Case Report

Anesthetic Management of a Pregnant Patient with Intrahepatic Cholestasis Posted for Elective Caesarean Section

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Abstract

Intrahepatic cholestasis of pregnancy is a reversible type of hormonally influenced pregnancy-specific liver disorder. It is a severe form of cholestasis in pregnancy and is associated with an increased risk of perinatal mortality. Delayed delivery can lead to fatal fetal outcome even though maternal prognosis might be good. Early diagnosis and intervention may yield better perinatal outcome. This is a case report of anesthetic management of a primigravida with intrahepatic cholestasis of pregnancy posted for elective caesarean section.

Key Words: Intrahepatic cholestasis, Pruritus, Liver function, Pregnancy, Anesthesia

Introduction

During pregnancy, increased progesterone levels inhibit release of cholecystokinin which can lead to incomplete emptying of gall bladder resulting in cholestasis[1]. Intrahepatic cholestasis of pregnancy (IHCP) is a liver disorder that is confined to pregnancy. With an incidence of 1.24% in Indian population, IHCP mainly presents in third trimester as pruritus (80%) and jaundice (20%)[2]. The abnormalities in liver function tests are: bilirubin level less than 5mg/dl with mild or no elevation in transaminases and elevated bile acids. IHCP is strongly associated with family history, rare in black ethnicity and has a high incidence of recurrence in subsequent pregnancies (45-70%).

Related to the fetus, it can result in preterm delivery(20%) and meconium staining(25%). Incidence of fetal distress and death is high if early delivery is not induced. The presence of multiple gestations has been identified as a risk factor for the development of intrahepatic cholestasis of pregnancy, with reported rates that range from 9.5% to 20.9%.

This is a report of intraoperative anesthetic management of a pregnant patient with IHCP for elective caesarean section (Indication: Oligohydramnios and increased risk of fetal distress).

Case Report

A 30 year old primigravida at 34 weeks of gestational age presented with history of pruritus for one month and yellowish discoloration of urine for 10 days. Her amniotic fluid index (AFI) was 6. She was a known case of hypothyroidism, on treatment with T.Levothyroxine sodium 75 mcg OD. On examination, her heart rate was 88 bpm, blood pressure was 124/80 mmHg; general examination revealed icterus and pedal edema. Systemic examination was within normal limits. Preoperative laboratory investigations revealed: Total bilirubin - 2.4 mg/dl, Direct bilirubin - 1.59 mg/dl, AST -155 U/L, ALT - 151 U/L, Alkaline phosphatase - 479 U/L, GGT - 45 U/L. Bleeding Time - 2 mins, Clotting time - 4 mins. Complete blood count, thyroid profile, coagulation profile, viral markers and Ultrasonogram of abdomen were normal

Patient was posted for elective caesarean section in view of oligohydramnios and increased risk of fetal distress due to IHCP. She had received two doses of Inj. Beclomethasone 12 mg, 12 hours apart in view of premature delivery, for lung maturity. Half an hour before surgery, patient received Inj. Ranitidine 50 mg iv and Inj. Metoclopramide 10 mg iv. Standard monitors of heart rate (HR), non invasive blood pressure (NIBP), pulse oximetry (SPO_2) and respiratory rate (RR) were instituted and patient was preloaded with 500 ml Ringer lactate. Since there was no absolute contraindication for subarachnoid block (normal platelet count, normal coagulation profile), this patient was managed with subarachnoid block.

Under aseptic precautions, with patient in sitting position, subarachnoid block was administered with 2.0 ml of Inj. 0.5% Bupivacaine (Heavy) with Inj. Fentanyl 25 mcg using 25G Quinckie spinal needle at L3- L4 intervertebral space. Sensory blockade was achieved up to T6 dermatome level. Oxygen via face mask was given at 6 L/min. Baby was delivered after 12mins with birth weight of 2.5 kg and APGAR scores of 8/10, 9/10 at 1 min and 5 min respectively. Inj. Oxytocin 10 IU in 500 ml normal saline iv infusion was administered. Estimated blood loss was 500 ml and urine output 700 ml. Procedure was completed uneventfully.

Patient improved symptomatically by 5th postoperative day with repeat Liver Function Tests showing Total bilirubin - 1 mg / dl, Direct bilirubin - 0.24 mg / dl, AST - 45 U / L, ALT - 48 U / L, Alkaline phosphatase - 159 U/L .

Discussion

Repeated jaundice of pregnancy, obstetric cholestasis and hepatosis of pregnancy are known as intrahepatic cholestasis of pregnancy (IHCP). It is second only to viral hepatitis as a cause of jaundice in pregnancy and is the most common condition peculiar to pregnancy [1]. The etiology is unknown but may have a genetic susceptibility for more sensitivity and modified membrane content of bile ducts and hepatocytes to normally produced estrogens and progestogens and their metabolites. Histology of liver reveals simple cholestasis[3].

