كلية : كلية الطب العام

القسم او الفرع : النسائية والتوليد

المرحلة: الرابعة

أستاذ المادة : م.د.آلاء شلال فرحان

اسم المادة باللغة العربية :التوليد

اسم المادة باللغة الإنكليزية : Obstetrics

اسم المحاضرة الثانية عشر باللغة العربية: السمنة خلال الحمل

اسم المحاضرة الثانية عشر باللغة الإنكليزية : Obesity during pregnancy

محتوى المحاضرة الثانية عشر

Obesity during pregnancy

Excessive weight has become one of the major health problems in affluent societies. The prevalence of obesity in the United States has increased steadily as economic prosperity has increased. Unfortunately, obesity more correctly is *endemic*—a condition that is habitually present. Moreover, its prevalence has continued to increase since 1960. By 1991, approximately a third of adults in the United States were overweight, and almost 300,000 deaths were attributed annually to obesity. Sadly, the problem is not limited to adults, and 15 percent of children aged 6 through 11 years are reported to be overweight. The prevalence in adolescents is similar.

There are many obesity-related diseases, including diabetes, heart disease, hypertension, stroke, and osteoarthritis. Together they result in a decreased life span. Obese women who become pregnant and their fetuses are predisposed to a variety of serious pregnancy related complications. Long-term maternal effects include significant and increased rates of morbidity and mortality. Moreover, recent studies show that the offspring of obese women also suffer long-term morbidity.

A number of systems have been used to define and classify obesity. The *body mass index* (*BMI*), a is currently in use. The BMI is calculated as weight in kilograms divided by height in square meters (kg/m^2). According to the National Heart, Lung, and Blood Institute (1998), a *normal* BMI is 18.5 to 24.9 kg/m^2; *overweight* is a BMI of 25 to 29.9 kg/m^2; and *obesity* is a BMI of 30 kg/m^2 or greater.

The Metabolic Syndrome

In some people, obesity interacts with inherited factors and leads to the onset of *insulin resistance*. This metabolic abnormality in turn is responsible for altered glucose metabolism and a predisposition to type 2 diabetes. In addition, it causes a number of abnormalities that predispose to cardiovascular disease and accelerate its onset. The most important among these are type 2 diabetes, dyslipidemia, and hypertension. When clustered together with other insulin resistance–related subclinical abnormalities, these are referred to as the *metabolic syndrome*. Virtually all obese women with hypertension demonstrate elevated plasma insulin levels. Levels are even higher in women with excessive fat in the abdomen—an apple shape, compared with those whose fat is in the hips and thighs—a pear shape.

Morbidity and Mortality Associated with Obesity

They estimated that 300,000 adults die each year from obesity-related causes. Individuals who are overweight are at increased risk for an imposing number of complications. The direct link between obesity and type 2 diabetes mellitus is well known. Ninety percent of type 2 diabetes is attributable to excess weight. Heart disease due to obesity is caused by hypertension, hypervolemia, and dyslipidemia. Higher rates of abnormal left ventricular function, heart failure, myocardial infarction, and stroke have been noted.

Pregnancy and Obesity

Obesity is associated with subfertility due to increased insulin resistance. In their review, linked impaired fecundity in women with a BMI in excess of 30 kg/m^2. In in vitro fertilization-intracytoplasmic sperm injection cycles, they found that implantation, pregnancy, and live-birth rates were progressively and significantly reduced with each unit of maternal BMI. They found that obesity is associated with increased risk of first-trimester and recurrent miscarriage. In the many overweight and obese women who achieve pregnancy, there are a number of increased and interrelated adverse perinatal outcomes. Marked obesity is hazardous to the pregnant woman and her fetus.

Maternal Weight Gain and Energy Requirement

Fat deposition is greater in women with high BMI, and thus, energy costs are significantly lower. They studied regional fat distribution changes across pregnancy using sonography. They found that during the third trimester increases were predominantly in visceral fat. Despite these stores, maternal catabolism is not good for fetal growth and development. Thus, it is recommended that even obese women should not attempt weight loss during pregnancy but should limit weight gain to 20 pounds.

Maternal Morbidity

Obesity causes excess maternal morbidity. Especially striking are the marked increases in gestational hypertension and diabetes.The cesarean delivery rates of 33.8 percent for obese and 47.4 for morbidly obese women compared with 20.7 percent for the control group. More worrisome is that obese women also have increased rates of *emergency* cesarean delivery.

Other morbidity associated with maternal obesity includes a higher incidence of failed trial of labor with a prior cesarean delivery. Obesity and hypertension are common cofactors in causing peripartum heart failure and obese women present anesthesia challenges that include difficult epidural and spinal analgesia placement and complications from failed or difficult intubations. Second-trimester dilatation and evacuation was reported to take longer and be more difficult in women whose BMI was 30 kg/m^2 or greater.

Other complications include urinary infection, wound infection, pelvic infection, post-term pregnancy, postpartum hemorrhage, macrosomia and stillbirth.

Obese women are less likely to breast feed than normal-weight women. They also have greater weight retention 1 year after delivery Finally, there is evidence that quality-of-life measures are negatively affected by obesity during pregnancy. They found that postpartum depression was significantly increased in obese women and also in relation to the degree of obesity.

Preeclampsia

There is no doubt that obesity is a consistent risk factor for preeclampsia .In a review of studies they found that the preeclampsia risk doubled with each 5 to 7 kg/m^2 increase in prepregnancy BMI.

