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MATERNAL OBESITY AND OBSTETRIC OUTCOMES IN A TERTIARY CARE CENTER

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ABSTRACT

BACKGROUND: Pregnancy is unique, yet normal physiological chapter in women's life. Pre-existing morbidity can complicate pregnancy affecting mother and fetus resulting in high risk pregnancy .One of which is obesity causing antepartum, intrapartum and postpartum complications both in mother and child. **AIM OF THE STUDY:** The aim of this study is to evaluate the effect of obesity on the maternal and perinatal outcome in pregnancies complicated by obesity. **MATERIALS:** A prospective study is done in Govt. RSRM lying in hospital during June 2019-june 2020 .Among antenatal mothers attending antenatal outpatient department, mothers were chosen in their first trimester who had Body Mass Index>30kg/m2 as study group and mothers with a Body Mass Indexbetween18.5kg/m2and25kg/m2 as control group. Detailed history taking and investigations done and they were followed up to delivery and postpartum until discharge and outcome studied. **RESULTS:** In the present study, increasing age, sedentary lifestyle and low socio economic status show a positive relation to obesity. The proportion of primiparous Women was more in obese group(51.9%)when compared to control group(48.1%). Higher incidence of gestational diabetes and pre eclampsia are seen in obese group. Higher rates of cesarean deliveries among this group. Preterm delivery in obese women 10.4% compared to control group. **CONCLUSION:** Maternal BMI has a strong association with pregnancy complications and outcome. The best time of intervention may be before a woman considers a pregnancy and attempts are to be made to maintain a normal BMI in women of childbearing age.

INTRODUCTION

The magnitude of the obesity prevalence has been increasing in developed and developing nations, though in varying degrees. It becomes a major issue when it affects the women of reproductive age group, by increasing the incidence of gestational diabetes, preeclampsia, gestational hypertension, labour induction, increased Caesarean rates, anesthetic complications, post-operative morbidity, prolonged hospital stay. They are at increased risk of delivering large babies and NICU admission. Although routine weighing of pregnant women is being carried out in all of the ante-natal clinics, not much of importance is given to the weight of the women as such. In fact pre-natal counseling plays a vital role in identifying women who are obese. Advice on weight reduction before embarking on pregnancy will go a long way in reducing the morbidity due to obesity in pregnancy.

AIM OF THE STUDY

The aim of this study is to evaluate the effect of obesity on the maternal and perinatal outcome in pregnancies complicated by obesity.

MATERIALS AND METHODS

MATERIALS: A prospective study is among antenatal women attending antenatal outpatient department at Govt. RSRM Lying in Hospital during the period of June 2019-June 2020. Cases were chosen such that their BMI during the first trimester is >30kg/m2. Controls are antenatal women between 18.5kg/m2 and 25kg/m2 in first trimester.

METHODS: Pregnant mothers were selected according to the criteria and in all women detailed history followed by complete general and physical examination was done. Relevant hematological, biochemical investigations, USG were done. They were followed upto delivery and postpartum until discharge and outcome studied.

RESULTS AND ANALYSIS

TABLE 1: MATERNAL AGE DISTRIBUTION:

Maternal Age			BMI		Total
			control	Case	
Age Group in years	< 20	Count	5	2	7
		%within Age	71.4%	28.6%	100.0%
		%within BMI	6.8%	2.6%	4.7%
	20-24	Count	45	40	85
		%within Age	52.9%	47.1%	100.0%
		%within BMI	61.6%	51.9%	56.7%
	24-29	Count	17	20	37
		%within Age	45.9%	54.1%	100.0%
		%within BMI	23.3%	26.0%	24.7%
	> 30	Count	6	15	21
		%within Age	28.6%	71.4%	100.0%
		%within BMI	8.2%	19.5%	14.0%
Total		Count	73	77	150
		%within Age	48.7%	51.3%	100.0%
		%within BMI	100.0%	100.0%	100.0%

The majority of women in this study groupwere20-24years (56.7%).The majority of obese women (71.4%) were> 30years whereas majority of control women(71.4%) were <20yrs.

TABLE 2: OBESITY AND PARITY

Obstetric			BMI		Total
			control	case	
Obstetric code	Primi	Count	33	40	73
		%within Obstetric code	45.2%	54.8%	100.0%
		%within BMI	45.2%	51.9%	48.7%
	Multi	Count	40	37	77
		%within Obstetric code	51.9%	48.1%	100.0%
		%within BMI	54.8%	48.1%	51.3%
Total		Count	73	77	150
		%within Obstetric code	48.7%	51.3%	100.0%
		%within BMI	100.0%	100.0%	100.0%

In this study it was observed that most of the primiparous patients were obese 51.9% whereas in multiparous48.1%.

