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Research Article



Pregnancy outcome in elder women of Lower Egypt

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Abstract

Objective: The objective of this study was to evaluate the pregnancy outcome (fetal and maternal) in women above the age of 35 years in Lower Egypt. **Patients and methods:** This study was conducted on 5000 pregnant women of those attending outpatient clinic of Banha teaching Hospital, Kalyobia governorate- Lower Egypt. These women were divided into 3 age groups; group 1 with age <35 years, group 2 with age from 35- 40 years and group 3 with age more than 40 years. **Results:** The rate of maternal and neonatal complications at ages 35-40 and above 40 years respectively was; abortion 13%, 14%, Ectopic pregnancy 0.6%, 2 %, vesicular mole 0.2%, 0.5%, pre-eclampsia 15.6%, 26%, Chronic hypertension 5.7%, 28.5%, gestational DM 16.6%, 16.5%, Chronic DM 3.3%, 17.5%, placental abruption 13.4%, 13.5%, placenta previa 6.4%, 12%, PPH 1.4% 3.5%, C-section 39%, 63%, preterm labour 16%, 20 %, macrosomia 9.7%, 13.5 %, LBW 14.8%, 15.5 %, major congenital anomalies 0.5%, 1.5 %, Low Apgar score 9.5%, 13.5% stillbirth 12.3%, 19.5 %, Neonatal death 5.9%, 12.5% neonatal ICU 9.3%, 13 %, at ages 35-40 and above 40 years respectively. There were significant differences of these complications between the 2 age's groups. The rate of maternal and fetal complications increased with increased maternal age. **Conclusions and recommendations:** Advanced maternal age is associated with higher rate of maternal and fetal complications. This study recommends other studies in a large scale on large number of women with advanced age in different communities and different races. It also recommends completing the family before the age of 35 years and a strict maternal supervision and good antenatal care for women with advanced maternal age.

Keywords: pregnancy outcome, Lower Egypt, neonatal complications.

Introduction

Advanced maternal age is defined as age 35 years and older at estimated date of delivery and it has become increasingly common. From 1970 to 2000, live births among women aged 35 years and older in the United States increased from approximately 5% to approximately 13% of all live births, (Martin, 2009).

In general, increased vascular endothelial changes with aging are suggested to be responsible for the increased risk of medical and chronic diseases in the older population. Abruptio placenta was more frequent among the older mother, which could be related to the higher incidence of hypertensive disorders in these women. Preterm birth and low birth weight were more frequently seen among nulliparous women aged 40 years and older. This finding may be related to the

underlying maternal and fetal complications seen in the older mothers, such as hypertensive diseases, diabetes, intrauterine growth restriction or fetal distress. The correlation between advanced maternal age and low birth weight may be due to age-related changes in the uterine vasculature, (NICE, 2011).

Many of the reasons why women are choosing to postpone child-bearing reflect the availability of safe, effective, and reversible contraception, which has allowed women the reproductive autonomy to decide if and when they will have children. Biologically, the optimum period for childbearing is between 20 and 35 years of age. The fecundity after 35 years of age is decreases, and the chance of adverse pregnancy outcomes is increases, (RCOG, 2011).

As women age, many option for fertility treatment to improve their chance of conception. The effectiveness of various reproductive technologies declines steadily after the age of 35, while the risk of pregnancy complications and adverse outcome increases with both maternal age and the use of reproductive assistance, (Leader, 2006). These pregnancy complications include ectopic pregnancy, spontaneous abortion, fetal chromosomal abnormalities, congenital anomalies, placenta previa, gestational diabetes, preeclampsia, multiple births, PTD, and Caesarean section. These in turn are associated with an increased risk of preterm birth and perinatal and maternal mortality and morbidity. Infants born preterm, especially multiples are at increased risk of morbidity, mortality, and long-term disability, (Luke et al., 2007).

