than in group II. There was no significant difference in the occurrence of abruptio placentae and local causes. Table 6 illustrates the neonatal outcome in both groups. The only statistically significant differences were fetal birth weight of > 4 kg and chromosomal abnormalities (analysed at the University of Jordan Genetics Laboratory). Among the chromosomal abnormalities shown in Table 7, only trisomy 21 was statistically higher in group I compared to controls.

Discussion

Most women aged > 35 years have healthy pregnancies and babies. However, recent studies suggest that women who postpone childbearing do face certain special risks. This was borne out in our study, where the risk of multiple pregnancy, hypertensive disorders, antepartum haemorrhage and diabetes mellitus were increased in the second and third trimesters compared to younger women. These findings agree with Gilbert et al. [*2*], Bianco et al. [*5*] and Berkowitz et al. [*7*]. Gilbert et al. studied first-time mothers aged > 40 years and observed that these women were 60% more likely to develop high blood pressure and four times more likely to develop diabetes mellitus than mothers in their twenties.

The risk of bearing a child with certain chromosomal disorders increases as women age. The most common of these disorders is Down syndrome. Indeed, this was the case in our study, where five women from the older age group gave birth to babies with trisomy 21, compared to only two from the control group.

Pregnancy in women of age > 35 years is associated with a high maternal and perinatal morbidity and mortality [*1*]. Older pregnant women also have a higher chance of delivery by caesarean section [*1*], although this was not obvious in our study, where abdominal deliveries in older mothers were not more frequent than in the controls. Contrary to reported data [*1*], the difference in frequency of instrumental deliveries in our study was also not statistically significant between the two groups.

The literature indicates that pregnant women of advanced age, in good health, do not need special care beyond normal obstetric practice [*1*]. Advances in medical care now help women in their late thirties and forties to have safer pregnancies than in the past. However, women should be aware of the risks associated with delayed childbearing so they can make informed decisions on when to start their families.

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Transforming health systems: gender and rights in reproductive health: a training curriculum for health programme managers

The title of this manual – *Transforming health systems: gender and rights in reproductive health* – reflects the aspirations of the initiative. The aspiration is to reform health systems to enable reproductive (and all other) health services to be gender sensitive and to uphold rights. The curriculum evolved over a five-year process that brought together people with diverse skills from different regions of the world, and included conducting the course in different parts of the world and learning from participants.

The manual offers a session-based and case-based curriculum on how to promote gender equity and reproductive rights through the use of evidence, policy development and service delivery. The curriculum is founded on the premise that the development of workable reproductive health programmes calls for training that not only includes new technical skills, but faces head-on the challenge of changing approaches and perspectives. It aspires to transform health workers, managers and policy makers into active change agents committed to transformation of health systems.

The manual is in three parts. The first part includes a brief background to the course and practical details about the course. The second part contains the six teaching modules with an opening and a closing module, and the third part contains annexes with tools and resources.

The manual is available from: World Health Organization, Department of Reproductive Health and Research, CH-1211 Geneva 27, Switzerland. It is also available free on the Internet at: http://whqlibdoc.who.int/hq/2001/WHO_RHR_01.29.pdf