

IMPACT OF LIVER DISEASES ON PREGNANCY AND PUERPERIUM STAGE: A SYSTEMATIC REVIEW

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Abstract

Purpose: Changes in the liver function tests (LFTs) are a serious complication during pregnancy and require proper analysis in order to avoid the risk factors in the diagnosis. Pregnancy-specific diseases are the most common reason for abnormal liver function tests while pregnant, especially in the third trimester.

Materials and Methods: In this review article, pregnancy-related liver disease articles indexed in various databases were used. The collection of articles was evaluated by using keywords including liver diseases, pregnancy, eclampsia, fatty liver, liver enzymes and puerperium stage.

Results: Liver cirrhosis, autoimmune infections, primary biliary redness, Wilson's unwellness are few examples of pre-existing liver diseases which are exceptionally rare because pregnant women are often young and healthy. Intrahepatic cholestasis of pregnancy, the HELLP syndrome (haemolysis, increased liver enzymes, low platelets), eclampsia and acute fatty liver are all liver conditions that are specific to pregnancy. These abnormalities may cause foetal distress, serious liver damage, and even hepatic failure; as a result, rapid diagnosis and treatment are required. Serum transaminases, alkaline phosphatase, bilirubin etc. are frequently used diagnostic procedures.

Conclusion: This review mainly focuses on the pregnancy-associated liver disorders with several biochemical tests, and their pathophysiology to interpret the abnormal condition of the liver during pregnancy. It also highlights the current scenario of Maternal Mortality Ratio in India. The effects of alcohol on unsuccessful pregnancies in females are also discussed. In this, so far bleak situation, changes in lifestyle, early and timely collaborative care by the obstetric and medical teams can produce the best results.

Keywords: Liver function test, pregnancy, liver diseases, liver enzymes, diagnosis.

Introduction

Changes in the liver function tests (LFTs) are a serious complication during pregnancy and require proper analysis in order to avoid the risk factors in the diagnosis. Sometimes the abnormal liver function test can have a dangerous effect on both the mother and fetus. Several acute liver diseases must be diagnosed at an early stage so that the chances of morbidity and mortality for mother and infant is reduced. In order to facilitate an appropriate management, it is important to make a difference between the normal physiological and diseased pathological changes in pregnancy. Moreover 3% of the pregnant women that are affected by the liver dysfunction are at a risk of various maternal and perinatal morbidities [1].

Basically, the liver disorders present unnoticeably during the gestation time because of the physiological changes in the liver and it is very difficult to manage and diagnose a liver disease that time. But there is a solution for every problem. So, to treat this liver disease a systemic management like taking a detailed clinical history, proper examination, laboratory analysis and certain radiographic evaluation is required [1]. The clinical history includes previous pregnancy complications, use of intravenous drugs, oral contraceptive etc. Also, some clinical data such as nausea, vomiting, abdominal pain, jaundice, polyuria, Polydipsia should be assessed in the absence of another chronic metabolic disease like diabetes.

Materials and methods

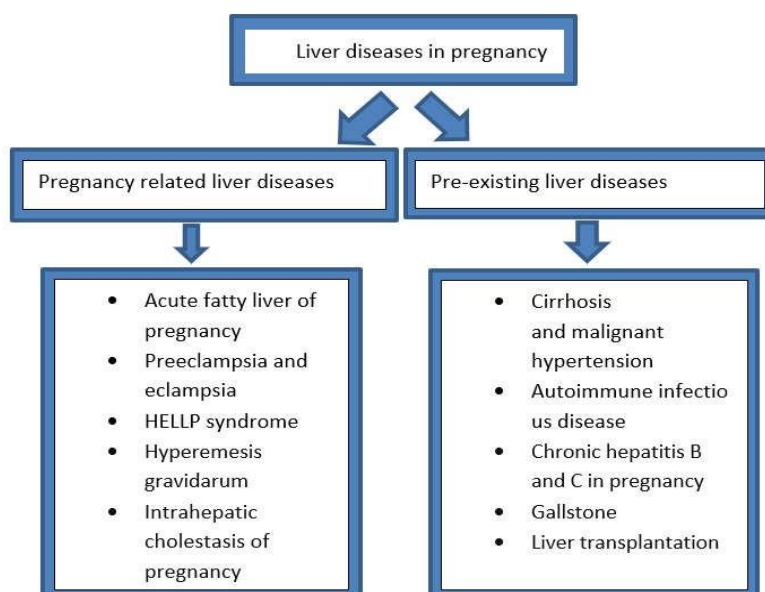
Articles on the liver diseases in pregnancy topic were searched in different databases viz. Google scholar, Scopus, Science Direct, Pubmed and Springer Science to be used in writing this review article.