Obesity is also associated with low-grade inflammation and endothelial activation. Endothelial activation also plays an integral role in preeclampsia. Some linked these two conditions by providing evidence that inflammation may explain, at least partly, the association of obesity with preeclampsia. They confirmed that obese pregnant women had significantly elevated serum levels of interleukin-6 and C-reactive protein as well as evidence of impaired endothelial function. These investigators found that obese gravid women had significantly higher levels of triglycerides, very-low-density lipoprotein cholesterol, insulin, and leptin compared with normal-weight pregnant woman.

Contraception

Most studies report that oral contraceptive failure is more likely in overweight women. They studied oral contraceptive use and found that women in the highest weight had a 1.6-fold increased pregnancy risk. Importantly, obese women who used very-low-dose oral contraceptives had a four- to fivefold increased pregnancy rate.

Perinatal Mortality

An increased incidence of late-pregnancy stillbirths has been associated with obesity. In addition, the early neonatal death rate was nearly doubled in women with a BMI 30 kg/m2. They confirmed an almost threefold late-stillbirth rate in women with a BMI > 25 kg/m2.

They found increased prepregnancy weight to be the factor most strongly associated with unexplained fetal deaths even after adjusting for maternal age and excluding women with diabetes and hypertensive disorders. Compared with normal-weight women, the fetal death rate among obese women increased with gestational age.

Perinatal Morbidity

Both fetal and neonatal complications are increased in obese women. Earlier studies reported that women with a BMI > 30 kg/m^2 had a twofold increased incidence of neural-tube defects compared with that of control women. They also found a two- to threefold increased incidence in omphalocele, heart defects, and multiple anomalies in obese women. The last two were also increased twofold in overweight women whose BMI was 25 to 29.9 kg/m^2. They found that maternal obesity was significantly associated with an increased risk of a wide range of fetal/newborn structural anomalies. Of important concern are the many reports of unreliable fetal anatomy sonographic screening in obese gravidas.

Two important and interrelated cofactors that contribute to excessive rates of perinatal morbidity and mortality are chronic hypertension and diabetes mellitus, both of which are associated with obesity. Chronic hypertension is a well-known cause of fetal-growth restriction. Pregestational diabetes increases the rate of birth defects, and gestational diabetes is complicated by excessive numbers of large for gestational age and macrosomic fetuses and even without diabetes, the prevalence of macrosomic newborns is increased in obese women.

Maternal obesity is linked with increased childhood obesity. Combined with sociological and dietary factors, some reported that breast feeding decreases the risk of childhood obesity. At the same time,they reported that obese women were less likely to breast feed.

Management

Weight loss is difficult for obese individuals to accomplish. If achieved, long-term maintenance poses equivalent or even more difficulties. There are innumerable methods espoused to help or even directly cause weight loss, but even the most legitimate nonsurgical methods are fraught with frequent failure. If they are successful, slow and inexorable return to preintervention weight usually follows. Legitimate weight loss approaches include behavioral, pharmacological, and surgical techniques, or a combination of these methods. The American College of Obstetricians and Gynecologists encourages the role of obstetrician-gynecologists in assessment and management of obesity in adult women.

A program of weight reduction is probably unrealistic during pregnancy. If such a regimen is chosen, however, it is mandatory that the quality of the diet be monitored closely, and that ketosis be avoided. It is more pragmatic to *limit* weight gain in obese or overweight women.The goal of 15 pounds is an ideal target.

Close prenatal surveillance detects most early signs of diabetes or hypertension. Standard screening tests for fetal anomalies are sufficient. However, several investigators caution that detection of fetal anomalies in obese women is more difficult. Accurate assessment of fetal growth usually requires serial sonography. Antepartum and intrapartum fetal heart rate monitoring are likewise more difficult, and sometimes these are even impossible.

Surgical and Anesthetic Concerns

Evaluation by anesthesia personnel is performed at a prenatal visit or on arrival at the labor unit. For cesarean delivery, forethought is given to optimal placement and type of abdominal incision to allow access the fetus and to affect the best wound closure with the least intervening tissue. Individual differences in maternal body habitus preclude naming any one approach as superior.They reported a fourfold wound complication rate when a vertical abdominal incision was compared with a transverse incision—31 versus 8 percent and some reported similar wound complications with either incision.

Attention to closure of the subcutaneous layer is important. Subcutaneous closure resulted in a modest but significant 6-percent decrease in wound disruption.

Graduated compression stockings, hydration, and early mobilization after cesarean delivery in obese women is recommended. Some recommend "mini-dose" heparin prophylaxis, but we do not routinely use this.

Pregnancy Following Surgical Procedures for Obesity

A number of surgical procedures have been designed to treat morbid obesity by either decreasing gastric volume or bypassing gastrointestinal absorption. In a meta-analysis of these procedures in nonpregnant patients, they found them to improve or resolve diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea and the metabolic syndrome also improves.

Many women are becoming pregnant following weight-reduction surgery and improved fertility and reduced risks of obstetrical complications in those following bariatric surgery compared with morbidly obese controls. The three procedures commonly performed currently are vertical gastroplasty, gastric banding, and Roux-en-Y gastric bypass. Older procedures no longer in use include the jejunoileal bypass and upper gastrojejunostomy bypass.

Recommendations

The American College of Obstetricians and Gynecologists recommends the following counseling before and during pregnancy in women who have undergone bariatric surgery:

- Patients with adjustable gastric banding should be advised that they are at risk of becoming pregnant unexpectedly after weight loss following surgery.
- All patients are advised to delay pregnancy for 12 to 18 months after surgery to avoid pregnancy during the rapid-weight-loss phase.
- Women with a gastric band should be monitored by their bariatric team during pregnancy because adjustments of the band may be necessary.
- Patients should be evaluated for nutritional deficiencies, and vitamin supplementation should be given when indicated.

Thank you