Research Article

Risks of Pregnancy Above the Age of Forty

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Abstract
Background: Increasing maternal age is independently associated with specific adverse pregnancy outcome. But, it was noted when patients of advanced maternal age were followed and delivered their infants in modern tertiary care center, no increase in adverse outcome was noted. **Objectives:** This prospective study in which maternal and perinatal outcome in pregnant women aged 40 years and above compared with those of young women aged 25-35 who delivered in El-Eman General Hospital. **Patients and methods:** 422 women were divided into 2 groups. The first group contain 211 women whose age ranges from 25-35 years, the second group contain 211 women whose age 40 years and above. **Results:** There were significant increases in rates of Pregnancy Induced Hypertension among pregnant women aged over 40 years (12.3%) compared to older primigravida aged over 40 years. There was significant increase in the rate of preeclampsia among women aged over 40 years (18.5%). Incidence of preeclampsia increase in grand muliparus women aged ≥ 40 years (18.5%) and among women aged 25-23 years (7.6%). Risk of bad perinatal outcomes increases in relation to medical diseases with pregnancy. **Conclusion:** Women aged ≥ 40 years have higher risk of Cesarean section than young women. There were statistically significant increases in the rate of NICU referral due to perinatal problems among women with advanced age. The mother's high age can be an independent factor for adverse pregnancy outcomes, complete awareness of pregnancy outcomes in these age groups for midwives and gynecologist is needed to protect health of mothers.
Key Words: antenatal care, genetic disorders, age, maternal mortality, morbidity

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Introduction
Historically, women who desired to become pregnant after age of 40years often were discouraged from considering pregnancy because of the increase in both maternal and perinatal morbidity and mortality[(1)]**.** Management of parturient of advanced maternal age requires an understanding the effects of age, preexisting co morbidities and complications during pregnancy and delivery[(2)]**.**

Parturient of advanced maternal age are more likely than younger parturient to acquire more chronic illness such as diabetes mellitus and hypertension which are risk factors for adverse obstetric outcome[(3)]**.** In addition, the incidence of fetal congenital abnormality, spontaneous abortions and multiple pregnancies increased[(4)].

Also, Jolly et al.,[(5)] reported that the need for caesarean section is typicallygreater in women with advanced age, since older mothers have higher risk of pregnancy related complications such as:

i- Preeclampsia, Pregnancy Induced Hypertension and Gestational diabetes.
ii- Caesarean section is also indicated if there is fetal macrosomia or malpresentation.
iii- Finally, if there is placenta previa or placental abruption.

In addition to these complications already mentioned the prevalence of postpartum haemorrhage, pulmonary embolism and prolonged hospital stay is higher in older women[(3)].

The risk of genetic disorders, particular chromosomal disorders are higher in older patients, at the age of 40 years the risk of havinganewborn with chromosomal disorder is 1/66 and the risk increase dramatically at age 45 years to 1/21 compared to younger women[(6)].

But in recent years, it was noted that when patients of advanced maternal age were followed and delivered their infant in modern tertiary care center , no increase in adverse outcome was noted[(3)].

This study, which is a hospital based prospective study, is preformed to compare the pregnancy and perinatal outcomes of women aged over and below age of 40 years.

Subjects and Methods

This is a hospital based prospective study .We collected data from 422 women admitted to El-Eman general hospital. The women included in the study were dividing according to their age into 2 groups:

- First group included women aged ≥ 40 years.
- **Second** group included women aged 25-35 years .

Points of comparison were :
- Maternal complications in relation to age and gravidity.
- Characteristics of labor outcome.
- Perinatal outcome in relation to diagnosis and presentation.

Data collection sheet

Personal Data of the woman:

i- The name of the woman .
ii- Age .
iii- Education.
iv- Telephone namber.
v- Residence.

Reproductive History:

i- Number of pregnancies including the current pregnancy.
ii- Parity
iii- The outcome of previous pregnancies.
iv- Living infants .
v- Dead infants .
vi- Stillbirth.
vii- Abortions

Previous mode of deliveries :

i- Normal.
ii- Ventous
iii- Forceps.