Liver diseases

Pregnancy related liver diseases and pre-existing chronic liver diseases are Acute fatty liver of pregnancy (AFLP), intrahepatic cholestasis of pregnancy (ICP), and the HELLP syndrome, which includes hemolysis, increased liver enzymes, and low platelet count, and all liver illnesses associated with pregnancy. Hyperemesis gravidarum (HG) and pre-eclampsia (PE) are both linked to abnormalities in the liver [2]. The acute fatty liver (AFLD), one of the pregnancy- related liver illnesses, is an uncommon and serious complication with a 1:10,000 incidence rate and an 18% death rate. The third trimester and the first few weeks after delivery are when it generally happens.

Contrarily, unrelated pregnancy can result in hepatic problems such as autoimmune liver diseases, metabolic disorders, chronic and acute hepatitis, gallstones, and liver cirrhosis.

Fig. 1: Categorizing of liver diseases observed in pregnancy



Pre-existing liver diseases

The health of the liver prior to conception has a significant negative impact on the outcome of a physiological problem. The gestation itself causes vital changes in liver physiological conditions; these effects will be exacerbated in women with pre-existing disease or pregnancy related liver diseases [3].

Cirrhosis and malignant hypertension

A rough estimate of 0.45 instances per 1,000 reproductive-age girls are affected by liver illness. In normal physiological conditions, the aetiology of liver disease is similar to that in the non-pregnant state and typically involves alcohol and hepatitis C and B. Physiological conditions and biological processes will both be impacted by liver disease. However, if a girl's liver function is good (as in noncirrhotic portal hypertension) and her disease is treated before conception and continued throughout her physiological state, she may still become pregnant and can expect a reasonable result. Premature births are a serious danger for patients with liver illness and noncirrhotic malignant hypertension. Internal organ decompensation will take place, resulting in jaundice, ascites, muscle varices-related injury, and unexpected liver. In women with pre-existing cirrhosis and PH, upper gastrointestinal (GI) bleeding from varices is associated with high mortality and morbidity rates. This is due to the fact that liver decompensation, which leads to worsening of the liver's synthetic, metabolic, and excretory functions and manifests as ascites, hepatic encephalopathy, coagulopathy, and jaundice [4].

Autoimmune infectious disease

Autoimmune infectious disease, which can manifest at any time throughout gestation and the postnatal period, is a progressive illness that predominately affects girls of all ages.

Because of the physiological condition's iatrogenic state of immunological tolerance, infectious disease symptoms can occasionally be attenuated throughout the body, and treatment dosages are frequently reduced. However, flares have happened in patients during gestation and up to 25% of the way into the postnatal period during the Martinmas period. There's Associate in Nursing inflated risk of prematurity, low-birth-weight infants, and cranial loss [5].

Chronic hepatitis B & C

Early in pregnancy, hepatitis B virus (HBV) testing should be performed on all pregnant women. Recent EASL recommendations state that it may be wise to postpone therapy until after the baby is born for women of childbearing age without severe fibrosis and cirrhosis who intend to become pregnant soon. In contrast, treatment with nucleoside analogues (NAs), particularly tenofovir disoproxil fumarate (TDF), is advised for expectant women with persistent HBV infection and severe fibrosis or cirrhosis. The main risk factors for vertical transmission are the presence of HBe antigen and the maternal viral load. Vertical infection of infants delivered to HBsAg-positive mothers is associated with a higher risk of chronic infection [6].

Gallstone disease

Pregnancy and the presence of excess oestrogen encourage biliary cholesterol saturation and prevent the production of chenodeoxycholic acid in the liver, which favours lithogenesis. Additional risk factors for pregnancy-associated gallbladder illness include obesity prior to conception, inactivity, low serum leptin levels, and a history of gallbladder disease. By the third trimester, about 10% of pregnant women may develop gallstones, up from 5% at the beginning of the pregnancy. As the pregnancy progresses, the risk rises. The majority of gallstones do, however, recede after giving birth [7]. It has shown in studies that 8% to 25% of expectant mothers develop cholelithiasis symptoms, and 38% of those women encounter them again during the same pregnancy,

necessitating frequently surgical treatment. When carried out during the third trimester, laparoscopic cholecystectomy for symptomatic cholelithiasis in pregnancy is especially safe [8].

