

The implications of obesity on pregnancy

Rekha Wuntakal

Tony Hollingworth

Abstract

Obesity is a modern day epidemic. The incidence appears to be rapidly increasing in both developed and developing countries and has become much more obvious in the last decade. It is regarded as one of the major risk factors in pregnant women and has particularly gained recognition in obstetric practice due to its potentially adverse effects on pregnancy and the fetus.

There is evidence to show that obesity in pregnancy contributes to increased morbidity and mortality in both mother and baby. It is associated with adverse outcomes such as preeclampsia, gestational diabetes, thromboembolism, fetal abnormalities and large for gestational infants. According to the Confidential Enquiries into Maternal Deaths in the United Kingdom, 35% of the women who died had a BMI of 30 or more. All these issues highlight the immense importance in treating women with obesity in maternity practice accordingly.

Keywords gestational diabetes; metabolic syndrome; obesity; pregnancy outcome; pregnancy

Introduction

There are currently no universal guidelines for management of the obese woman during pregnancy. Most of the evidence comes from observational studies and audits in various maternity centres around the world. It should be mandatory to have a local protocol for management of such women.

In UK, further evidence for learning and reflection on practice comes from risk management meetings, audits, RCOG and Confidential Enquiries into Maternal Deaths (CEMACH). Consequently, obesity in pregnancy has been chosen as CEMACH's principal project with focus on maternal health for 2008–2011. The aim of the project is to review the prevalence and assess the quality of care such women receive in UK.

Research has shown a relationship between maternal obesity and increased weight in children, which subsequently leads to obesity as adults. This seems to be an ongoing process and traditional approaches to weight loss have not been effective in decreasing obesity. Prevention remains the best strategy therefore interventions at various levels are required to address the

Rekha Wuntakal MRCOG Educational/Research Fellow in Obstetric and Gynaecology, Department of Obstetrics and Gynaecology, Whipps Cross University Hospital, London-E11 1NR, UK.

Tony Hollingworth PhD FRCS(Ed) FRCOG Consultant Obstetrician and Gynaecologist, Department of Obstetrics and Gynaecology, Whipps Cross University Hospital, London-E11 1NR, UK.

risk factors leading to obesity in the offspring and thus break the vicious cycle.

Incidence and mortality (Maternal and Perinatal)

Obesity is considered as an epidemic in the USA with 27% of the population being obese. It is estimated that 130 million adults are either overweight or obese and one third of these are women of child bearing age.

In an audit conducted at a 'District General Hospital' in London (2004) the prevalence of overweight and obese women in obstetric population was 32%. The distribution in terms of ethnicity was 34.4% in Caucasians, 32% in Afrocaribbeans, 16.8% in Asians and 15.9% in others. The incidence of obesity (BMI > 30) in the UK among women of childbearing age is also increasing and has been reported to be in the order of 23%.

According to the 'Confidential Enquiries into Maternal Deaths' (2000–2002, UK), 35% of the women who died had a BMI of 30 or more. Thirty percent of the mothers who had a neonatal death or stillbirth were obese (Perinatal Mortality report, 2005). Late fetal deaths were also significantly higher in overweight and obese women whereas the risk for early neonatal death was not modified by pre-pregnancy BMI. This effect was higher in nulliparous than in parous women. Maternal complications and preterm deliveries largely contributed to this excessive mortality.

Classification

Obesity is commonly classified by the body mass index (BMI), derived from the formula of weight in kilograms divided by the square of the height in metres (Table 1).

The charts for calculating BMI are designed for the non-pregnant individual. Consequently, the definition of obesity during pregnancy remains unclear. A maternal weight of 90 kg is used as a cut-off in a few studies. For standardisations, the calculation of BMI is still advocated during pregnancy rather than absolute weight.

Epidemiology, ethnicity and socio-economic factors

Epidemiological studies have linked obesity during pregnancy to an increased risk of developing metabolic syndrome for the offsprings. Studies in the US reflect that there is an association of ethnicity, socio-economic factors and increasing incidence of obesity. Cultural practices and beliefs related to feeding are different among ethnic groups and contribute to different patterns of obesity in children and adolescence.

WHO classification of normal and abnormal body weight using body mass index BMI class (kg/m²)

| | |
|---------------|-----------|
| Ideal BMI | 18.5–24.9 |
| Overweight | 25–29.9 |
| Obese | 30–39 |
| Grossly obese | > 40 |

Table 1

According to the Department of Health, (UK) one in four adults in England are obese (23.1% in men and 24.8% in women) and it is estimated that nine in ten adults will be overweight or obese by 2050. The prevalence of obesity (2004) in women was reported to be higher for Black African (38%), Black Caribbean (32%) and Pakistani ethnic groups (28%) and lower in Chinese women (8%) when compared to women in the rest of the general population.

