

Impact of Covid-19 on the Prevalence of Intrahepatic Cholestasis of Pregnancy

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ABSTRACT

Background: The virulent pathogen SARS-CoV-2 first appeared in the Chinese province of Hubei in December 2019. Pregnant women were a high-risk population in the pandemic because immune system alterations that occur during pregnancy make them more vulnerable to foreign infections. Late-pregnancy cholestasis is a dangerous liver condition that can cause the foetus to experience potentially fatal problems like early birth and stillbirth. In the present study we were testing the Bile acid level during pregnancy patients after covid pandemic.

Objectives: To evaluate the prevalence of intrahepatic cholestasis in pregnant patients after Covid -19 pandemic.

Materials and Methods: This cross-sectional study was conducted at department of Dr.fida painless and General Hospital Peshawar from Jan 2022 to Dec 2022. We enrolled 186 pregnant patients after fulfilling the inclusion criteria. 5 ml blood sample were also taken from the patients. Serum was extracted and Bile acid test were performed in clinical laboratory. Data were collected in predesign questionnaire.

Results: Total 186 patients were enrolled in the study with mean age of 37.18±6.39 years (Range 18-45 years). The mean value of all enrolled patients was 31.38±5.79 with minimum and maximum value of bile acids 20 micromol/L and 40.6.00 micromol/L. In our study 95 (56.5%) of patients belongs to 36 to 45 years of age group followed by age group of 26 to 35 years in which 60 (35.7%) patients and 13 (7.7%) patients were belongs to age group of 18 to 25 years.

Practical implication: This study will help the clinical practitioner to take care of pregnant patients in order to avoid the prevalence of intrahepatic cholestasis.

Conclusion: It is concluded from this research study that prevalence of intrahepatic cholestasis in pregnancy has increased after Covid-19 pandemic.

Keywords: COVID-19, cholestasis, pregnancy, elevated Liver Enzyme, Bile Acids.

INTRODUCTION

The first case of SARSCoV2 (severe acute respiratory syndrome coronavirus 2) was discovered in December 2019 in the Chinese province of Wuhan⁽¹⁻³⁾. The disease was declared as pandemic by the World Health Organization in March 2020⁽⁴⁾. COVID-19 is a risk factor for severe liver damage. The incidence of liver injury (LI) in hospitalized COVID-19 patients ranged from 14% to 53%⁽⁵⁾.

The most typical liver condition that manifests during pregnancy is intrahepatic cholestasis of pregnancy (ICP)⁽⁶⁻⁸⁾. It is a pregnancy-specific condition that ends relatively swiftly and spontaneously, but it may return in subsequent pregnancies (up to 90% of subsequent pregnancies), frequently progressing more severely^(8, 9). It is a rare autosomal recessive condition characterised by repeated, intense itching and jaundice without major liver damage. Summerskill and Walshe provided the initial explanation of it in 1959⁽¹⁰⁾. Although the disease can strike at any age, it typically begins in childhood and frequently strikes in the first decade. On February 26, 2020, Pakistan received its first official report of a case. Since then, cases have been spreading throughout all four provinces of Pakistan, but COVID-19 is mostly present in a small number of strategic locales^(3, 11). It is considered that cholestatic episodes typically start after an upper respiratory tract infection even though there isn't any evidence to support the idea that viral illnesses might cause an incident of Benign recurrent intrahepatic cholestasis⁽¹²⁾.

Although the primary cause of death is respiratory failure, the illness has a systemic course and impacts all organs, including the liver. Patients with COVID-19 may experience liver damage as a direct result of the SARS-CoV-2 infection, an indirect result of the systemic infection, hypoxia alterations, treatment side effects, or an acute worsening of an underlying liver illness. Post-mortem investigations on COVID-19 patients have revealed bile duct growth, portal inflammation, and canalicular or ductular bile plugs in some cases⁽¹³⁾.

ICP is determined to be the source of a pregnant woman's skin pruritus and liver dysfunction based on her usual clinical symptoms, laboratory abnormalities, and differential diagnosis

ruling out other possible causes. Due to the absence of biliary duct dilation and the appearance of normal hepatic parenchyma, the disease is not linked with abnormalities seen in imaging. Skin pruritus and elevated bile acid (BA) levels in the pregnant woman's blood serum are its main signs⁽¹⁴⁾. The main laboratory finding that permits for disease identification is an increase in serum total BA concentration, which is found in over 90% of affected pregnancies. The primary role of BAs in the human body is their involvement in digestive processes, along with other physiological processes⁽¹⁵⁾. The present study was conducted in order to evaluate the raised level of bile acid in pregnant patients during and after Covid pandemic. This study will help the clinical practitioner to take care of pregnant patients in order to avoid the prevalence of intrahepatic cholestasis.

Objective: To evaluate the prevalence of intrahepatic cholestasis in pregnant patients after Covid-19 pandemic.

MATERIALS AND METHODS

Study Design and Setting: This cross-sectional study, was done at Dr Fida Painless and General Hospital Peshawar from Jan 2022 – Dec 2022.

Sample Size: Sample size was 186 pregnant females with COVID.

Inclusion Criteria:

- Patients with pruritus.
- Pregnant patients.
- Patients with high levels of bile acid
- Patients of 18 to 45 years of age.