Liver transplantation

The majority of patients can expect long-term survival after liver transplantation. Most women who have a liver transplant after LT have their fertility recovered, especially after the first year. A recent study found that 117 pregnancies occurred in 79 women who had liver transplants (median patient age 29 years). Preeclampsia/eclampsia (15%), acute cellular rejection (15%), gestational diabetes (7%), graft loss (2%), and bacterial infections were the maternal side effects [9].

Pregnancy related liver diseases

The third trimester is when AFLP, the HELLP disease (haemolysis, high liver catalyst levels, low platelet count), eclampsia, and toxæmia occur, and they are linked to increased suffering and mortality for both the mother and hatchling. The demarcation between them is important because a variety of similar pathologic systems have been addressed by these issues. 20% of patients with significant eclampsia and 50% of AFLP patients who have toxæmia nurture the HELLP syndrome. Conveyance is the main advance in dealing with these problems since it tends to be lifesaving to mother and kid.

AFLP refers to acute fatty liver of pregnancy; ALT refers to alanine aminotransferase; AST refers to aspartate aminotransferase; DIC means disseminated intravascular coagulation; FHF means fulminant hepatic failure; GG refers to γ -glutamyl transferase; HELLP syndrome (haemolysis, elevated liver enzyme levels, low platelet count).HG refers hyperemesis gravidarum; IHCP refers intrahepatic cholestasis of pregnancy; LCHAD refers long-chain 3-hydroxylacyl- CoA dehydrogenase; LDH means lactate dehydrogenase; PT means prothrombin time; TSH refers to thyroid- stimulating hormone [10].

Acute fatty liver of pregnancy

AFLP is a rare third-trimester problem that affects fewer than 0.01% of pregnant women. It is typically usual for primiparous women older than 30 and women with many pregnancies to deliver a male hatchling. Starting side effects are vague and incorporate sickness, heaving, and stomach torment. Due to the potential for rapid progression to encephalopathy, jaundice, hypoglycaemia, scattered intravascular coagulation with stamped reduction of antithrombin III action, and simple liver failure, these symptoms should prompt cautious examination [11].

Free unsaturated fatty acid (FFA) levels rise in maternal blood during pregnancy as a result of the effects of prenatal insulin and chemical delicate lipase. The energy necessary for a baby's development is provided by the transport of unsaturated fats into the cell and their oxidation by the mitochondrion. Unsaturated fat oxidation difficulties are defects in the characteristics encoding for the transportation and oxidation routes of unsaturated fats that are acquired as autosomal latent traits. These have been shown to be connected to foetal, placentar, and maternal complexity. The baby's metabolic needs increase in the third trimester, and mothers who are heterozygous for a problem with unsaturated fat oxidation and are carrying a weakened hatchling risk developing AFLP because they don't properly use unsaturated fats. Unsaturated fats at that point store in the liver [12].

Liver biopsy might be vital for determination. AFLP is described by microvascular fat testimony in centrilobular hepatocytes. Delivery of the hatchling clears the excess unsaturated fat from the liver and promotes rapid recovery without the side effects of persistent liver disease. Lack of long-chain 3-hydroxylacyl-CoA dehydrogenase in AFLP is the most well-known problem with unsaturated fat oxidation (LCHAD) [11].

Preeclampsia and eclampsia

Pre-eclampsia is typically the commonest reason behind liver dysfunction associated with physiological condition. It happens once twenty weeks of physiological condition and is defined by cardiovascular disease. Pre-eclampsia is still considered a "disease of theories," but recent research suggests that it occurs in two stages: Stage 1: abnormal placentation resulting in hypoperfusion of the placenta, which some patients progress to Stage 2: pre-eclampsia is characterized by multi-systemic involvement and endothelial dysfunction. An imbalance between angiogenic and anti-angiogenic factors may play a role in the transition from stage 1 to stage 2. Clinical Presentation The patient may be asymptomatic or present with abdominal pain, nausea, or vomiting. Endothelial dysfunction causes hepatic microcirculatory disturbances and subsequent hepatocellular necrosis, just as it does in patients with involvement of other organs [12]. Although up to 50% of these patients exhibit some form of liver dysfunction, it indicates severe disease. Beginning aspirin at a low dose around 16 weeks of pregnancy may prevent severe pre-eclampsia in subsequent pregnancies.