The most common medical problems complicating pregnancy are hypertension (pre-existing and gestational) and diabetes mellitus (pre-gestational and gestational), and the risk of both of these complications increases with maternal age. The prevalence of medical and surgical illnesses, such as cancer and cardiovascular, renal, and autoimmune disease, increases with advancing age. As a result, pregnant women 35 years of age have 2 to 3-fold higher rates of hospitalization, Caesarean section, and pregnancy-related complications than younger women, (Salihu et al., 2005).

Lifestyle factors, such as smoking and alcohol use during pregnancy have been associated with an increased risk of LBW, perinatal morbidity, and stillbirth in all age groups, and the risks are further elevated in older women, (Aliyu et al., 2008). Even the rate of cesarean sections increases proportionally with the maternal age. Both multiparous and nulliparous mothers aged 40 and older had a higher risk for cesarean delivery possibly due to deterioration of uterine activity with age. A lower threshold of obstetricians for performing cesarean sections in older women, referred as “precious baby syndrome”, has also been proposed in many reports, (Kirchengast et al., 2007).

Macrosomia was more frequent among the multiparous older women, a 5-minute Apgar score < 7, which is considered to be a good indicator of long-term outcome, was twice as common in the older mothers, increase in perinatal mortality in the older woman, (Miller et al., 2005). White women aged over

40 years seem to have a greater risk of neonatal congenital anomalies such as esophageal atresia, (Oddsberg et al., 2008).

Patients and Methods

This study was performed on 5000 pregnant women attending outpatient clinic of Banha Teaching Hospital during the period from July 2012 to December 2013. These women were classified according to the age into three main groups: Group (1): with age less than 35 years, Group (2): with age from 35- 40 years, Group (3): with age more than 40 years.

After informed consent all patient was subjected to: complete medical, obstetrics and social history, complete medical and obstetrics examinations, including height (in cm) and weight (in kg) and BMI measurements. BMI was calculated by dividing the body weight of the patients in kilograms by the square of her height in meters, (BMI = kilogram ÷ meters²).

Laboratory investigations was included: complete blood count (CBC), blood grouping and Rh typing, complete urine analysis and urine culture and sensitivity test for positive result for infection, fasting and postprandial blood sugar, renal and liver function tests and others laboratory investigations according the situations.

The gestational age was calculated from the last menstrual period and ultrasound (US) done in the first or second trimester and if there was discrepancy between the US and last menstrual period taken US as reference. All the patients were followed up during pregnancy by the usual antenatal care. Any obstetrics or medical complication was managed according the stander managements.

The following adverse pregnancy outcomes were considered in the subjects studied: abortion (fetal loss before 24 weeks), Gestational hypertension (blood pressure > 140/90 on at least 2 occasions greater than 6 h apart without evidence of chronic hypertension or significant proteinuria), Preeclampsia (criteria for gestational hypertension and significant proteinuria). Gestational diabetes (non fasting 50 g oral glucose challenge test =135mg/dl followed by 2 or more abnormal values on fasting 100 g oral glucose tolerance test - fasting 95mg/dl, 1-hour 180mg/dl, 2-hour = 155mg/dl and 3-hour = 140mg/dl).

Preterm delivery (delivery before 37 weeks of gestation), Low birth weight (birth weight < 2,500 g), Macrosomia (birth weight >4.500 g), Placental abruption (premature separation of normally implanted placenta), Placenta previa (placenta completely or partially covering the internal cervical os at the time of delivery).

Post delivery follow-up was performed one day after delivery. In addition, single perinatal reviewed detailed maternal and pediatric medical records for the

following patient subsets to discover the adverse obstetric or pediatric outcome.

The data was collected by questionnaire and patient interview, summarized, computerized and statistically analyzed. An informal interpretation of P-value, based on a significance level of about 10%, might be: p-value 0.001 high significant, p-value 0.05 significant and p-value 0.05 not significant. Statistical analysis was performed to evaluate the effect of maternal age on the pregnancy outcomes, considered separately.

