

Complications and Outcome of Pregnancy in Extremes of Reproductive Age Groups: Experience at Tertiary Care Center

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Abstract

Background: Pregnant women of extremes of reproductive age group at both ends (< 20 years and > 35 years age) comprise high risk groups. Pregnant women up to 35 years get many complications like diabetes, spontaneous abortion, hypertensive disorders, autosomal trisomies, increased newborn and maternal morbidity and mortality and cesarean sections. Pregnancies of < 18 years age group is complicated by anemia, preterm labor, urinary tract infections, pre-eclampsia, and a high rate of cesarean sections, preterm birth, low birth weight and growth retardation of the newborns.

Objectives: Incidence of various antenatal complications, pregnancy outcome and mode of delivery in < 20 years age group and > 35 year age group and to compare both the groups.

Methods: This retrospective study was done at department of obstetrics and gynaecology, Chatrapati Shahuji Maharaj Medical University, Lucknow, from January 2010 to December 2010. Data were collected from institutional logbook and various complications and outcome were studied. Statistical analyses were carried out by using the statistical package for SPSS-15.

Results: Present study showed that the definite increased risk of preeclampsia, eclampsia, obstetric cholestasis, twin gestation, anemia, preterm labor, premature rupture of membranes, intrauterine fetal growth restriction, and intrauterine fetal death in adolescent pregnancies and increased risk of eclampsia, diabetes, and cesarean sections in advanced age pregnancies.

Conclusions: Both adolescent and advanced age groups are high risk pregnancy groups so for best reproductive outcome, pregnancies at these ages should be very carefully supervised with both good maternal and fetal surveillance to achieve best maternal and fetal results.

Keywords: Adolescent, Advanced Age, Reproductive Age

1. Background

For good fertility outcome maternal age is an important factor. Pregnant women of extremes of reproductive age group at both ends (< 20 years and > 35 years age) comprise high risk groups. Advanced age pregnancies are more common as result of infertility treatments, changing social and demographic trends [1, 2]. Pregnancies of < 18 years age group is complicated by anemia, preterm labor, urinary tract infections, pre-eclampsia, and a high rate of cesarean sections, preterm birth, low birth weight and growth retardation of the newborns [3-8]. Smoking, unemployment, anemia and chorioamnionitis were found to be risk factors of teenage pregnancies. Teenage women were found to have a higher incidence of chorioamnionitis, which may be the result of several causes such as physiological immaturity of the cervix, specifically alkalinity of vaginal PH, prominence of the squamocellular junction and shorter cervical length [9]. Age-related differences in the prevalence of risk factors such as immunologic

naivety to sperm due to sexual inexperience [10], (inadequate blood volume expansion [11], and/or abnormal cytotrophoblastic stem cell differentiation and poor placental invasion due to a deficit of maternal gonadal hormones early in gestation) [12] could predispose adolescents to PIH. Pregnancies of > 35 years women get many complications like diabetes, spontaneous abortion, hypertensive disorders, autosomal trisomies, newborn and maternal mortality and cesarean sections [13-20]. The increased incidence of cesarean section is very common in advanced age. One possible explanation is that obstetricians may have a lower threshold for intervention in older women. An alternative explanation is that myometrial function deteriorates with age [21]. This mechanism may also be relevant to the increased age-related risk of breech presentation and postpartum hemorrhage, as uterine atony is the most common cause of postpartum hemorrhage. There was a wider distribution of birth weight in the older women. Although some studies have shown that delayed childbearing is as-

sociated with many increased complications of pregnancy but neonatal outcomes has not been shown to be appreciably different from younger women [18]. Jacobsson et al. showed in their studies that prenatal mortality, intrauterine fetal death, and neonatal death increased with age [19]. Pregnancies at both extremes of reproductive age represent many complications during pregnancy and birth which result in increased maternal and newborn morbidity and mortality [22]. The high rates of an ovulation during adolescence and after the age of 35 may be interpreted as an adaptation to high risk pregnancies during these phases of life. The identification of risk groups may enable the design of targeted ante-partum testing regimen which will result in improved outcomes so it is important to identify high risk groups to decrease complications. Although there are studies which have shown association between increased complications in extremes of reproductive age, but there is complete lack of Indian data so this study was done to report our experience at tertiary centre.

2. Objectives

This study is designed to have incidence of various antenatal complications, pregnancy outcome and mode of delivery in < 20 years age group and > 35 years age group and to compare both the groups.

3. Methods

This retrospective study was done at department of obstetrics and gynecology, Chatrapati Shahuji Maharaj University, Lucknow, from January 2010 to December 2010. Data were collected from institutional logbook. Eligibility for the study was limited to the pregnancies who reached 24 weeks of gestation. Total cases were divided in three groups. Group A consisted teenage pregnancy (< 20 years age), group B had women > 35 years age and group C had women between 20 - 35 years of age. Incidence of antenatal complications like preeclampsia, eclampsia, anemia, cholestasis, preterm labor, premature rupture of membranes, intrauterine growth retardation, placenta previa, placental abruption, polyhydramnios, oligohydramnios, twinning of pregnancy in all three groups calculated. Incidence of various medical disorders like jaundice, hypothyroidism, and heart disease were also find out. Mode of delivery and prenatal outcome were compared. Comparisons between the groups and subgroups were performed with Student t test for continuous data and chi square test or Fisher's exact test for categorical data. A probability value of < 0.05 was considered significant. Mean and standard deviation (SD) were calculated for continuous vari-

ables. Statistical analyses were carried out by using the statistical packages for SPSS-15.