IHCP may occur in the end of 2nd or beginning of 3rd trimester. IHCP is marked by pruritus predominantly in the palms and soles. The severity of cholestasis is based on the early onset of symptoms. Jaundice is generally mild and obstructive (Serum bilirubin not > 5 mg%). Elevated serum aminotransferases, slight increase of AST and ALT (2-10 times), and increased serum bile acid levels (10-40 μmol/L)[4] with gradual relief of symptoms and normalization of lab values in the postpartum period[5]. Serum alkaline phosphatase level increases 7-10 times above normal[5]. GGT level is usually normal. Prothrombin time is generally normal, but when raised denotes vitamin K deficiency[6] due to malabsorption.

Though maternal prognosis is good, in subsequent pregnancies, recurrence is common; upto 45-70%. There is increased risk of intrapartum and postpartum hemorrhage (PPH) in undiagnosed coagulopathy. Postpartum hemorrhage is recorded in 8-22% cases after delivery[6,7]. Fatal fetal outcomes include preterm delivery, meconium staining of amniotic fluid, fetal bradycardia, fetal distress and sudden unexplained intrauterine death, particularly during fasting serum bile acid levels >40 μmol/L[1].

In general anesthesia there is a chance for potential decrease in liver function and blood flow to the liver[8]. During controlled ventilation liver blood flow can be decreased due to inhalational anesthetics and surgical stress. Inhalational anesthetics have high hepatotoxicity. Halothane exacerbates hepatic toxicity by decreasing blood flow to liver. Isoflurane, an isomer of enflurane, undergoes only a minimal biotranformation of 0.2% and preserves hepatic blood flow and oxygen delivery and hence may be inhalational agent of choice because it has minimal hepatotoxicity amongst all inhalational anesthetics[8]. Intravenous agents like propofol, etomidate, midazolam does not alter the hepatic function. Inj.Thiopentone, can have a prolonged duration of action as it is predominantly degraded in the liver. Opioids have little effect on hepatic function. They may increase the tone of common bile duct and sphincter of oddi leading to biliary spasm. This is more often seen in large doses of long acting opioids due to limited metabolism and elimination secondary to liver disease. Fentanyl in appropriate doses, is the opioid of choice as it is short acting. Succinylcholine may have a prolonged duration of action due to deficiencies of plasma cholinesterase. The volume of distribution of nondepolarizing muscle relaxants is increased in patients with liver disease and hence larger doses maybe required. Atracurium and cisatracurium are metabolized independent of liver and are hence preferred. Inspite of all the drawbacks, if general anesthesia is preferred, minimal doses of Inj.Thiopentone and isoflurane with fentanyl and muscle relaxant atracurium are to be used[8].

Regional anesthesia maintains blood flow to liver as long as blood pressure is maintained in normal limits. A fall in mean arterial pressure may lead to hypoperfusion of the liver. Prior to administration of subarachnoid block, preloading the patient with 500-1000ml of crystalloids is necessary to prevent hypotension. The use of vasopressor drugs (eg. ephedrine) for maintenance of perfusion pressure maybe beneficial. Catecholamines secreted as a result of surgical stress reduce hepatic blood flow and since this stress response is reduced with regional anesthesia, subarachnoid block is a good choice of anesthesia[8]. However there is an increased chance of spinal hematoma in case of deranged coagulation profile. In liver disease prothrombin time maybe longer due to vitamin K deficiency. Hence there is an absolute requirement of coagulation profile on the day of surgery in case regional anesthesia is preferred[8].

The treatment of IHCP aims at relieving pruritus, decreasing the level of bile acids and improving perinatal outcome. The high risk of fetal distress, spontaneous preterm delivery and sudden death dictates the management of IHCP. Irrespective of altered liver function tests, progression towards delivery may have an increased risk on the fetus. Hence monitoring of these markers is essential even though abrupt fetal distress and fetal death cannot be prevented. Induction of labor may be done following establishment of fetal lung maturity[9]. Ursodeoxycholic acid (UDCA), a tertiary bile acid, is the choice for the management of cholestatic liver diseases. Dose is 1 g (14 mg/kg/d). It improves the biochemical parameters and relieves pruritus[10]

Conclusion

IHCP has low maternal morbidity but has grave effects on the fetus. This case emphasizes the fact that IHCP should be considered as an important differential diagnosis of parturient with jaundice in third trimester. Such cases can effectively be managed with subarachnoid block provided there is no platelet dysfunction or coagulation diathesis. Early diagnosis, appropriate medical intervention, careful fetal assessment and timely delivery will improve both maternal and fetal outcome.

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