Results

Table1: maternal age groups, parity, mean age, mean BMI, mean gestational age among the studied women

Variable	No.	%
Age groups (No & %)		
< 35 years	3500	70.0
35 – 40 years	1300	26.0
>40 years	200	4.0
Total	5000	100%
Age(Mean ±SD, range)	29.59±5.7	(20 - 44)
Parity: (No %)		
Primi-para	700	14.0
Multi-para	2500	50.0
Grand multi-para	1800	36.0
BMI (Mean ±SD, range)	27.46±4.71	(19-38)
Normal	4538	90.8
Over weight	214	4.2
Obese	158	3.2
Morbid obese	90	1.8
Gestational age(Mean ±SD, range)	37.12±7.04	(5-41)
Residence:		
Urban	1550	31.0
Rural	3450	69.0

Table1 showed the age groups, parity, the mean maternal age, BMI, gestational age among the studied women. The mean maternal age was 29.59±SD ±5.7 years (ranged 20 – 44 years), the mean BMI was

27.46±SD ±4.71 (ranged 19-38) and the mean gestational age was 37.12 weeks. ±SD ±7.04 (ranged 5 -41w).

Table 2: The relations of maternal complications to maternal age:

Age of mother	Group 1 <35 (3500)		Group 2 35-40 (1300)		Group 3 >40(200)		Total	P1 1&2	P2 1&3	P3 2&3
	Maternal complication	No	%	No	%	No				
Abortion	104	2.9	170	13.0	28	14.0	302	0.001	0.001	0.001
Ectopic pregnancy	14	0.4	8	0.6	4	2.0	26	0.092	0.002	0.11
Vesicular mole	2	0.06	2	0.2	1	0.5	5	1.0	0.27	0.27
Pre eclampsia	98	2.8	203	15.6	52	26.0	353	0.001	0.001	0.001
Chronic hypertension	86	2.5	74	5.7	57	28.5	217	0.17	0.006	0.067
Gestational DM	52	1.4	216	16.6	33	16.5	301	0.001	0.028	0.001
Chronic DM	53	1.5	43	3.3	35	17.5	131	0.15	0.025	0.18
Placental abruption	49	1.4	175	13.4	27	13.5	251	0.001	0.003	0.001
Placenta previa	51	1.4	84	6.4	14	12.0	149	0.001	0.001	0.001
PPH	21	0.6	18	1.4	7	3.5	46	0.32	0.001	0.007
CS	518	14.8	507	39.0	126	63.0	1151	0.29	0.001	0.001
cesarean hysterectomy	7	0.2	9	0.7	6	3.0	22	0.31	0.39	0.21

Table 2: shows the relations of maternal complications to maternal age. There was increase in rate of abortion, Ectopic pregnancy, Vesicular mole, preeclampsia, chronic hypertension, gestational DM,

chronic DM, Placental abruption, placenta previa, PPH, CS and cesarean hysterectomy with increased maternal age.

Table 3: The relations of fetal complications to maternal age:

Age of mother Fetal complication	Group 1 <35 (3500)		Group 2 35-40 (1300)		Group 3 >40(200)		Total	P1 1&2	P2 1&3	P3 2&3
	No	%	No	%	No	%				
LBW	224	6.4	193	14.8	31	15.5	448	0.15	0.001	0.001
Preterm	101	2.8	208	16.0	40	20.0	349	0.001	0.001	0.001
Congenital anomalies	5	0.1	6	0.5	3	1.5	14	0.38	0.23	0.144
Macrosomia	98	2.8	127	9.7	27	13.5	252	0.053	0.001	0.001
Low Apgar score	97	2.7	124	9.5	27	13.5	248	0.06	0.001	0.001
Stillbirth	154	4.4	160	12.3	39	19.5	353	0.27	0.001	0.001
Neonatal death	49	1.4	77	5.9	25	12.5	151	0.011	0.001	0.001
Neonatal ICU admission	102	2.9	121	9.3	26	13.0	249	0.053	0.001	0.001

Table 3: shows the relations of fetal complications to maternal age. There is significant increase in low birth weight, preterm labour, congenital anomalies, macrosomia, low Apgar score, stillbirth, neonatal death, and neonatal ICU admission with increased maternal age.

Discussion

This study was performed on 5000 pregnant women to determine the impact of maternal age on maternal and neonatal outcome. These women were classified according to age into three main groups: Group (1): less than 35 years, Group (2): from 35- 40 years, Group (3): more than 40years.