HELLP syndrome

0.5% of pregnancies are complicated by the HELLP disease, and the recurrent rate is considerable, approaching 20% in severe cases. Microangiopathic haemolysis with burr cells and schistocytes on the fringe smear, elevated liver chemical levels, with AST levels above ALT levels, and a platelet count less than 100,000/mm are the symptoms.

The HELLP disease can manifest 30% postpartum and is more common in multiparous women. The typical symptom is stomach pain; other symptoms include rapid spread of intravascular coagulation, renal failure, subcapsular liver hematoma, and hepatic fracture. Maternal mortality is typically 1%, but in cases of hepatic failure, it rises to 60%. Perinatal passing varies and can reach 37% when the illness manifests itself earlier in the pregnancy [13].

Intrahepatic cholestasis of pregnancy

Only 1% of pregnancies are affected by intrahepatic cholestasis of pregnancy (ICP), which develops in the second half of pregnancy. It settles right away after delivery and typically happens again in subsequent pregnancies. In conclusion, the main complaint is pruritus, and jaundice can occur in up to 50% of cases. The AST level is increased, the total amount of bile corrosive levels climb noticeably, reaching multiple times the average, and the bilirubin level remains below 6 mg/dL. The etiology of ICP is indistinct however may be because of a hereditary transformation in the canalicular carriers of phospholipids [14].

If the mother experiences unusual or bothersome pruritus, it may need to be treated. For reducing pruritus, Ursodeoxycholic corrosive (FDA class B) is the preferred medication. Additionally, it enhances biological indicators while having no negative effects on the mother or the unborn child. ICP poses the greatest risk to the developing infant. Large amounts of bile acids have been linked to hurried work, meconium staining, and sudden death. Rapid transportation could be able to prevent these issues. Late information proposes long haul impacts of ICP on the mother. Non-alcoholic cirrhosis and gallstone-related confusions have been accounted for.

Hyperemesis gravidarum

Hyperemesis gravidarum (HG) occurs in less than 2% of pregnancies, starting in the first trimester and resolving by week 20 of gestation. Severe nausea and vomiting as well as electrolyte imbalances that may necessitate hospitalisation are its defining characteristics. Over 5% of pre-pregnancy body weight has been lost in weight. HG is more prevalent in primiparous women and may be linked to a slight transaminase level rise. Although the exact cause of HG is unknown, contributing factors may include the fetus's gender (male or female) [1]. Antiemetics and rehydration are helpful. Except in cases where severe vomiting results in esophageal rupture,

vascular depletion, and kidney injury, the outcome for the mother is benign. Premature birth and low birth weight are uncommon adverse newborn outcomes that appear to be caused by inadequate mother weight increase later in the pregnancy.

Liver function tests

Liver function test evaluates liver function, liver damage and function of biliary system. The specific tests that included in LFTs are hepatic enzyme, synthetic function test and bilirubin. Alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma glutamyl transferase (GGT) are the main enzymes of LFT. Among these ALT and AST are collectively known as aminotransferases or transaminases. The synthetic function of liver checks how well it can synthesize new compounds and protein such as serum albumin and other proteins [15].

Alanine aminotransferases (ALT)

With an EC number of 2.6.1.2, alanine transaminase, formerly known as serum glutamic pyruvic transaminase (SGPT), belongs to the Transaminase class of enzymes. It aids in protein breakdown and is primarily located in the liver, with smaller amounts being present in the heart and muscles. Normally, the blood ALT level is low, but when the liver is injured, ALT is released and the amount rises. Therefore, ALT is employed to make a quick diagnostic of the liver [16]. A small rise in ALT and/or AST activity has been observed during the third trimester in a few studies. However, the bulk of published research show that the levels of serum ALT and AST activity do not alter or stay within the normal ranges defined in non-pregnant women during pregnancy. When compared to controls who were not pregnant, pregnant women's ALT levels somewhat increased only during the second trimester, and we had no explanation for this. The contractions of the uterine muscle may be the cause of a rise in ALT or AST levels during childbirth [16, 17].

