

Association between Obesity and Miscarriage among Females of Reproductive Age

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ABSTRACT

Objective: To determine the association between obesity and miscarriage among females of reproductive age.

Methodology: This cohort study was carried out in Department of Obstetrics & Gynaecology, Jinnah Hospital, Lahore for 6 months (15-08-2013 to 15-12-2014). The females were divided in two group on the basis of their BMI i.e. obese (>30kg/m²) or normal (18-24.9kg/m²). Then females were followed-up in OPD till 12 weeks of gestation. Females counseled and advice to present in hospital, if they develop indications for miscarriage. If any female had spontaneous abortion, miscarriage was labeled. Relative risk was calculated to measure the association between obesity and miscarriage. RR>1 was considered as significant.

Results : The mean age of patients was 30.48±5.64 years and the mean gestational age was 7±0.81 weeks. The miscarriage was occurred in 63(31.50%) patients in which 47 cases were obese and 16 cases were normal. Statically there is 4.65 times greater risk of miscarriage was observed in obese patients than to normal i.e. RR=4.65 [2.39-9.038].

Conclusion: It has been proved in our study that Obesity is associated with increased risk of first trimester and recurrent miscarriage among females of reproductive age.

Keywords: First Trimester, Miscarriage, Reproductive, Fetus, Obesity

INTRODUCTION

Obesity is a medical condition when the body mass index is >30. Maternal obesity is known as women become obese during pregnancy. Maternal obesity is associated with a higher rate of adverse outcome for both mother and the infant. Obese pregnant women also confer a higher and independent risk of obesity to her child.¹ In obstetric practice, it becomes the most commonly occurring risk factor.²

The literature is evident that the obesity is strongly linked with miscarriage. Morbidly obese women have a higher risk of congenital anomalies as well as high miscarriage rates.^{3,4} Controlling the obesity has a significant effect to prevent spontaneous abortion and it is a noninvasive, potentially modifiable and self-manageable by patients.⁴

Literature revealed a higher miscarriage rate of 12.5-13.6% in obese (BMI) >30 kg/m² versus 10.5-10.7% in normal-BMI (18-24.9 kg/m²) women. This seems to be insignificant.⁵⁻⁷ One study reported higher rate of miscarriage in obese women than those with normal BMI (60% vs 6.7%, p=0.002).⁸

This study was to determine the association between obesity and miscarriage among females of reproductive age. Literature has reported that maternal obesity is significantly associated with miscarriage. But in routine females ignore their BMI status which leads to ultimate death of fetus / abortion. But due to lack of local evidence, we are unable to motivate females to reduce their weight before conceiving pregnancy so that excessive abortions and complications related to abortion can be prevented. Thus we tried to prove that obesity is a significant risk factor for miscarriage. Through this study we also got local evidence. This may help to reduce burden of hospital by

reducing number of excessive miscarriages and we can also prevent females from complications of miscarriage. Through results of this stud we may able to update guidelines and if females presented with conception and they are obese as well, then we may have develop management plan to prevent them from miscarriage and its complications.

METHODOLOGY

A total of 200 cases (100 in each group) were enrolled in the study on fulfilling the selection criteria: Females of age 20-40years of parity<5 presenting with single fetus (on USG) at gestational age of >6-8weeks (on EDD and LMP). In **Group I:** Females with BMI>30kg/m² and **Group II:** Females with BMI 18-24.9kg/m². We excluded all those females with BMI 25-29.9kg/m², those with ectopic or heterotopic pregnancy or multiple pregnancy, PCOs, High risk patients like chronic diabetes (BSR>200gm/dl), chronic hypertension (BP>140/90mmHg), anemia (Hb<8gm/dl), deranged LFTs (ALT>40IU, AST>40IU), deranged RFTs (serum creatinine>1.2gm/dl), having previous history of miscarriage, and with previous h/o pre-term birth (<37 gestation). The demographic details (name, age, gestational age, BMI and parity) were also noted. Then females were divided in two group on the basis of their BMI i.e. obese (>30kg/m²) or normal (18-24.9kg/m²). Then females were followed-up in OPD till 12 weeks of gestation. Females counseled and advice to present in hospital, if they develop indications for miscarriage (as per operational definition). If any female had spontaneous abortion, miscarriage was labeled. All this information was recorded in the proforma (attached). We used 17th version of SPSS for data analysis, relative risk was calculated to measure the association between obesity and miscarriage. RR>1 was considered as significant. Parity was presented as frequency.