The rate of abortion among the all studied groups was 6% and this increase to 13% at age group between 35-40 years and 14 % at age group above 40 years. Older women have a higher rate of spontaneous abortion. These are both aneuploid and euploid, and most occur between 6 and 14 weeks' gestation. In a study from

Denmark, the calculated risk of spontaneous abortion in women > 35 years of age was more than double that in women < 30 years of age (25% vs. 12%), and was > 90% in women 45 years of age (Smith et al ., 2008).

Ectopic pregnancy has occurred in is 0.5% (n = 26 women) in all age groups , 0.6% at age group between 35-40 years and 2 % at age group above 40 years. Ectopic pregnancy is a major source of maternal mortality and morbidity in early pregnancy. Maternal age 35 years is associated with a risk of ectopic pregnancy 4- to 8-fold greater than that of younger women. This is due to an accumulation of risk factors over time, such as multiple sexual partners, pelvic infection, and tubal pathology (Hook. 2010), this inconsistent with this study.

The rate of vesicular mole in this study is 0.1%, (n = 5 women) in all age groups, 0.2% at age group between 35-40 years and 0.5 % at age group above 40 years. The rate of hydatidiform mole is known to vary across different populations and groups.

Factors which have been associated with an increased risk for hydatidiform mole include maternal age, previous hydatidiform mole, and other modifiable and non-modifiable factors such as parity, ethnicity, socioeconomic status, and environmental exposures, (Smith and Kim, 2003).

The rate of pre-eclampsia among the all studied groups was (7%) and this increase to 15.6% at age group between 35-40 years and 26 % at age group above 40 years. The rate of pre-eclampsia was (7%), (n = 353 women) which is nearer to that the reported rate by Lawler et al., 2007 whom has been reported a range of 1.5% to 7.7%. Rates of preeclampsia in the general obstetric population are 3% to 4%. It increases to 5% to 10% in women over 40, and up to 35 % percent in women > 50 years of age (Paulson et al., 2002).

two hundred seventeen women (217) among study groups (4.34 %) were suffering from chronic hypertension although the rate of chronic hypertension during pregnancy ranges between 0.6% and 2.7% have been reported by Martin et al .,2009, and this inconsistent with this study.

The rate of gestational DM in all age groups of this study was 6% and this increase to 16.6% at age group between 35-40 years and 16.5% at age group above 40 years. DM type 2 was found in 2.62% from all cases. Thomas et al., 2005 found that diabetes in pregnancy affects 3-10% of pregnancies, depending on the population studied. Jacobsson, 2004 found that the prevalence of diabetes increases with maternal age. The incidence of both preexisting diabetes mellitus and gestational diabetes is 3- to 6-fold higher in women 40 years of age than in women aged 20 to 29. The incidence of gestational diabetes is also 3- to 4-fold higher in older women (7% to 12 % in women > 40; 20% in women > 50) compared with the 3% incidence in the general obstetric population, (Jacobsson, 2004)

The rate of placental abruption in all age groups of this study was 5% and this increase to 13.4% at age group between 35-40 years and 13.5 % at age group above 40 years. The rate of the overall placenta praevia in all age groups is 3% and this increase to 6.4% at age group between 35-40 years and 12 % at age group above 40 years. The prevalence of placental problems, such as placental abruption, placenta previa, and

placenta accreta, is higher among older women. The rate of PPH in all age groups of this study was 0.9% and this increase to 1.4% at age group between 35-40 years and 3.5 % at age group above 40 years. Increasing maternal age appears to be an independent risk factor for postpartum hemorrhage. Age 35 years was an independent risk factor for postpartum hemorrhage in vaginal deliveries and Cesarean deliveries. Ijaiya and co-workers in Nigeria found that the risk of postpartum hemorrhage in women > 35 years was two-fold higher compared to women < 25 years, although no consideration of confounding was made in this study. Rates of obstetric hysterectomy have also been reported to increase with age; Okogbenin and colleagues in Nigeria reported an increase from 0.1% at 20 years to 0.7% at 40 years (Ijaiya et al., 2003 and Okogbenin et al., 2003).

