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Case Report

Extreme obesity in pregnancy: A case report with references to the risks and the management

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ABSTRACT

This is a case report of extreme obesity in pregnancy where the foetus died in utero and the mother developed life threatening acute respiratory distress. Her life was saved by urgent ventilatory support and other care at the intensive treatment unit at ILS Hospital. The dead foetus with placenta and membranes were delivered normally. She went home in good health. The paper quotes publications on maternal and foetal risks in extreme obesity in pregnancy. The paper also refers to the international committees who framed guidelines towards management of obesity in the population before, during and after pregnancy.

1. Introduction

Prevalence of obesity has increased worldwide over past decades; such increase is also seen in reproductive age-group. Obesity has no universally accepted definition. It is defined best as adiposity in excess of that consistent with health. Evidence suggests obesity is consequent of ingestion of excess calories. (Tables 1 and 2).

Table 1: Categorization of body weight as per World Health Organization as follows

WHO Weight Category	Body Mass Index (BMI)* for adults (> 21 yrs)
Underweight	< 18.5 Kg/m2
Normal Weight	18.5 – 24.9 Kg/m2
Overweight	25 – 29.9 Kg/m2
Obese	≥ 30 Kg/m2

*Body weight is measured in Body Mass Index (BMI). BMI is calculated as weight in Kg / Height in square meter

Morbid obesity: BMI is ≥ 40 kg/m2. Extreme obesity: BMI is ≥ 50 kg/m2.

Table 2: WHO** classification of obesity

Class	Body Mass Index (BMI)
Class 1 Obesity	30 – 34.9 Kg/m2
Class 2 Obesity	35 – 39.9 Kg/m2
Class 3 Obesity	> 39.0 Kg/m2

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There is increased risks of maternal, fetal mortality and morbidity in obesity in pregnancy.

The risks are more when obesity is more. This case depicts extreme obesity in pregnancy with intra-uterine-death of the fetus(IUD) and life threatening acute respiratory distress.

2. Case Report

Mrs. X, 35 years old, with extreme obesity in pregnancy came to causality department of Institute of Laparoscopic Surgery (ILS Hospital, Salt Lake, Kolkata) in one late evening. She presented with acute respiratory distress over for past two to three hours. She had shallow labored breathing. She was tense, worried and in apparent distress.

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She gave history of hypertension and was on hypertensive therapy. She had bad obstetric history (BOH) of two miscarriages. In the third pregnancy, she gave birth of a healthy female baby, delivered by caesarian section six years ago. She had pre-conceptional BMI of 51 kg/m^2, and was waiting for bariatric surgery which was postponed due to uncontrolled co-morbidities.

On arrival, she had marked edema of lower extremities, face and abdominal wall, her vulva was grossly swollen. (Figure 1 & Figure 2).

Fig. 1: Obesity & edema of the face and abdominal wall

Her pulse rate was 130 per minute, Temperature 101°F and Blood Pressure 160/100 mmHg. No cardiac abnormality. Urine showed proteinuria +++. Oxygen saturation as SPO_2 was 92%. A bolus dose of $MgSO_4$ was administered intravenously that quietened her. She was shifted to Intensive Therapy Unit (ITU) with oxygen given via ventrimask. At ITU she was put on nonvasive ventilaroty support by BIPAP. $MgSO_4$ was continued as intravenous infusion 6 gm. in 500 ml. 5% dextrose of total 24 gm. $MgSO_4$ in 24 hours. The patient felt better, respiration became less laboured and slept peacefully.

Portable Chest X-Ray done on next morning, showed patchy diffuse consolidation of both lungs. The case was evaluated by specialist chest physician and on his advice patient was put on intravenous Augmentin 1000 mg. twice daily, Budecort nebulization and intravenous Lasix and labetalol and stamlodipin tablets orally. Special investigations done showed.

Fig. 2: Solid edema in the lower extremities (thighs)

2.1. Blood

Blood group: B +ve, Hb: 8 g/dl, Total Leucocyte Count (TLC): 6.0 x10^3/μL, Polymorphs: 70%, Lymphocytes: 24%, Platelet Count: 170 x 10^3/μL, ESR: 130 mm. Uric Acid: 7.7 mg/dl., Urea: 44.1 mg.dl., Creatinine: 0.7 mg/dl. Total Cholesterol: 220 mg/dl, Triglyceride: 200 mg/dl., LDL:180 mg/dl, HDL: 30 mg/dl. D Dimer: 6.04 μg/ dl., Fibrogen: 564.40 mg/dl., Ferritin :321.30 μg/ dl, Plasma Iron: 208 μg/ dl.

2.2. Urine

The urine routine examination showed Pus cell 15-18/ hpf, RBC: 4-6/hpf.

The urine culture showed growth of Escherichia coli.

Ultrasonography (USG) done for Feto-placental profile the day following admission showed: single intrauterine pregnancy of about 26 weeks' maturity, fetal weight 275 gm. with cardiac activities.

USG repeated 3 days later showed intra uterine death of fetus. Policy of conservative management was adopted. The medical treatment and physiotherapy were continued. The patient showed progressive improvement and had soft diet and was ambulated.