Exclusion Criteria:

- Patients with active or chronic liver disease, hypertensive disease of pregnancy.
- Patients with active or chronic biliary disease.
- Having history of drug intake.
- Patients with multiple pregnancies.
- Patients with elevated liver enzymes or high fasting biliary acid (FBA) levels prior to Covid positivity.^{15,16}

Methods: After getting approval from hospital ethical committee, totally 186 patients were enrolled. The aim of the study were explained to the patients and informed consent were obtained from the patients/ guardian. All the enrolled patients were managed by an experienced team according. 5cc peripheral venous blood samples were taken from affected individuals under aseptic condition by trained phlebotomist. 5 ml syringes were used. Sterile method was used to avoid contamination. The blood samples were collected in EDTA tubes (BD tubes). Tourniquet was used where necessary. Serum was extracted and bile salt test were performed in clinical laboratory. Data were collected in predesign questioner. **Statistical Analysis:** For data analysis SPSS (version 25.0) was used. The data was presented in the form of table and graph.

RESULTS

Total 186 patients were enrolled in the study with mean age of 37.18±6.39 years (Range 18-45 years) (Table 1). The mean value of all enrolled patients was 31.38±5.79 with minimum and maximum value of bile acids 20 micromol/L and 40.6.00 micromol/L. In our study 95 (56.5%) of patients belongs to 36 to 45 years of age group followed by age group of 26 to 35 years in which 60 (35.7%) patients and 13 (7.7%) patients were belongs to age group of 18 to 25 years. 15% patients had symptom like pruritus (graph 1-0).

Table 1: Mean age and Bile Salt value of enrolled patients (n=186)

Variable	Mean±SD	Minimum	Maximum
Age (Years)	37.18± 6.39	18	45
Bile Salt (µmol/L)	31.38±5.79	20	40

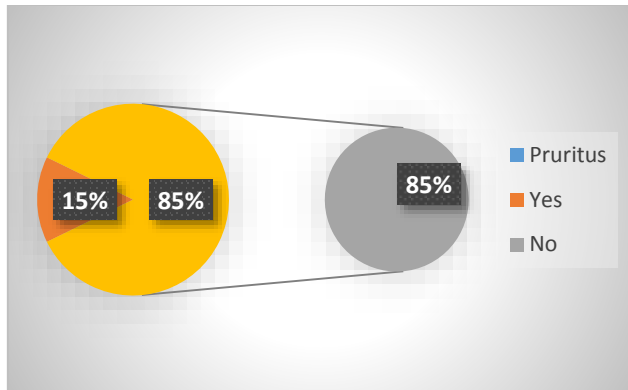


Figure 1: Graphical Representation of patients according to Pruritus (n=186)

Table 2: Distribution of patients according to age group and pruritus (n=186)

Age Group	Frequency	%
18 to 25 years	21	11.3
26 to 35 years	67	36.0
36 to 45 years	98	52.7

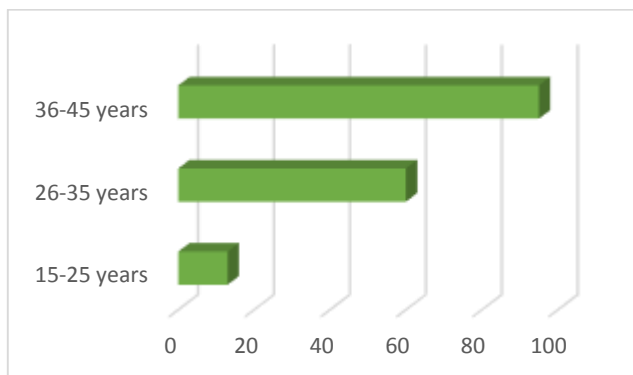


Figure 2: Graphical Representation of patients according to age group (n=186)

DISCUSSION

Intrahepatic cholestasis of pregnancy (ICP) is a rare liver disorder that can develop during pregnancy. The prevalence of cholestasis in pregnancy is about 0.3 to 5.6. In order to handle IHCP and ensure its excellent prognosis, medical care is required if it is discovered at a late gestational age. ICP symptoms have a significant impact on the patient's quality of life; the difficult aspect is timely diagnosis of the condition. In contrast to other liver diseases, ICP usually rare condition to manifest in an early end of pregnancy. It was discovered during the COVID period that even a mild or undetected COVID infection could worsen IHCP. The present study was conducted in order to evaluate the upsurge of cholestasis in pregnant patients after Covid. According to our study data the level of bile salt was elevated with mean value of 31.38±5.79 µmol/L with minimum and maximum value of 20 µmol/L and 40 µmol/L respectively. This elevated value is the characteristic of cholestasis. So in our study pregnant patients there is rapid upsurge in cholestasis. In a study conducted by Christina M. et al.⁽¹⁶⁾ stated that all patients had significantly elevated total serum bile acid levels, which were associated with a poorer outlook for the foetus. According to him⁽¹⁶⁾ all these patients were suffering from cholestasis. Impaired bile drainage is referred to as cholestasis⁽¹⁷⁾. All patients had noticeably increased total serum bile acid levels at the time of diagnosis (mean, 31.38±5.79 mol/L; range, 20-40 mol/L). It is diagnosed in women who appear with pruritus and elevated serum bile acid levels. Although affected women usually only experience temporary gestational cholestasis, they are more likely to develop hepatobiliary issues later in life. Bile acid levels should be monitored throughout pregnancy due to mounting evidence that higher levels of bile acid are associated with an increased chance of adverse perinatal outcomes, such as stillbirth.⁽¹⁸⁾ Intrahepatic cholestasis Pregnancies are more likely to have negative results when bile acid levels are high⁽¹⁹⁾. In our study about 15% patients had symptom like pruritus. Pruritus is one of the primary symptoms of IHCP and often appears in the third trimester. Pruritus is associated with bile salts as bile salts irritate nerves in your peripheral nervous system, causing itching.

CONCLUSION

It is concluded from this research study that prevalence of intrahepatic cholestasis in pregnancy has increased after Covid-19 pandemic. Our study pregnant patients have elevated bile Acids levels that is sign of cholestasis.

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