Asian Research Journal of Gynaecology and Obstetrics

6(3): 18-21, 2021; Article no.ARJGO.75408

Sudden Intrauterine Fetal Death as a Fetal Complication Due to Intrahepatic Cholestasis of Pregnancy: A Case Report

M. Ait Oufkir[1*], M. Azerki[1], Z. Kabba[1], Z. Iloughmane[2], H. Alami[1], A. Filali[1], Z. Tazi[1] and R. Bezad[1]

[1]National Center of Reproductive Health, Mohammed V University, Hospital Ibn Sina, Rabat, Morocco.
[2]Aeromedical Expertise Center, Military Hospital Mohammed V, Rabat, Morocco.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

Editor(s):
(1) Dr. Abdelmonem Awad M. Hegazy, Zagazig University, Egypt.
Reviewers:
(1) Nehal Sahay, Rajasthan University of Health Sciences, India.
(2) Amer Suskic, Univrsity Sarajevo, Bosnia and Herzegovina.
Complete Peer review History: https://www.sdiarticle4.com/review-history/75408

Case Report

Received 02 September 2021
Accepted 08 November 2021
Published 15 November 2021

ABSTRACT

Intrahepatic cholestasis of pregnancy (ICP) is a liver disorder during pregnancy. ICP usually manifests during the second and third trimester of gestation and the diagnosis is based on the clinical symptoms; the presence of pruritus with a deterioration of liver tests, and typically elevated serum levels of total bile acids. The symptoms and liver function tests of ICP resolve spontaneously after delivery. ICP is associated with the risk of preterm delivery, respiratory distress syndrome, meconium-stained amniotic fluid and sudden intrauterine fetal death. We report a case of 23-year-old patient who was admitted to our hospital in the 32th week of pregnancy due to decreased fetal movements a month before. The clinical symptoms was pruritus and jaundice, it was appeared a three month before hospitalization. Immunology tests parasitology and virology tests were negative. The patient denied taking any medicines and herbal preparations before and during pregnancy. Total bile acids in the serum were significantly elevated (147 mg/L). Liver enzymes were raised. The abdominal ultrasound revealed a collapsed gallbladder without image of cholelithiasis. Obstetric ultrasound revealed a sudden intauterine fetal death at 23th week of pregnancy. She underwent induction of labour and delivered a death male infant.

**Corresponding author: E-mail: azex10@hotmail.com;*

Keywords: Intrahepatic cholestasis of pregnancy; fetal complications; sudden intrauterine fetal death.

ABBREVIATIONS

ICP : Intrahepatic Cholestasis of Pregnancy
TBA : Total Bile Acid
MSAF : Meconium-stained Amniotic Fluid
IUFD : Intrauterine Fetal Death
RDS : Respiratory Distress Syndrome

1. INTRODUCTION

Intrahepatic cholestasis of pregnancy is a liver disease that seen in pregnancy. ICP affects around 1% of all pregnancies .The prevalence of ICP is important in certain geographical areas (South America, Scandinavia) that explain the existence of family forms [1].

The principal complication of ICP is sudden intauterine fetal death (IUFD) even if it is rare. This disease is typically presenting in the second to third trimester of pregnancy and is characterized by pruritus, elevated serum of liver function tests. The clinical symptoms and liver function tests of ICP resolve spontaneously after delivery [2].

The pathogenesis of ICP is multifactorial, include an environmental, genetic and hormonal factors [2]. ICP has been reported to have important fetal complications. ICP has been found to be associated with increased risk of preterm delivery, meconium stained of amniotic fluid, fetal distress and sudden intrauterine fetal death [1,3,4].

2. CASE REPORT

A 23-year-old patient, normal weight, housewife, without particular pathological history or notion of taking medicines and herbal preparations before and during pregnancy, she has two children living and well.

She was admitted to our hospital in the 32th week of pregnancy due to decreased fetal movements a month before. The first clinical symptoms were pruritus and jaundice, the symptomps appeared a three month before hospitalization. Clinical examination showed general jaundice with scratching lesions.