The patient went into spontaneous labour fortnight after admission on 10^{th} day of detection of IUD. A female macerated baby weighing 888 gm. was delivered. Placenta and membranes came out spontaneously. Placenta showed evidence of degeneration. There was no post-partum haemorrhage (PPH). In the puerperium special steps were taken against venous thrombosis by use of elastic stockings, physiotherapy and early mobilization.

Prothrombin time on the first day of puerperium was 10.1 seconds, normal less than 11 seconds (INR: <1). Colour Doppler venous study of both lower limbs showed normal blood flow. Patient was discharged on the third day of puerperium in good health physical and mental with advice to continue medical treatment for comorbidities and hematinics, Vitamin B complex and Vitamin D. She was advised for post-natal checkup four weeks later or earlier if there is any problem.

3. Discussion

Obesity is a rising global epidemic. The recent National Health and Nutrition examination survey found that more than one third of reproductive aged women were obese and 7.6% of them were extremely obese, BMI ≥ 50 kg/m2.[1]

Obesity in pregnancy is associated with increased maternal and fetal risks which is directly correlated with severity level of obesity. Other co-morbidities are common (diabetes mellitus, hypertensive disorder) and contribute to further increased risks. Confidential report in maternal deaths (2003-2005) in United Kingdom (UK) states that 28% maternal deaths occurred in obese women against 16-13% in non-obese pregnant women.

The secondary analysis of maternal death cases from 2000 to 2006, reviewed by Michigan group showed 3.7 times increase risk of pregnancy related deaths (PRD) amongst obese women compared that in pregnant women of normal body weight.[2]

A population based cohort study was undertaken in new found land and Labador, Canada, between January 2002 to December 31^{st}, 2011. The objective of the study was to evaluate the effect of extreme obesity (BMI ≥ 50 kg/m^2) on maternal and perinatal complications among 22594 (6 per 1000 pregnancies with BMI ≥ 50 kg/m^2). One death occurred in a mother with extreme obesity.[3]

The International Federation of Obstetrician and Gynaecologist (FIGO), in 2015 stated that obesity in pregnancy could lead to range of health problems, to the expectant mothers and their babies.[4]

Metabolic syndrome, a common comorbidity adds to the risks in obesity in pregnancy. Features of metabolic syndrome, also called X syndrome are hypertension, hyperglycemia and dyslipidemia. In dyslipidemia four of the lipid parameters should be abnormal.[5] High blood uric acid level is now included in metabolic syndrome. In the present case the lipid profile is suggestive of dyslipidaemia, so is the uric acid level.

The case here is one of extreme obesity in pregnancy with most features of metabolic syndrome. To make the matter worse the pregnancy occurred when she was having secondary amenorrhoea for last six years'. She was unaware of the pregnancy until in advanced second trimester. She had no understanding, no counselling about the adverse impact of obesity in pregnancy. Extreme obesity and the added weight gain in pregnancy grossly limited her physical activities. Respiratory efforts were reduced. Ventilation and inspiratory capacity volume were lowered. Diminished pulmonary function and altered immunity in pregnancy predisposed to lung infection and caused acute respiratory distress in the mother. Her life was saved by emergency admission in the hospital, urgent ventilatory support and intravenous broad spectrum antibiotic therapy and other medical care.

Poor oxygenation of the mother's blood, lowered the oxygen level in feto placenta circulation with consequent death of the fetus.

Worldwide International committees addressed the issue of obesity in pregnancy and advised an oriented surveillance approach.[6–8] The American College of Obstetrics and Gynaecologist (ACOG) in their committee opinion strongly encouraged precoceptional assessment and counselling for obese women that should include the provision of specific information concerning the maternal and fetal risk in obesity in pregnancy.[6]

The Royal College of Obstetrician and Gynaecologist (RCOG) in a joint guideline with centre for maternal and child enquires (CMACE) emphasized the need for clear guidelines in management of obesity in pregnancy and reinforced the need of dietary supplements of folic acid, Vitamin D in pregnancy. Special attention was given to the subclass of morbidly obese and extreme obesity.[7] The U K NICE also published guidance in 2010 regarding weight management before, during and after pregnancy.[8] The guidance recommends which action should be taken in obese population in preparing for pregnancy, during pregnancy and after child birth with respect to nutrition and physical activity.

Bariatric surgery is an option in extreme obesity that is refractory to medical measures.[9] The women reported here was advised to undergo bariatric surgery at an early convenient time.

4. Conclusion

In extreme obesity in pregnancy the risks to the lives of the mothers and their babies are too high to be acceptable. Mothers with extreme obesity or with obesity of the heaviest class must be counselled against venturing into pregnancy. They should be asked to follow the relevant guidelines recommended by the world academic bodies.

5. Statement of Human and Animal Rights

"All procedure performed in study involving human participants were in accordance with the ethical standards of the institutional and / or national research committee with the 1964 Helsinki declaration and its later amendments or comparable ethical standards".

"Informed consent was obtained from the patient referred in this case report".

6. Source of Funding

None.

7. Conflict of Interest

The authors declare that they have no conflict of interest.

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