TABLE 3: GESTATIONAL AGE AT DELIVERY

Gestational age			BMI		Total
			control	case	
Gestational age (in weeks)	<37	Count	3	8	11
		%within Gestational age (in weeks)	27.3%	72.7%	100.0%
		% within BMI	4.1%	10.4%	7.3%
	37-40	Count	56	56	112
		%within Gestational age (in weeks)	50.0%	50.0%	100.0%
		% within BMI	76.7%	72.7%	74.7%
	>40	Count	14	13	27
		%within Gestational age (in weeks)	51.9%	48.1%	100.0%
		% within BMI	19.2%	16.9%	18.0%
Total		Count	73	77	150
		%within Gestational age (in weeks)	48.7%	51.3%	100.0%
		% within BMI	100.0%	100.0%	100.0%

Majority of women in our study group delivered at term. Preterm delivery in obese women is 10.4% compared to control group 4.1%.

TABLE 4: ANTEPARTUM COMPLICATIONS

Antepartum Complication		BMI		Total
		Control	case	
GHTN	Count	0	16	16
	% within Antepartum Complication	.0%	100.0%	100.0%
	%within BMI	.0%	20.8%	10.7%
Severe Pre Eclampsia	Count	1	3	4
	% within Antepartum Complication	25.0%	75.0%	100.0%
	%within BMI	1.4%	3.9%	2.7%
GDM	Count	0	8	8
	% within Antepartum Complication	.0%	100.0%	100.0%
	%within BMI	.0%	10.4%	5.3%
Anaemia	Count	9	4	13
	% within Antepartum Complication	69.2%	30.8%	100.0%
	%within BMI	12.3%	5.2%	8.7%
Total	Count	73	77	150
	% within Antepartum Complication	48.7%	51.3%	100.0%
	%within BMI	100.0%	100.0%	100.0%

The incidence of gestational diabetes was10.4%%and .0% respectively in obese and control group.The incidence of pre-eclampsia was 3.9% and 1.4% in obese and control group respectively. The incidence of gestational hypertension was 20.8% and .0% in obese and control group. The results were statistically significant.

TABLE 5: Mode of Delivery

Mode of Delivery			BMI		Total
			control	Case	
Mode of delivery	Labour natural	Count	46	20	66
		% within mode of delivery	69.7%	30.3%	100.0%
		%withinBMI	63.0%	26.0%	44.0%
	Primary Caeserean	Count	13	32	45
		% within Mode of delivery	28.9%	71.1%	100.0%
		%withinBMI	17.8%	41.6%	30.0%
	Repeat Caeserean	Count	9	17	26
		% within Mode of delivery	34.6%	65.4%	100.0%
		%withinBMI	12.3%	22.1%	17.3%
	Forceps	Count	0	5	5
		% within Mode of delivery	.0%	100.0%	100.0%
		%withinBMI	.0%	6.5%	3.3%
	Vaccum	Count	4	3	7
		% within Mode of delivery	57.1%	42.9%	100.0%
		%withinBMI	5.5%	3.9%	4.7%
	VBAC	Count	1	0	1
		% within Mode of delivery	100.0%	.0%	100.0%
		%within BMI	1.4%	.0%	.7%
Total		Count	73	77	150
		% within Mode of delivery	48.7%	51.3%	100.0%
		%within BMI	100.0%	100.0%	100.0%

Among obese women group 41.6% delivery by primary Caesarean.

In normal BMI 63% delivered by labour natural. Repeat Caesarean rate was also higher. Five delivered by Outlet forceps .Vacuum delivery higher in case of control group 5.5% than in obese 3.9%. Among the indication for Primary Caesarean section Failed Induction highest with 4.7%

TABLE 6: Intrapartum Complication

Intrapartum Complication		BMI		Total
		control	case	
Shoulder Dystocia	Count	0	1	1
	%within Intrapartum Complication	.0%	100.0%	100.0%
	%withinBMI	.0%	1.4%	.7%
Increase BP	Count	2	1	3
	%within Intrapartum Complication	66.7%	33.3%	100.0%
	%withinBMI	2.7%	1.3%	2.0%
Abruptio placenta	Count	0	2	2
	%within Intrapartum Complication	.0%	100.0%	100.0%
	%withinBMI	.0%	2.6%	1.3%
Total	Count	73	77	150
	%within Intrapartum Complication	48.7%	51.3%	100.0%
	%withinBMI	100.0%	100.0%	100.0%