Aspartate aminotransferases (AST)

Aspartate aminotransferases (AST), also referred to as serum glutamic oxaloacetic transaminase, belong to the transaminase family of enzymes and are present in the heart, liver, and muscles, among other tissues of the body. AST is less specialized than ALT because it is present in more organs. Hepatobiliary disorders cause an increase in AST. There is no evidence that pregnancy affects AST or ALT levels. However, studies have revealed that the amount of AST marginally increases throughout the third trimester. And its level remains normal while not pregnant. The contraction of uterine muscles contributes to the rise in AST or ALT activity. Therefore, serum AST or ALT levels prior to childbirth are abnormal and necessitate additional research [16, 17]. An elevated AST level is brought on by a number of hepatocellular conditions, including cirrhosis, hepatitis, fatty liver, drug toxicity, and any biliary condition, including choledocholithiasis, cholecystitis, cholangitis, cholangiocarcinoma, rhabdomyolysis (muscle breakdown), myocardial infarction, hemolysis, etc [18].

Alkaline phosphatase

A group of enzymes known as alkaline phosphatase can be found in various bodily tissues. ALP is elevated as a result of liver disease, bile duct obstruction, and gallbladder disease. ALP levels in serum should range from 30-125 IU/L. The level of ALP varies significantly by age, sex, and blood type [19]. Liver and bones are the main sources of ALP. Osteoblast cells in bones create ALP, which aids in the creation of bone. Hyperthyroidism, hyperparathyroidism, Paget's disease, congestive heart failure, hepatic disease, biliary disease, and hyperparathyroidism all contribute to elevated levels of ALP. Due to placental isoenzyme production during pregnancy rather than hepatic isoenzyme production, serum ALP levels are often higher in the third trimester. During pregnancy, bone isoenzymes are also generated. Hence serum ALP is not a reliable test for late pregnancy [20].

Gamma glutamyl transferase (GGT)

Gamma glutamyl transferase is a liver-specific enzyme. GGT aids in the catalysis of the transfer of a glutathione gamma glutamyl group to an amino acid, peptide, or water. Pregnant women's serum GGT levels are extremely important during the first and third trimesters. Pregnant women with viral hepatitis had greater serum GGT levels than those who contract the illness in the third trimester [21]. Any type of biliary disease, hepatocellular disease, alcoholism, renal failure, and drug use are among the reasons of increased GGT. As the GGT test is high in both hepatic and non-hepatic disorders, it is not very accurate for discriminating between different types of liver injury. A small amount of alcohol consumption raises GGT levels [22]. Historically, it has been believed that serum GGT activity during pregnancy is normal. In addition, morning sickness-prone women were shown to have significantly lower serum GGT activity in late pregnancy compared to early pregnancy. Contrarily, women with viral hepatitis in the early stages of pregnancy had higher levels of serum GGT activity than do those in the later stages of pregnancy [21, 22].

Bilirubin

Red blood cells are broken down to produce bilirubin. It moves in the plasma bound to albumin. The liver receives the albumin-bilirubin complex where it dissociates with the help of the enzyme bilirubin glucuronyltransferase, bilirubin combines with two molecules of glucuronic acid in the liver to become bilirubin diglucuronide. This is conjugated bilirubin. Conjugated bilirubin is excreted and enters the bile ducts [23]. In the colon, β -glucuronidase hydrolyses bilirubin-glucuronidase to release bilirubin. All three prenatal trimesters saw a drop in total bilirubin levels. During all three trimesters, pregnant women's free bilirubin concentrations were likewise found to be lower than those of non-pregnant controls, as were the concentrations of conjugated bilirubin in the second and third trimesters. Since albumin is the protein that transports bilirubin, haemodilution may at least in part be to blame for the drop in bilirubin concentration [24].

Table 1: Changes in liver function parameters during pregnancy

LFT parameters	Changes observed in pregnancy
Alkaline transaminase (ALT)	No expected change
Aspartate transaminase (AST)	No expected change but might be slightly high in the third trimester
Alkaline phosphatase (ALP)	Increases
Gamma-glutamyl transferase (GGT)	No such changes but might get slightly high in case of alcohol consumption
Bilirubin	No expected change
Albumin	Decreases

However, the maternal coagulation system alters to encourage haemostasis to cope-up postpartum haemorrhage. As a result, levels of fibrinogen, clotting factors VII, VIII, IX, and X can be raised. Ceruloplasmin and transferrin levels are also elevated. On the other hand, serum albumin, total protein, and biological anticoagulants such as protein S and antithrombin all show a decline. However, in patients who do not have an underlying bleeding condition, coagulation-related liver tests including PT, activated partial thromboplastin time (APTT), and thrombin time (TT) still frequently remain within normal ranges. ALT and AST level almost exist within range though ALP level gets slightly high in case of pregnancy [25-27].