Previous abortions :

1st trimester abortion.
2nd trimester abortions.

Previous operations:

i- Cesarean section: How many times and indication.
ii- D & C
iii- Hysterotomy.
iv- Cercelage
v- Myomectomy.
vi- Classical repair.
vii- Others.

Antepartum and intrapartum complications:

i- Gestational Diabetes.
ii- Gestational Hypertension.
iii- Preeclampsia
iv- Plasenta previa
v- Accidental Haemorrhage
vi- PROM
vii- Preterm delivery
viii- Post term delivery
ix- Malpresntation
x- Obstructed labor
xi- IUGR
xii- IUFD
xiii- Others

Characters of labor outcome :

i- Normal .
ii- Induction.
iii- C.S.: Why

Perinatal outcome:

i- Gestational age (in weeks).
ii- Labor outcome:
- Living -Dead -Stillbirth

iii- Weight in grams.
iv- Apgar score at: -1 min -5 min
v- NICU admission: Why
vi- For how long.
vii- Take home baby
viii- Congenital anomalies
ix- Neonatal complications : -birth trauma -birth asphyxia -neonatal deaths

Postpartum complications:

Postpartum haemorrhage :

- yes - no

If yes:
- Tonic - Traumatic
- What the management?

Blood transfusion:

ICU admission:
-Yea -NO
-For how long

Maternal morbidity:

- YES -NO
- If yes what the cause ?
- Renal failure
- Liver failure anemia
- Iatrogenic
- Others

Statistical analysis:

The difference between the results of the experiment and the null hypothesis is determined. Then, assuming the null hypothesis is true, the probability of a difference that large or larger is computed . Finally, this probability is compared to the significance level. If the probability is less than or equal to the significance level, then the null hypothesis is rejected and the outcome is said to be statistically significant. Traditionally, experimenters have used either the 0.05 level (sometimes called the 5% level) or the 0.01 level (1% level), although the choice of levels is largely subjective. The lower the significance level, the more the data must diverge from the null hypothesis to be significant. Therefore, the 0.01 level is more conservative than the 0.05 level

The data in study were analyzed using SPSS pakage.The analysis was performed using the following procedures:

i- Data input .

ii- Descriptive analysis.

iii- Significance analysis.

Chi-square test was used to check the significance between categories of data. Fisher s Exact test was used for check the significance between continuous data (calculate the probability of getting the observed data, and all data sets with more extreme deviations, items between two different groups).

Results

Table (1) showed the parity of women aged 40 years and over .rang (0-15) Mean±SD (5.4±2.3) while the rang of parity in women aged (25-35) years (0-8) Mean±SD (2.1±1.5).

Table (2) showed, statistically significant increase in number of multigravidas among those aged (25-35) [107 (50.7%)] compared to number of multigravidas [30 (14.2%)]among those aged ≥40 years [P=0.000]. Also, there is statistically significant increase in number of grandmultipares among those aged ≥40 [178 (84.4%)] compared to [42(19.9%0] grand-multiparae among those aged (25-35).

Table(3) depicts that, there were statistically significant increase in the rate of PIH among pregnant women aged over 40years[26(12.3%)] especially in garndmultiparea [24(13.5%) compared to older primigravida aged over 40 years [0(0.0%)] and the incidence of PIH is (3.3%) in women aged 25-35 years where the risk of PIH is (1.6%) in primigravida (2.4%) in grand-multipara [P=0.002] (table 4).

Table (5) depicts statistically significant increase in the rate of normal delivery among women aged 25-35 years (54.0%) compared to women aged over 40 years (38.4%) [p=0.002]. Also, there is statistically significant increase in the rate of caesarean section among women aged over 40years (52.1%) compared to younger women aged 25-35 years (36.5%) [p=0.004].

With regarded to perinatal outcome ,perinatal complications especially those which need NICU referral significantly increase in women aged over 40 years (23.1%) while rate is (10.2%) in women aged 25-35 years [p=0.002]. This can be explained by increase the incidence of maternal complications with advanced age (table 6).