Received on 03-01-2021

Accepted on 03-07-2021

RESULTS

In this present study total 200 cases were enrolled with the mean age of 30.48 ± 5.64 years with minimum and maximum age of 21 & 40 years respectively, 23(11.50%) patients were nulliparous, 69(34.50%) patients had parity one, 60(30%) patients had parity two, 30(15%) patients had parity three and 18(9%) patients had parity four. The mean gestational age of the patients was 7 ± 0.81 weeks with minimum and maximum gestational ages of 6 & 8 weeks respectively. The mean weight of the patients was 70.04 ± 12.85 kg with minimum and maximum weights of 50 & 95 kg respectively, mean height of the patients was 1.60 ± 0.05 m with minimum and maximum heights of 1.50 & 1.69 m respectively. The mean value of BMI of the patients was 27.48 ± 5.62 kg/m² with minimum and maximum BMI values of 18.07 kg/m² & 36.72 kg/m² respectively.

In this study, the miscarriage occurred in 63 cases in which 47 cases were obese and 16 cases were normal, similarly the miscarriage not occurred in 137 cases in which 53 cases were obese and 84 cases were normal. Statically there is 4.65 times greater risk of miscarriage was observed in obese patients than to normal i.e. RR=4.65 [2.39-9.038]. Table#1

Table # 1 Comparison of study groups with miscarriage

		Study Groups		Total
		Obese	Normal	
Miscarriage	Yes	47	16	63
	No	53	84	137
Total		100	100	200

Chi value=22.26

p-value = 0.000 (Significant)

RR=4.65 [2.39-9.038]

DISCUSSION

Reproductive age group women face a significant problem of obesity.⁹ Obesity affects female reproductive function and fertility.⁹ Pregnant women also face various complications due to obesity which may occur during pregnancy (diabetes mellitus, thromboembolism, and hypertension) during labor (dystocia, fetal distress cesarean section/instrumental delivery). However, it may also affect fertility and miscarriages.¹⁰⁻¹²

Our study results showed that the mean value of BMI of the patients was 27.48 ± 5.62 kg/m², the miscarriage was occurred in 63(31.50%) patients, in which 47 cases were obese and 16 cases were normal, Statically there is 4.65 times greater risk of miscarriage was observed in obese patients than to normal. i. e RR=4.65 [2.39-9.038]. Some of the studies discussed below showing the results in favour of study.

Wang JX and others¹³ reveals a significant risk of spontaneous abortion in obese and underweight women than those with normal BMI. ($p < 0.05$, $p < 0.01$, and $p < 0.001$, respectively).

Boots and Stephenson¹⁴ also agrees with the findings of our results, they recorded miscarriage commonly in obese women than normal BMI females. (OR 1.31, 95%CI 1.18–1.46).

Literature revealed a higher miscarriage rate of 12.5-13.6% in obese (BMI) >30 kg/m² versus 10.5-10.7% in

normal-BMI (18-24.9 kg/m²) women. This seems to be insignificant.⁵⁻⁷

Metwally M et al¹⁵ revealed obesity as a general risk for miscarriage and those with >25 BMI had higher rate of miscarriage regarding method of conception.

Hamilton-Fairley et al¹⁶ in a study at North West Thames region in 1992 found miscarriage associated with higher BMI in primiparous women.

Another study by H. Lashen et al⁷ resulted that of 1644 obese and 3288 with normal weight cases of 26.6yrs of mean age were the part of the study. It was revealed that REM and early miscarriage rate was higher in obese females ($p=0.04$).

One study reported that Miscarriage rate was significantly higher in obese women compared with the non-obese women (60% vs 6.7%, $p=0.002$).⁸

Different studies presented that the miscarriages, especially on early stage of pregnancy, are common,¹⁷ however, the relationship between body mass index and miscarriages among females in general population is not well established as both obese and underweight females are found with increased risk of miscarriages.^{7, 15, 18-22}

CONCLUSION

It has been proved in our study that Obesity is associated with increased risk of first trimester and recurrent miscarriage among females of reproductive age.

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