Sixty four percent of the adults in US are either overweight or obese. The prevalence of overweight and obese women is higher in ethnic minority (Black Americans) than in white Americans. Based on the data from the National Health and Nutrition Examination Survey (US) for adults (20–74 years), the prevalence of overweight (BMI > 25) women was 78% in Black (non-Hispanic) and 57.5% in White (non-Hispanic) while the prevalence of obese women (BMI > 30) was 50% and 30%, respectively. Morbid obesity (BMI > 40) was seen in 15.1% of Black (non-Hispanic) and 4.9% in white (non-Hispanic).

It was noted that women of lower socio-economic status were 50% more likely to be obese than those of higher socioeconomic status. The difference in dietary practices and exercise behaviours due to cultural differences was considered to play a big role in this increase in obese population in ethnic minority.

Pathology and pathogenesis

Obesity has a multifactorial aetiology (genetic, environmental, and socio-economic). Exposure of the fetus to over nutrition results in a variety of central and peripheral neuroendocrine responses that in turn regulate the development of the fat cell and the central appetite regulatory system. Early over nutrition has been linked to poor health outcomes that emerged in childhood and adolescence. This appears to have a direct impact on the reproductive fitness and health of the next generation, thus contributing to the cycle of obesity.

A comparison of the anthropometric measures in neonates of women who were overweight/obese (BMI \geq 25) and those who were lean/average (BMI <25) showed that there was significant increase in the percentage of body fat and also fat mass in babies born to overweight/obese women compared to lean/average weight women. Even with normal glucose levels, there was an increased risk of obesity in the offspring of obese women as well as a significant risk for adolescent obesity and components of the metabolic syndrome.

The metabolic syndrome is a combination of several risk factors for cardiovascular disease. The exact mechanisms of developing this syndrome are not known but it is thought to be directly affected by genetics and lifestyle factors such as diet and exercise patterns. Obesity with high blood pressure or abnormal blood lipids is the most common combination of the features of this syndrome. It can also occur in someone with insulin resistance despite normal blood glucose levels. Metabolic syndrome affects one in five people in the US and UK and the prevalence increases with age.

Preconception care and fertility

Weight loss in morbidly obese women has been shown to reduce maternal complications during pregnancy. As a consequence this may be the best opportunity for counselling women with obesity. They should be informed about dietary practices, and screened for diabetes and hypertension.

Optimising BMI is also important in women presenting with infertility. Increasing BMI has a negative effect on fertility. Women can present in many ways e.g. primary infertility, longer time to conceive, increased miscarriage rate, pregnancy complications such as pre-eclampsia, gestational diabetes and higher incidence of fetal abnormalities.

Women with lean PCOS rather than the obese range had more favourable assisted reproductive technology cycle characteristics (lean PCOS women used less gonadotropin ampoules and had more oocytes retrieved than obese PCOS women). Obese non-PCOS women had better-grade embryos, fewer embryos transfers than obese PCOS women but showed no clinical outcome differences (clinical pregnancy and live birth rates).

There is a linear reduction in fecundity (probability of achieving one pregnancy) with increasing BMI and IVF treatment with the pregnancy rate among women with a BMI >35 being half that for women with a BMI 20–25. The relative poor quality of embryos (during IVF treatment) is attributed to this finding and emphasises the importance of optimising the body weight before IVF treatment.

Obesity and contraception

The association between higher body weight and increased contraceptive failure emerged mainly from secondary analyses of efficacy trials of Norplant and the transdermal contraceptive patch (EVRA). A similar association was demonstrated between higher body weight and oral contraceptive (OC) failure.

The question as to whether weight really influences the efficacy of the modern low dose combined oral contraceptive pills (COC) has been raised, and the conclusion is that it does not. A recent large retrospective cohort study did not show a statistically significant association between increased BMI and contraceptive failure. It is suggested that the pill dosage, with all its back up actions, is sufficient and should be effective at all maternal weights; failure is usually consequent on poor compliance. However, a BMI >39 should be considered as an absolute contraindication for combined oral contraceptive pill use.

To date, there is no evidence to conclude that body weight influences the efficacy of the majority of progesterone only pills whose mechanism of action causes anovulation in only 15–40% of the cycles. In one study, a higher pregnancy rates with higher body weight was noticed but did not achieve statistical significance. However, it has been reported that body weight is less likely to affect the efficacy of POP containing 75 micrograms of desogesterol (Cerazette) as it will inhibit ovulation in 97–99% of the cycles, resulting in an efficacy similar to combined oral contraceptive pills.

Smoking and obesity

Smoking and obesity are associated with various poor outcomes including ectopic pregnancy, placental abruption, placenta previa, and preterm premature rupture of the membranes, pre-eclampsia, diabetes (gestational and non gestational), caesarean section and infections.

The combination of obesity (BMI > 30) and smoking was significantly associated with increased risk of venous thromboembolism (VTE) during pregnancy (Odds ratio 2.7) and puerperium (Odds ratio 5.3).

Download English Version:

<https://daneshyari.com/en/article/3967398>

Download Persian Version:

<https://daneshyari.com/article/3967398>

[Daneshyari.com](https://daneshyari.com)