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HYPERPARATHYROIDISM DURING PREGNANCY A REVIEW

Surgery

Dr Pushpalata Dubey HOD Zoology, TNB College, Bhagalpur, TMBU University Bihar

Dr Prakhar Upadhyay* Senior resident ENT JLNMCH Bhagalpur Bihar *Corresponding Author

Dr Chandra Mauli Upadhyay Associate Professor , Surgery JLNMCH Bhagalpur Bihar

ABSTRACT

Pain abdomen due to hyperparathyroidism is a rare condition.In hyperparathyroidism the level of parathormone hormone is raised. Parathomone is secreted from parathyroid endocrine glands which are small size(grain of rice) endocrine glands (4 in no) situated in the neck behind the thyroid. It plays an important role in calcium metabolism of body.it maintains the blood calcium level.HIGH level of this hormone in the blood leads to hypercalcemia which is responsible for many pathological conditions. Many systems and organs, such as pancreas ,kidney ,bone and brain are involved in hyperparathyroidism .It presents with pathological features of bones, stones, abdominal groans and psychic moans. Primary hyperparathyroidism during pregnancy poses significant risks to the mother and the fetus. The prevalence of primary hyperparathyroidism in the general population is 0.15%. This condition is more common in women and 25% of cases appear in women during the childbearing years. Because up to 80% of gravid patients with primary hyperparathyroidism are asymptomatic, diagnosing this condition is more difficult. Hyperparathyroidism during pregnancy puts both the mother's and child's life at risk. Complications associated with primary hyperparathyroidism in pregnancy have been reported to occur in up to 67% of mothers and 80% of fetuses. In addition to many constitutional symptoms, maternal complications include nephrolithiasis, bone disease, pancreatitis, hyperemesis, muscle weakness, mental status changes, and hypercalcemic crisis. Reported fetal complications include intrauterine growth retardation, low birth weight, preterm delivery, intrauterine fetal demise, postpartum neonatal tetany, and permanent hypoparathyroidism. . A four-fold decrease in perinatal complications may be achieved with appropriate therapy. Conservative intervention may be appropriate under certain circumstances, but excision of a parathyroid adenoma remains the only definitive treatment. Debate continues regarding the safety of surgery during pregnancy. This should be done with a minimally - invasive procedure that is as quick as possible, and of course, has a high likelihood of cure. It should be performed in the early part of the second and third trimester. Several cases of successful surgery have been reported.

KEYWORDS

INTRODUCTION

Primary hyperparathyroidism (PHP) is the third most common endocrine disorder after diabetes and thyroid disease. Women are affected twice as common as men Although PHP is a very rare condition during pregnancy. This can in part be attributed to the fact that PHPT most commonly occurs after the childbearing years. Another explanation could be that the disorder is generally underdiagnosed due to the physiological changes during pregnancy. Hypoalbuminaemia, increased glomerular filtration rate, transplacental transfer of calcium and the increased levels of estrogen all contribute to lowering serum calcium levels, thus masking PHPT . In addition, the symptoms that may appear in relation to the disorder, such as nausea and vomiting, may be thought to be due to the pregnancy and not due to PHPT. It is therefore possible that gestational PHPT is more frequent than previously reported. In addition, the symptoms that may appear in relation to the disorder, such as nausea and vomiting, may be thought to be due to the pregnancy and not due to PHPT. It is therefore possible that gestational PHPT is more frequent than previously reported.

It may cause feto-maternal morbidity and mortality . The prevalence of hyperparathyroidism in pregnancy varies from 0.15% to 1.4% . PHP occurs due to decreased negative feedback control and autonomous parathyroid hormone production by the parathyroid glands. The most frequent reason of PHP is a single parathyroid adenoma (85%) followed by parathyroid hyperplasia (15%-20%) .

Although rare, gestational PHPT may have serious consequences for both mother and child . It has been reported that the rate of maternal complications during pregnancy associated with PHPT can be as high as 67%, most commonly being hyperemesis and nephrolithiasis . More severe complications such as pancreatitis and hypercalcaemic crisis have also been reported, although at extremely high serum calcium levels . In addition, an increased risk of preeclampsia has been shown in women with PHPT . Gestational PHPT may also induce neonatal complications, such as risk of miscarriage can be as high as 85 percent, risk of premature birth, neonatal hypoparathyroidism((failure of the parathyroid glands to form)., hypocalcaemic tetanus, mental retardation and low birth weight , risk of heart rhythm problems during labor / delivery and Risk of seizures in the baby during first few days of life (due to LOW levels of calcium).

The treatment of PHP during pregnancy is based on severity of the disease. The optimal management in pregnancy has been debated in the literature. Conservative therapy for hypercalcemia may induce preterm delivery (5). Surgery is the most definitive treatment of PHP. Although it reduce the incidence of life-threatening maternal and fetal complications such as pre-eclampsia, miscarriage and hypercalcemic crisis, may provoke spontaneous abortion and preterm delivery . In this report, we aimed to present the successful conservative medical treatment of PHP diagnosed at 14 weeks of pregnancy.

Management

Investigations

Laboratory investigation—
Special Invetigation
Serum calcium ---more than reference range (reference range 8.4-10.4 mg/dl),

Phosphate level—less than normal(reference range 2.3-4.0 mg/dl),
Alkaline phosphatase level—raised (reference range 30-120 U/L)

Urine calcium level --- raised (reference range 100-250 mg/day)

Parathyroid hormone (PTH) level ---raised (reference range 16-48 pg/ml)

Ultrasonography of neck for parathyroid----finding will be A solid, hypoechoic nodule in any of the parathyroid gland.