The laboratory test showed an increasing of serum transaminases, alanine aminotransferase = 107 U/L, aspartate transaminase = 105 U/L, modestly increase of total bilirubin =147 mg/L and direct bilirubin = 108 mg/L, triglycerides = 2.48g/L, Lipase= 18 U/L and elevations in the serum concentrations of ALKP = 441 U/L. We noted unchanged coagulation samples and normal of kidney function tests. Immunology tests virology and parasitology test were negative. The abdominal ultrasound revealed a collapsed gallbladder without image of cholelithiasis. Obstetric ultrasound revealed a sudden intauterine fetal death at 23th week of pregnancy. She underwent induction of labour and delivered a death male infant macerated weighting 900g.

Subsequently, three months after delivery the laboratory test returned to normal values.

3. DISCUSSION

The etiopathogenesis of the fetal complications of ICP still remains the subject of research. Most studies have shown that these complications are closely related to elevated maternal systemic levels of TBA [5]. The fetus synthesizes bile acids in the second trimester that transported through the placenta then excreted through the maternal side. When maternal bile acid concentrations are elevated, the fetal-maternal gradient is inverted, leading to an elevation of fetal TBA, though fetal levels do not usually reach maternal TBA levels [4-5].

Knowledge of the maternal serum concentrations of TBA allows only a rough estimate of TBA levels in the fetal compartment.

Sudden IUFD represents 1-2% of pregnancies complicated by ICP[1-5]. The link between elevated bile acid levels and stillbirth is reported consistently in the literature [1]. Fetal death is thought to be directly related to bile acid effects on the fetal heart and not to chronic placental insufficiency. Clinical studies of the arrhythmogenic effect of bile acids on the fetal heart have reported fetal atrial flutter and supraventricular tachycardia in ICP [6]. In vitro animal and human stem-cell cardiomyocte models have shown that bile acid administration decreases contractile function and induces arrhythmia [7-8]. In addition, there is evidence that bile acids have a pathologic effect on the placenta causing marked vasoconstriction of chorionic vessels. This has been hypothesized as a contributor to the risk of sudden fetal death in ICP [9].

Preterm delivery rate is estimated to 19%–60% in women with ICP [1-5]. ICP is more frequent among in multiparas. There is a significant proportion of preterm labors results from iatrogenic interventions. The mechanism is that bile acids stimulate the expression of oxytocin receptors. Therefore, the myometrium of women with ICP is more sensitive to oxytocin [10], which may lead to spontaneous preterm delivery. Animal studies have demonstrated a potential causal link between elevated bile acid levels and spontaneous preterm birth [11].

Meconium-stained amniotic fluid (MSAF) rate is estimated to 27% in women with ICP [1] .It is explained that meconium expulsion is secondary to vagal stimulation of the mature fetal gastrointestinal tract caused by hypoxic stress. Vagal nerve stimulation results in gut peristalsis and anal sphincter relaxation leading to meconium passage. It is known that bile acids stimulate the motility of the large intestine, and, therefore, may lead to meconium expulsion [12]. The incidence of MSAF correlates with severity of ICP. In animal studies, bile acids have been shown to directly stimulate gut motility. In a rabbit model, colonic smooth muscle contractility measurement demonstrated a dose-dependent increase with the addition of bile acids the risk of meconium expulsion greatly increases after 38th week of pregnancy [4].

The incidence of respiratory distress syndrome in the new-borns of mothers affected by ICP is estimated to 29% [1]. This can be explained by the earlier gestational age at delivery, but it has been demonstrated that RDS is associated with ICP, due to analysis of bronchoalveolar lavage fluid of neonates born to mothers with ICP. It has been proposed that bile acids can cause surfactant depletion in the alveoli [13]. There are some animal studies that have shown microscopic of atelectasis, eosinophilic substances in intra-alveolar spaces, and formation of hyaline membranes in rabbits after intratracheal instillation of taurocholic acid [14,15].

4. CONCLUSION

Intrahepatic cholestasis is a liver disease during pregnancy defined by pruritis and elevated bile acids. ICP can have serious impacts on fetal health which usually occurs in the late second or third trimester. it remains a common, dangerous, and poorly understood complication of pregnancy for which continued investigation is certainly warranted.

CONSENT

According to the standards, written consent was taken from patient prior to cease publication.

ETHICAL APPROVAL

As per international standard and university standard written ethical approval has been collected and preserved by the author.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle4.com/review-history/75408