In table (7), we found that the risk of adverse perinatal outcomes increases in relation to medical diseases with pregnancy like pre-eclampsia and PIH.33% of stillbirths recorded in our study borne to women who have medical disease with pregnancy [p=0.077] were 6% of them born to women with PIH and 26% of stillbirths women developed pre-aclampsia but the difference was statistically not significant.

Table (1): Demographic characteristics according age groups

	Age (years)		
	≤35 (n=211)	≥ 40 (n=211)	Total (n=422)
Age:			
Mean ± SD	24.9 ± 3.7	41.1 ± 1.8	33.2 ± 3.1
Range	25 – 35	40 – 45	25 – 45
Parity:			
Mean ± SD	2.1 ± 1.5	5.5 ± 2.3	3.1 ± 2.4
Range	0 – 8	0 – 15	0 – 15

Table (2): Gravidity in relation to age

	Age (years)						P –value
	≤35 (n=211)		≥ 40 (n=211)		Total (n=422)		
	No.	%	No.	%	No.	%	
Primi-gravida	62	29.4	3	1.4	65	15.4	0.000*
Multi-gravida	107	50.7	30	14.2	137	32.5	0.000*
Grand multipara	42	19.9	178	84.4	220	52.1	0.000*

*statistical significant differences

Table (3): Maternal complication in relation to age

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	Age (years)				P-value
	≤35 (n=211)		≥ 40 (n=211)		
	No.	%	No.	%	
Chronic hypertension	0	0.00	4	1.9	-----
PIH	7	3.3	26	12.3	0.002*
Pre-eclampsia	16	7.3	39	18.5	0.002*
Diabetes mellitus	1	0.5	1	0.5	-----
Antepartum haemorrhage	4	1.9	13	6.2	0.087
Postpartum haemorrhag	5	2.4	9	4.3	0.0184
Malpresentation	12	5.7	24	11.4	0.114
Multiple pregnancy	9	4.3	5	2.4	0.312
Prematurity	20	9.5	37	17.5	0.053
Post-term delivery	20	9.5	13	6.2	0.263

Table (4): Maternal complication in relation to gravidity

	Age (years)									
	35 ≤ (n=211)				P-value	40 ≥ (n=211)				P-value
	PG (n=62)		GM (n=42)			PG (n=3)		GM (n=178)		
	No.	%	No.	%		No.	%	No.	%	
Chronic hypertension	0	0.0	0	0.0	NA	0	0.0	3	1.7	1.000
PIH	1	1.6	5	2.4	0.002	0	0.0	24	13.5	1.000
Pre-aclampsia	6	9.7	3	7.1	0.736	0	0.0	33	18.5	1.000
Diabetes mellitus	0	0.0	0	0.0	NA	0	0.0	1	0.6	1.000
Antepartum haemorrhage	0	0.0	1	2.4	0.404	0	0.0	12	6.7	1.000
Postpartum haemorrahage	0	0.0	1	2.4	0.404	0	0.0	7	3.9	1.000
Malpresentation	2	3.2	2	4.8	1.000	1	33.3	17	9.6	0.271
Multiple pregnancy	0	0.0	3	7.1	0.063	1	33.3	4	2.2	0.081
Prematurity	6	9.7	5	11.9	0.753	0	0.0	32	18.0	1.000
Post-term delivery	6	9.7	5	11.9	0.753	0	0.0	10	5.6	1.000

Fisher s Exact test PG: primigravida GM : grandmultipara

Table (5): Labour outcome

	Age(years)				P-value
	35≤ (n=211)		40≥ (n=211)		
	N0.	%	No.	%	
Normal delivery	144	54.0	81	38.4	0.002*
Caesarean section	77	36.5	110	52.1	0.004*
Induction of labour	20	9.5	19	9.0	0.691
Operative delivery	0	0.0	1	0.5	---