CBC
LFT
KFT
Serum Amylase

Serum lipase
RE Urine

USG whole abdomen to know the condition of Liver,Pancreas, Kidney, whole peritoneal cavity and pelvis for foetal condition.

Diagnosis PHP is diagnosed on the basis of biochemical findings .

Treatment

Treatment of the patient should be done according to his complaints ,physical finding and diagnosis and gestational age of foetus diagnosed with the Ultrasound.

The conservative treatment is given first if required .

High fluid intake, low calcium diet and oral phosphate (3 g/day) by monitoring high fluid intake, low calcium diet and oral phosphate (3 g/day) by monitoring plasma calcium and phosphate levels on weekly period, conservatively.plan parathyroid surgery in the second trimester, as a radical and definitive treatment of PHP.If ptient is not ready for operation.Then calcitonin at the dose of 4 mg/ kg intramuscularly, 2 times during pregnancy to treat persistent symptoms of hypercalcemia. Calcitonin is considered the safest conservative treatment option due to negligible passage through the placenta in patients with hypercalcemia during pregnancy (11). The recommend dose should be that keep total plasma calcium lower than 3.0 mmol/L to avoid serious complications . Calcitonin treatment can be associated with tachyphylaxis. High doses of calcitonin during pregnancy may cause low birth weight in some animal studies . Maternal conservative treatment without calcitonin is continued in the postpartum period. Open focused parathyroidectomy should be performed to the patient after 6 months .

Management of neonate-. Admit the neonate in NICU. Early neonatal hypocalcemia should be detected with a low calcium level((reference range 8.4-10.4 mg/dl). Start intravenous calcium infusion (calcium gluconat, 400 mg/kg/day) and active vitamin D (calcitriol, 50 ng/kg/day) treatment to the newborn to increase serum calcium level. The infusion should continue for following two days of delivery. The newborn should be discharged after condition stabilizes.

Surgical treatment–

A minimally invasive parathyroidectomy in the second trimester of pregnancy is the most definitive and effective management of PHP. Parathyroidectomy is associated with a slightly increased risk of spontaneous abortion and preterm delivery . Surgery in the second trimester is safer than the other trimesters due to the lowest risk of anesthesia-induced preterm delivery and completion of organogenesis (16).

Maternal PHP causes suppression of fetal parathyroid glands secondary to an increase in net calcium flux across the placenta to the fetus. Transient suppression of fetal parathyroid function may result in severe neonatal hypocalcemia that leads to seizures . Neonatal hypocalcemic tetany, which usually occurs during the first 72 hours, may depend on maternal PHP (18). In transient neonatal hypocalcemia without neonatal tetany detected in the first day after delivery should be treated by intravenous calcium and active vitamin D administration.

DISCUSSION

The prevalence of PHP during pregnancy is probably underestimated because of non-recognition and selective reporting. In a previous study, PHP varies from 0.15% to 1.4% during pregnancy . The most important cause of PHP is a solitary parathyroid adenoma. Maternal complications of untreated parathyroid disorder can led to nephrolithiasis, hyperemesis or potentially life-threatening complications such as hypercalcemic crisis, preeclampsia and pancreatitis .

Intrauterine growth retardation, low birth weight, preterm delivery, intrauterine fetal demise and postpartum neonatal tetany may occuras fetal complications . Early diagnosis and effective management of this condition can reduce feto-maternal mortality and morbidity.

Clinical manifestations of PHP may be similar to pregnancy-related disorders. Therefore, some physiological modifications of pregnancy can mask typical symptoms of PHP. Correct diagnosis of PHP in pregnancy plays an important role due to the significant risk of perinatal mortality. Ultrasonographic examination is the preferred imaging modality during pregnancy for location of parathyroid adenomas with a sensitivity of 69% and a specificity of 94%. Computerized tomography and sestamibi scintigraphy are contraindicated during pregnancy due to possible risks of ionizing radiation.

PHP during pregnancy risks of ionizing radiation .

PHP during pregnancy necessitates an effective management because of the serious complications reported in untreated cases . Lack of evidence based guidelines often raises the dilemma between a conservative and surgical approach. Medical treatment may be an option during the first trimester of pregnancy, especially if symptoms and calcium levels can be controlled by drug therapy . By reason of progressive hypercalcemic symptoms, we shoul dstart a therapy with intramuscular injection of calcitonin. Calcitonin is considered the safest conservative treatment option due to negligible passage through the placenta in patients with hypercalcemia during pregnancy . The total plasma calcium must be lower than 3.0 mmol/L to avoid serious complications . Calcitonin treatment can be associated with tachyphylaxis. High doses of calcitonin during pregnancy may cause low birth weight in some animal studies .A minimally invasive parathyroidectomy in the second trimester of pregnancy is the most definitive and effective management of PHP. Parathyroidectomy is associated with a slightly increased risk of spontaneous abortion and preterm delivery . Surgery in the second trimester is safer than the other trimesters due to the lowest risk of anesthesia-induced preterm delivery and completion of organogenesis ..

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CONCLUSION

PHP during pregnancy is a rare and preventable cause of feto-maternal morbidity and mortality. Early correct diagnosis is essential for the management of PHP to avoid serious complications during pregnancy. Conservative management should be preferred in mild cases of PHP. Oral phosphate supplementation and intramuscular injection of calcitonin are safe and appropriate options of the treatment. On the other hand, surgical treatment in the second trimester is the gold standard and definitive therapy for PHP. Treatment options should be individualized to each pregnant woman based on the severity of the disease.

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