While there are predicted laboratory alterations in pregnant women, some of them may also exhibit unexpected changes in liver chemistries, which could point to a liver disease process.

Table 2: Changes in abnormal liver function test during pregnancy

Type of liver diseases	ALT	AST	ALP	GGT	Bilirubin	PT
Liver diseases onset of pregnancy						
Acute fatty liver of pregnancy	↑	↑	↔	↔	↑	↑
Preeclampsia and eclampsia	↑	↑	↔	↔	↔	↔
HELLP syndrome	↑	↑	↔	↔	↑	↔
Intrahepatic cholestasis of pregnancy	↑	↑	↑	↑	↔	↔
Hyperemesis gravidarum	↑	↔	↔	↔	↔	↔
Pre-existing liver diseases						
Cirrhosis and malignant hypertension	↑	↑	↑	↑	↔	↔
Autoimmune diseases	↑	↑	↔	↔	↔	↔
Chronic hepatitis	↑	↔	↔	↔	↔	↔
Gallstone diseases	↑	↑	↑	↑	↑	↔

Diagnosics and outcomes

An understanding of the pathogenesis and expression of liver diseases in pregnancy has been evolving, and various diagnostic and prognostic tools have been studied in order to determine noninvasive approaches to identifying and staging of such diseases. It is challenging to diagnose disease during pregnancy. For example, jaundice, nausea, vomiting, and abdominal discomfort are the signs and symptoms that are typically not specific. A rapid diagnostic workup should be started because the underlying disease will have a significant influence on morbidity and mortality in both mothers and babies [28, 29]. A prenatal checkup reveals skin changes that indicate chronic diseases, such as: B. Area erythroderma and spider angiomas. These changes are caused by gestational hypersteremia and can last up to an hour in healthy pregnancies.

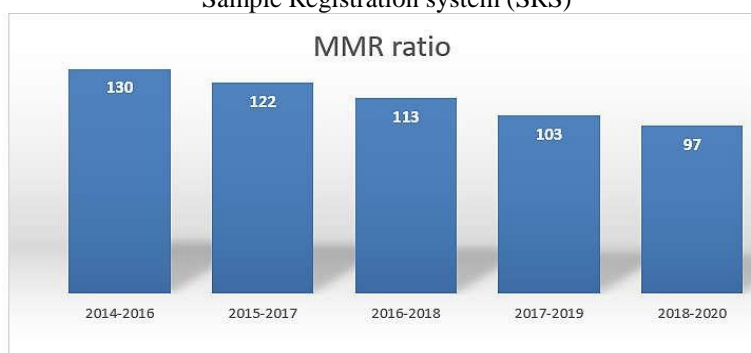
Elevated aminotransferases, bilirubin, and factor II time (PT) are indicative of a pathogenic state. Pregnancy does not affect the unconjugated pathophysiology of Gilbert syndrome. Conventional pregnancy affects natural behavioural variables and promotes a hypercoagulable state. Girls with inherited thrombotic tendencies, such as clotting factor C and anti-thrombin III deficiency, are twice as likely to experience venous occlusion during pregnancy [30]. When diagnostic imaging is required throughout the workup of liver check abnormalities in an exceedingly pregnant lady, ultrasound becomes the modality of alternative due to its safety for the craniate. Resonance imaging (MRI) could also be used as a second line check if extra data continues to be necessary. CT and examination retrograde cholangiopancreatography (ERCP) involve radiation to the craniate and need shielding of the womb [31]. On the other side, pregnancy causes toxemia and AFLP, which increases the risk of liver failure and mortality [32].

Discussion

In the present study we have reviewed the data of maternal mortality ratio from Ministry of Health and Family Welfare (India) and it has been noticed that there has been a significant decline in the Maternal Mortality Ratio (MMR) in the country, India. The Maternal Mortality Ratio (MMR) is the number of maternal deaths per 100,000 live births over a given time period. According to the Registrar General of India (RGI)'s Special Bulletin on MMR, India's Maternal Mortality Ratio (MMR) has increased by a stunning 6 percentage points to 97 per lakh live births.