Chi-square test *Statistical significant difference --:Not applicable

Table (6): Perinatal outcome

	Age(years)				P-value
	35≤ (n=211)		40 ≥ (no=211)		
	No.	%	NO.	%	
Stillbirth	14	6.4	21	9.7	0.352
NICU referral	21	10.2	45	23.1	0.002*
Low birth weight	33	16.0	36	18.5	0.796
Congenital anomalies	4	1.8	3	1.4	----
Take home babies	205	99.5	189	96.9	-----
IUGR	4	1.8	1	0.5	------
Birth asphyxia	0	0.0	4	1.9	-----

Table (7): Adverse perinatal outcome in relation to maternal complications

	Total number (n=422)	Still birth (n=36)	Birth asphyxia (n=4)	Low birth weight (n=69)	IUGR (n=5)	Congenital anomalies (n=7)
Medical diseases with pregnancy	99 (23.3%)	12 (33.0%)	1 (25%)	17 (40%)	2 (40%)	1 (14.2%)
p-value		0.077	1.000	0.357	0.618	0.692
Haemorrhage	31 (6.5%)	5 (13.8%)	2 (50%)	7 (10.1%)	0 (0.0%)	1 (14.2%)
p-value		0.032*	0.002*	0.025*	1.000	0.450
Fetal Problem	127 (29.9%)	21 (58.3%)	1 (25%)	46 (67.0%)	2 (40%)	5 (71.4%)
P-value		0.655	0.000*	1.000	0.053	0.065

Discussion

Increasing maternal age is independently associated with specific adverse apregnancy outcomes[7]**.** We collected data from 422 women who divided into two groups according to their age each group contain 211 women. Of the women aged above 40 years ,[3(1.4%)]were primigravida and [178(84.4%) were grand-multipara. Of women aged 25-35 years [62 (29.4%)] were primigravida, [107(50.7%)] were multigravida and [42(19.9%)] were grand multipara.

In our study, we found that the incidence of PIH increase with age there were statistically significant increase in the rates of PIH among pregnant women aged over 40 years was [26 (12.3%)] especially in grandmultipara [24 (13.5%)] versus older primigravida aged over 40 years [0 (0.0%)]. While the incidence of PIH is (3.3%) in women aged 25-35 years where the risk of PIH is (1.6%) in primigravida (2.4%) in grandmultipara. Gilbert et al.,[8] have similar results.

Also, in pre-aclampsia there was statistically significant increase in the rate of pre-aclampsia among women aged over 40 years (18.5%) compared to women aged 25-35 years (7.6%) .Also the incidence of pre-eclampsia increase in grandmultipara women aged above 40 years (18.5%), while the incidence increased among primigravida aged ≤35 years (9.7%) compared to grandmultipara (7.1%)[8]**.**

In our study, we also found that there was statistically significant decease in the rate of normal delivery among women aged more than 40 years (38.4%) compared to women aged 25-35 years (54.0%)[7] .

Also, there is statistically significant increase in the rate of caesarean section among women aged over 40 years (52.1%) compared to younger women aged less than 35 years (36.5%) these results were in agreement with results of Cleary et al.,[7].

Older women may be at increased risk for abnormalities of the course of labor, perhaps secondary to the physiology of aging .It is possible that decreased myometrial efficiency occurs with aging . Nonetheless maternal age alone may be a factor influencing physician decision making[9]. It is uncertain whether the increased rates of cesarean delivery are due to a real increase in the prevalence of obstetric complications or whether there is a component of iatrogenic intervention secondary to both physician and patient attitudes toward pregnancy in this older patient population[10]**.**

Also, we found that the risk of adverse perinatal outcomes increase in relation to medical diseases with pregnancy like pre-aclampsia and PIH . 33% of stillbirths recorded in our study born to women who have medical disease with pregnancy were 6% of them born to women with PIH and 26% 0f stillbirths to women developed pre-eclampsia. Bell et al.,[10] supported our results. The reason that advanced-maternal age patients may be at increased risk of perinatal mortality is unknown**.** But, the failure of uterine vasculature to adapt to the increased homodynamic demands of pregnancy as women aged is a proposed explanation**.**