TABLE 7: POSTPARTUM COMPLICATION

Postpartum Complication		BMI		Total
		control	case	
Wound infection	Count	0	5	5
	% within Postpartum Complication	.0%	100.0%	100.0%
	%withinBMI	.0%	6.5%	3.3%
Anemia	Count	4	1	5
	% within Postpartum Complication	80.0%	20.0%	100.0%
	%withinBMI	5.5%	1.3%	3.3%
GHTN	Count	0	1	1
	% within Postpartum Complication	.0%	100.0%	100.0%
	%withinBMI	.0%	1.3%	.7%

HELLP/AKI	Count	0	1	1
	% within Postpartum Complication	.0%	100.0%	100.0%
	%withinBMI	.0%	1.3%	.7%
AtonicPPH	Count	0	2	2
	% within Postpartum complications	.0%	100.0%	100.0%
	%withinBMI	.0%	2.6%	1.3%
Fever	Count	0	1	1
	% within Postpartum Complication	.0%	100.0%	100.0%
	%withinBMI	.0%	1.3%	.7%
Total	Count	73	77	150
	% within Postpartum Complication	48.7%	51.3%	100.0%
	%withinBMI	100.0%	100.0%	100.0%

Five obese patients developed wound infection, in control group no wound infection was found. One obese patient with elevated blood pressure and one obese patient with HELLP/AKI who recovered Anemia rate in control group was higher (5.5%) and lower in obese group(1.3%). Deep vein thrombosis was not seen in either group.

93.5% of control women delivered at term and 6.5% of obese women and 4.1% of control group delivered preterm.

TABLE 8: INDICATIONS FOR NICU ADMISSION

INDICATION FOR NICU ADMISSION			BMI		Total
			control	Case	
NICU admission and indication	NNH	Count	7	7	14
		% within Neonatal morbidity/ mortality	50.0%	50.0%	100.0 %
		%within BMI	33.3%	25.0%	28.6%
	Preterm	Count	0	1	1
		% within Neonatal morbidity/ mortality	.0%	100.0 %	100.0 %
		%within BMI	.0%	3.6%	2.0%
	Fever	Count	0	1	1
		% within Neonatal morbidity/ mortality	.0%	100.0 %	100.0 %
		%within BMI	.0%	3.6%	2.0%
	IDM	Count	1	4	5
		% within Neonatal morbidity/ mortality	20.0%	80.0%	100.0 %
		%within BMI	4.8%	14.3%	10.2%
	Respiratory distress	Count	2	7	9
		% within Neonatal morbidity/ mortality	22.2%	77.8%	100.0 %
		%within BMI	9.5%	25.0%	18.4%
	LBW	Count	5	1	6
		% within Neonatal morbidity/ mortality	83.3%	16.7%	100.0 %
		%within BMI	23.8%	3.6%	12.2%
	Birth Asphyxia	Count	2	1	3
		% within Neonatal morbidity/ mortality	66.7%	33.3%	100.0 %
		%within BMI	9.5%	3.6%	6.1%
	MSAF	Count	1	1	2
		% within Neonatal morbidity/ mortality	50.0%	50.0%	100.0 %
		%within BMI	4.8%	3.6%	4.1%
	Macrosomia	Count	0	1	1
		% within Neonatal morbidity/ mortality	.0%	100.0 %	100.0 %
		%within BMI	.0%	3.6%	2.0%

Neonates of obese mothers had increased NICU admission. 18.4% of babies born to obese women and 13.4% babies of control women were admitted in and in control group in this study was due to Neonatal Hyperbilirubinaemia; for obese group maximum was due to respiratory distress(25%).

CONCLUSION

Our study highlights the importance of obesity as a public health issues. The numerous maternal and perinatal risks in obese pregnant women which pose a considerable challenge to the obstetrical practitioner. Maternal BMI has a strong association with pregnancy complications and outcome. The best time of intervention may be before a woman considers a pregnancy and attempts are to be made to maintain a normal BMI in women of childbearing age. Prepregnancy counselling, health programs and appropriate multidisciplinary management should be done.

Obesity not only impacts the health of the women but also child leading to childhood obesity and diabetes. Pregnancies among obese women must be classified as high risk pregnancies and appropriate antenatal care should be provided with heightened surveillance, anticipation and diagnosis of the complications and intervene earlier, if complications arise.

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