According to data from the Sample Registration System (SRS), the country's MMR has decreased over time, going from 130 in 2014-2016 to 122 in 2015-17, 113 in 2016-18, 103 in 2017-19, and 97 in 2018-20 [32-34].

Fig. 2: Report of the Maternal Mortality Ratio of India for the period 2014-2020, as per the data from national Sample Registration system (SRS)



Under the National Health Mission (NHM) of 2014, India has made a concerted effort to reduce the number of maternal deaths that could have been avoided by providing affordable, high-quality health care for newborns and mothers. India's outstanding efforts to successfully lower the MMR ratio provide hope for achieving the SDG goal of a MMR less than 70 by 2030 and establishing a reputation as a nation that respects maternal care.

Multiple medications have been tried as treatments for cholestasis of pregnancy. Parenteral vitamin K (phytonadione; Aqua-Mephyton) supplementation is advocated in patients with prolonged cholestasis (secondary to malabsorption of this fat-soluble vitamin). Ursodeoxycholic acid (Actigall), given at dosages of 15 mg per kg per day, has been the most successful therapy for cholestasis of pregnancy, as it ameliorates both the pruritus and liver function abnormalities and is well-tolerated by both mother and fetus [33]. Ursodeoxycholic acid has been proved safe in trials of cholestatic liver disease in infants, children and adults.

Patients exhibiting cholestasis of pregnancy should receive close fetal surveillance at delivery. Symptoms of cholestasis usually resolve within two days of delivery. Elevated serum bilirubin and alkaline phosphatase levels return to normal four to six weeks after delivery. Cholestasis of pregnancy recurs in 60 to 70 percent of subsequent pregnancies [32, 33]. The most effective treatment for HELLP syndrome is prompt delivery. Postpartum corticosteroids have proved efficacious in improving maternal platelet counts, ALT levels and blood pressure. Therapies that have not proved efficacious include plasmapheresis, antithrombotic agents and immunosuppression. The treatment of acute fatty liver of pregnancy is expeditious delivery and intensive care. Patients usually improve immediately after delivery, and in the absence of long-chain 3-hydroxyacyl-CoA dehydrogenase deficiency, pregnancy after acute fatty liver of pregnancy has a favorable prognosis [34].

Studies have shown that over half of all women of childbearing age have revealed liquor use, and one of every eight has announced hitting the bottle hard. Large numbers of these ladies are explicitly dynamic and don't take successful measures to forestall pregnancy. Women are more sensitive to the effects of alcohol than males are, and ethanol use increases the risk of developing alcoholic hepatitis again, as well as female annoyances, infertility, early terminations, and unsuccessful pregnancies [35]. Due to the lack of agreement on a safe level of pre-birth alcohol use, the U.S. Secretary of Health and Human Services and top health spokespeople have advised women

planning to become pregnant to abstain from alcohol both at conception and throughout pregnancy. Moms who burn-through liquor during pregnancy can have untimely children, stillbirths, infants with neonatal liquor withdrawal (portrayed by nervousness, crabbiness, and helpless taking care of in the initial 12 hours of life), and babies with fetal liquor condition. Fetal alcohol disorder is a real intrinsic distortion that can be identified by dysmorphic facial features, prenatal and postnatal developmental delays, and abnormalities in the focused sensory system. 10% to 50% of children of moderate to heavy drinkers (1-2 oz/day of pure alcohol) and lifelong heavy drinkers have foetal alcohol disorder [36, 37].

Conclusion

The most common reason for abnormal liver function tests while pregnant, especially in the third trimester, is pregnancy-specific diseases. The most prevalent of these is the pre-eclampsia-related condition. Absent awareness, abnormal LFT may go undetected, especially if jaundice is not the primary presenting sign. If a methodical approach is used, the problem is frequently obvious. The initial stage could be determined by the gestational age of the pregnancy, especially when pertinent clinical characteristics are present. This step, when combined with the relative results of various liver function tests in various conditions unique to pregnancy and disorders not specific to pregnancy, appears to be the greatest indicator for making the diagnosis. In this so far bleak situation, early and timely collaborative care by the obstetric and medical teams can produce the best results.

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