While 25% of newborns who developed birth asphyxia were born to women with medical problem like pre-eclampsia. 25% of newborns were low birth weight and the risk of incidence of low birth weight increased in those born to mothers having pre-eclampsia (20.8%) in pregnancy, versus 1.4% of them were born to women with PIH. 40% of newborns were having IUGR and were born to women with medical diseases .40% of these newborns their mothers were having pre-eclampsia. Also, there are statistically significant increase in rate of adverse perinatal outcomes with hemorrhage (antepartum and post-partum hemorrhage). Dutta[11] reported that various fetal complications that occur in patients with ante partum hemorrhage are premature baby ,low birth weight, intrauterine death ,congenital malformation and birth asphyxia**.**

In our study, 16% of stillbirths occur in women with hemorrhage and 8% of them born to mothers with antepartum hemorrhage and 8% of stillbirths born to women with post-partum hemorrhage .

The increased tendency of various complications of pregnancy with advanced age resulted in increased frequency of induced preterm delivery and intrauterine death**[12].** In our study, 34.0% of stillbirths and 25% of newborns who developed birth asphyxia and 43.5% of newborns with low birth weight were premature.

With regarded to malpresentation, the incidence of malpresentation insignificantly increased in women aged ever 40 years (11.4%) compared to women aged25-35 years (5.7%). In our study, the incidence of malpresentation increased in elderly primigravida aged over 40 years (33.3%) compared to grandmultipara (9.6%), while the incidence increased in grandmultiparus women aged 25-35 years (4.8%)compared to primigravida in the same age group.

The research results of Bobrowki and Bottoms[13] showed that, various fetal malpresentation are said to be common in grandmultipara, reduced tone of abdominal muscles, pendulous belly, fetal size and congenital abnormalities are usually suspected as causative factors**.** These malpresentations directly affect outcome of labour which increases the incidence of perinatal complications like stillbirths and low birth weight**.** In our study, we found that, in 8% of stillbirths and 11.6% of low birth weight malpresentations had occurred.

An interesting aspect of this study was that we did not find advancing maternal age to be associated with statistically significant increased risk of ante partum haemorrhage, low birth weight, stillbirths, prematurity in pregnant women with advancing maternal age while Cleary et al., reported that advancing maternal age may be associated with statistically significant increased risk of these complications, this is can be explained by that our study did not include enough number of women aged 40 years and older to draw any statistical conclusions about rates of ante partum hemorrhage, low birth weight, stillbirth, prematurity in women of these age groups while the study of Cleary et al., involved 36,056 women with complete data were available: 28,398 (79%)less than 35 years of age and 1,364 (4%) aged 40years and older. This study revealed that, increasing age was significantly associated with placenta previa (adjusted oods ratio [adjOR] 2.8), increased risk for abruption (adjOR2.3), preterm delivery (adjOR1.4), low birth weight (adjOR 1.6), and perinatal mortality (adjOR 2.2) was noted in women aged 40years and older.

Conclusion

1- Women aged ≥ 40years have higher risk of Cesarean section than young women . Incidence of PIH and pre-aclampsia show significant increase in correlation to age where risk of PIH and preiaclapsia is high among grandmultiparus women aged over 40.
2- There were statistically significant increases in the rate of NICU referral due to perinatal problems among women with advanced age. Rate for stillbirths, birth asphyxia, low birth weight were significantly increase with antepartum haemorrhage.
3- There were significant increase in the rate of stillbirths and low birth weight among those with fetal problems like malpresentation, multiple pregnancy and prematurity
4- As a result, the mother's high age can be an independent factor for adverse pregnancy outcomes, therefore complete awareness of pregnancy outcomes in these age group for

midwives and gynecologist is needed to protect the health of the mothers and to help over aged women to have normal labor with term infant and without adverse pregnancy outcomes, so that over age must not be a contraindication of pregnancy.

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