The rate of C-section among the all the studied women in this study was 23% and this increase to 39% at age group between 35-40 years and 63% at age group above 40 years. The rate of cesarean hysterectomy among the all the studied women in this study is 0.44% and increase to 0.7% at age group between 35-40 years and 3 % at age group above 40 years. The chances of having a C-section increase with age (Franz et al., 2010). The Caesarean section rate in women aged 40 to 45 years approximates 50%, and this increases to approximately 80% in women aged 50 to 63 years, although the rate in the general obstetric population is about 25% (Martin et al., 2009). Mothers over age 40 years appear to be more than twice as likely as mothers under age 20 to have a C-section. According to the Centers for Disease Control and Prevention, about 47% of mothers over age 40, 41% between ages 35 and 39, 27% between ages 20 and 24, and 22% under age 20 had a C-section (Martin et al., 2009).

This study found that, the rate of NICU admission was 5% , stillbirth 7%, LBW 9%, preterm 7%, congenital anomalies 0.28%, macrosomia 5%, low Apgar score 5%, neonatal death 3%. There are significant increase in LBW, preterm labour, macrosomia, Low Apgar score, stillbirth, neonatal death, and neonatal ICU admission with increased maternal age.

In this study the overall rate of preterm labour in all age groups was 7% and this increase to 16% at age group between 35-40 years and 20 % at age group

above 40 years. Diejomaoh, 2006; Miller, 2005; and Joseph.2005 reported that advanced maternal age associated with increase preterm labour. Very preterm (28w:33w) and moderate preterm (34w:36w) were significantly higher among women with medical problems, while full term was significantly lower among the same group.

The rate of macrosomia among the all the studied groups is 5% and this increase to 9.7% at age group between 35-40 years and 13.5 % at age group above 40 years. The overall rate of low apgar score in all studygroups is 5%, 9.5% at age group between 35-40 years and 13.5 % from women at age group above 40 years. Macrosomia was more frequent among the multiparous older women, a 5-minute Apgar score < 7, which is considered to be a good indicator of long-term outcome, was twice as common in the older mothers, increase in perinatal mortality in the older woman (Miller., 2005).

The rate of LBW among the all the studied groups is 9%, 14.8% at age group between 35-40 years and 15.5 % at age group above 40 years. VLBW and LBW were significantly higher among women with medical problems, while normal BW was significantly lower among the same group. The mean gestational age and mean birth weight were significantly lower among patients having medical problems. Lawn et al., (2006) report that women above 35 y have a high risk of VLBW, LBW, premature infants, and newborn with low Apgar values. These disagree with this study.

The rate of major congenital anomalies among the all the studied groups is 0.28% and increase to 0.5% at age group between 35-40 years and 1.5 % at age group above 40 years. Advanced maternal age (above 40y) associated with increase in the incidence rate of congenital anomalies (de la Rochebrochard and Thonneau, 2002; Zhu et al., 2005, 2006; Astolfi et al., 2006 and Jolly et al., 2000).

The rate of stillbirth among the all the studied groups was 7% and increase to 12.3% at age group between 35-40 years and 19.5 % at age group above 40 years. Fretts and Naeye et al., (2008) reported that advanced maternal age by itself has been identified as a significant risk factor for stillbirth. The rate of neonatal death in this study is 3% and 5.9% from women at age group between 35-40 years have neonatal death and 12.5 % from women at age group

above 40 years have neonatal death. Huang et al in their hospital-based cohort study found that two-thirds of all unexplained fetal deaths occurred after 35 weeks of gestation, (Fretts et al., 2004).

The rate of neonatal ICU admission among the all the studied groups was 5% and increase to 9.3% at age group between 35-40 years and 13 % at age group above 40 years. Although, in previous studies infants born to mothers over the age of 40 years currently are about 3% of total births, they represent 5% of those requiring neonatal intensive care (Battin et al., 2007). NICU admission and stillbirth were significantly higher among neonates whose mothers have medical problems.

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