4. Results

During the study period total number of deliveries at tertiary centre were 4720. Out of 4720 deliveries incidence of < 20 years women (group A) (326/4720) and > 35 years women (group B) (329/4720) was approximately similar and was 6.9%. Rest 86% women were between 20 - 35 years (group C). In group A, most women (63%) were primiparous while in group B and group C most women were multiparous (75% and 60%) respectively. Statistically significant difference (< 0.0001) was found in incidence of abortion in group A and group B when compared to group C. On comparing group A with control group C, statistically significant increase in incidence of various antenatal complications was found in group A and these complications were spontaneous abortion, preeclampsia, eclampsia, twin gestation, anemia, preterm labor, premature rupture of membranes, intrauterine fetal growth restriction and intrauterine fetal death. On comparing group B with group C incidence of spontaneous abortion, preeclampsia, anemia, and premature rupture of membranes, intrauterine fetal growth restriction and Lower segment cesarean section (LSCS) was statistically significantly increased in group B. Incidence of LSCS was significantly high (< 0.001) in group B. Although incidence of preterm neonate was significantly high only in group A but low birth weight neonates were significantly more in both the groups A and B. There was not statistically significant difference was found in antenatal complications like placenta previa, abruption, and congenital anomaly in group A and group B when compared to group C. More so ever on comparing group A with group B incidence of preeclampsia, eclampsia, anemia preterm labor, preterm rupture of membranes, intrauterine fetal growth restriction and intrauterine fetal death was statistically significant high in group A.

5. Discussion

Present study showed definite increased risk of preeclampsia, eclampsia, obstetric cholestasis, twin gestation, and anemia, preterm labor, premature rupture of membranes, intrauterine fetal growth restriction, and intrauterine fetal death in adolescent pregnancies. Previous studies have also focused on the adverse obstetrical outcomes in adolescent maternal age. Lao et al. reported that teenage pregnancies have higher incidence of preterm labor, lower birth weight, and caesarean rate

Table 1. Demographic Characteristics

Characteristics	Adolescent Age Group, (Group A)		Advanced Age Group, (Group B)		Control Group, (Group C)	
	Mean Age	Range	Mean Age	Range	Mean Age	Range
Age, y	(17.2 ± 3.1)	(16 - 20)	(38.2 ± 2.4)	(35 - 42)	(28.2 ± 3.2)	(21 - 36)
Abortion	Number	Percent	Number	Percent	Number	Percent
Total	129	39.5	198	60.1	472	11.6
A1	88	68	65	66	318	67
> A2	41	32	133	34	144	33
Parity	Number	Percent	Number	Percent	Number	Percent
P1	207	63	83	25	1635	40.2
> P2	119	37	246	75	2430	59.7

Table 2. Incidence of Complications in Three Groups^a

Parameter	Group A (326)	Group B (329)	Group C (4065)
PE	80 (24)	38 (11)	304 (7.4)
Eclampsia	38 (11.6)	6 (1.8)	98 (2.4)
Gestational diabetes	4 (1.6)	11 (3.2)	12 (3.6)
Anemia	106 (31.6)	79 (23.9)	248 (6)
Cholestasis	4 (1.6)	6 (1.8)	67 (1.6)
Twins	17 (5.2)	7 (2.1)	78 (1.9)
Preterm	72 (22)	264 (6.4)	16 (4.8)
PROM	33 (13.1)	13 (3.9)	116 (3.8)
Placenta Previa	12 (3.6)	17 (3.4)	139 (3.4)
Placental Abruption	5 (1.5)	2 (0.6)	42 (1)
IUGR	21 (6.4)	6 (1.8)	146 (3.6)
IUD	49 (15)	26 (7.9)	281 (6.9)
Congenital anomaly	6 (1.8)	9 (2.9)	36 (1.1)
Obstructed labor	3 (0.9)	11 (3.3)	66 (1.6)
Fibroid	0	1 (0.3)	10 (1.2)
Rheumatic heart disease	8 (2.4)	4 (1.2)	44 (1.1)
Jaundice	8 (2.4)	3 (0.9)	66 (1.6)
Hypothyroidism	1 (0.3)	5 (1.5)	50 (1.2)
Deliveries Vaginal	178 (54)	131 (40)	2296 (56)
LSCS	148 (46)	198 (60)	1796 (44)
Preterm	105 (32)	30 (8.8)	407 (9.3)
IUGR	279 (85.5)	114 (34)	1032 (25)

Abbreviations: IUGR, intrauterine growth restriction; IUD, intrauterine death; LSCS, lower segment cesarean section; PE, preeclampsia; PROM, premature rupture of membranes; RHD, rheumatic heart disease.

^aValues are expressed as No. (%).

[23]. Contrarily, Raatikainen et al. found no evidence for increased risk of preterm delivery, fetal growth restriction,

low birth weight, or fetal or prenatal death in teenage mothers [24]. Hidalgo et al. reported that adolescent

Table 3. Comparison of Variables in Extremes of Age Group and Control Group

Variable	A Versus C		B Versus C	
	OR (CI)	P Value	OR (CI)	P Value
Abortion	5.4 (4.2 - 6.9)	< 0.001	12.4 (9.7 - 15.9)	< 0.001
PE	4 (3.0 - 5.3)	< 0.0001	1.6 (1.1 - 2.3)	< 0.008
Eclampsia	3.9 (2.6 - 6)	< 0.0001	0.75 (0.3 - 1.79)	0.5
Gestational diabetes mellitus	0.75 (0.12 - 0.7)	1	1.1 (0.3 - 3.8)	0.7
Anemia	13.6 (10 - 18.3)	< 0.001	4.86 (3.6 - 6.5)	< 0.001
Cholestasis	0.3 (0.1 - 2.2)	0.3	1.3 (0.4 - 3.9)	0.5
Twins	2.8 (1.6 - 4.9)	< 0.001	1.1 (0.4 - 2.5)	0.8
Preterm	4.1 (3 - 5.5)	< 0.001	0.7 (0.4 - 1.2)	0.2
PROM	3 (1.9 - 4.7)	< 0.001	2 (1.2 - 3.4)	< 0.006
Placenta Previa	1.1 (0.5 - 2)	0.9	1.5 (0.9 - 2.6)	0.1
Placental abruption	1.5 (0.5 - 3.9)	0.4	0.6 (0.1 - 2.5)	0.7
IUGR	1.8 (1.1 - 3)	0.01	0.5 (0.2 - 1.1)	0.12
IUD	2.4 (1.7 - 3.3)	< 0.001	1.19 (0.7 - 1.8)	0.5
Congenital Anomaly	2.1 (0.8 - 5.2)	0.1	0.7 (0.1 - 2.9)	1
Obstructed Labor	1.1 (0.3 - 4)	0.7	1.9 (0.6 - 5.2)	0.2
RHD	2.3 (0.1 - 5.1)	0.05	1.1 (0.93 - 3.2)	0.7
Jaundice	1.5 (0.6 - 3.3)	0.3	0.5 (0.1 - 1.8)	0.4
Hypothyroidism	0.2 (0.01 - 1.6)	0.1	1.2 (1.4 - 3.2)	0.6
LSCS	1.1 (0.8 - 1.3)	0.5	1.2 (1.5 - 2.5)	< 0.001
Preterm neonate	4.2 (3.3 - 5.5)	< 0.001	0.9 (0.6 - 1.35)	0.67
Small for Gestational age	17 (12.5 - 24)	< 0.001	1.6 (1.2 - 2)	< 0.001

Abbreviations: IUGR, intrauterine growth restriction; IUD, intrauterine death; PE, preeclampsia, PROM, premature rupture of membranes; RHD, rheumatic heart disease; LSCS, lower segment caesarean section.

maternal age with lower socio-economic status increase the risk for low birth weight, adverse neonatal outcome, and cervicovaginal infections but is not associated with adverse obstetrical outcomes [25]. Advanced maternal age pregnancies have also been determined to have high risk for adverse obstetrical outcomes. The incidences of preeclampsia, gestational hypertension, cesarean delivery, abruption placenta, preterm delivery, and 5-minute Apgar scores < 7 to be significantly higher in the advanced maternal age group in their studies [20, 26]. Luke et al. reported increased abnormal labor, bleeding during labor and higher cesarean section rate in the advanced maternal age group [27]. Similarly, Jolly et al. also showed that complications such as gestational diabetes, placenta previa, cesarean section, postpartum hemorrhage, prematurity, low birth weight and stillbirth have higher frequency among women with advanced maternal age [28]. In contrast, Kale et al. reported that advanced maternal age with

high parity is not always related with adverse maternal outcomes [29]. Present study showed increased risk of eclampsia, diabetes and caesarean section in advanced age pregnancies. In older literature (e.g. Moerman 1982) [30], the increased risk of cesarean section among teenage mothers was mentioned, however according to more recent papers no increased rate of cesarean sections is found among very young adolescent mothers [22, 23, 31]. The results of the present paper support these findings, as the teenage mothers of the present sample had the lowest rate of cesarean sections of the whole sample. This might be due to the improved medical supervision of the teenage pregnancies.

5.1. Conclusion

To our best of knowledge there is paucity of Indian data regarding reproductive outcomes in extremes of age group. Both adolescent and advanced age groups are high

risk pregnancy groups so for best reproductive outcome, pregnancies at these ages should be very carefully supervised with both good maternal and fetal surveillance

Footnotes

Authors' Contribution: Manju Lata Verma has done data collection, data analysis and wrote the manuscript. Sabuhi Qureshi was involved in the design, implementation and data analysis, and contributed to the writing of the paper. Uma Singh and Nisha Singh were involved in the execution of the trial, and quality assurance. Pushpa Lata Sankhwar has helped in data collection and writing paper.

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