



## Original Research Article

# CLINICAL, BIOCHEMICAL AND RADIOLOGICAL PROFILE OF HEPATITIS C INFECTED PATIENTS PRESENTING TO GOVERNMENT MEDICAL COLLEGE AND RAJINDRA HOSPITAL, PATIALA

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### ABSTRACT

**Objectives:** The aim of this study to know the clinical presentation of the patients with chronic hepatitis-C, prevalence of complications of chronic hepatitis C like cirrhosis (compensated or decompensated), hepatocellular carcinoma at the time of diagnosis and to know the biochemical and radiological profile of patients with chronic hepatitis C at the time of diagnosis.

**Materials and Methods:** Descriptive observational study conducted over a period of year from 1st Dec 2019 to Nov 2020 on the patients diagnosed with HCV. Clinical, Biochemical and Radiological data was collected.

**Results:** Maximum patients were in 21-30 years of age group and mean age was  $42.31 \pm 17.25$  years. Out of 342 patients, 241 patients (70.47%) were males and 101 (29.53%) patients were females. Out of total 342 patients, 256 (74.85%) were non-cirrhotic, 70 (20.47%) were compensated cirrhotic and 16 (4.68%) were decompensated cirrhotic.

**Conclusion:** In the present study, majority of patients were young, predominately affecting males, detected incidentally and non-cirrhotic. Easy accessibility and free treatment provided by Punjab Government is the reason for most patients getting an early diagnosis of HCV at the asymptomatic stage. In the present study, only 16 patients out of 342 HCV patients were found to have decompensation. This highlights the importance of detecting and initiating treatment at an early stage under Mukh Mantri Punjab Hepatitis-C Relief Fund (MMPHCRF).

**Keywords:** Hepatitis C, Prevalence, Complications, Cirrhosis.

## INTRODUCTION

The hepatitis C virus (HCV) is a small, enveloped, single-stranded, positive sense RNA virus. It is the member of the genus Hepacivirus in the family Flaviviridae.<sup>[1]</sup> The most recent estimates of disease burden show an increase in seroprevalence over the last 15 years to 2.8%, equating to >185 million infections worldwide.<sup>[2]</sup> In India, HCV genotype 3 is the predominant genotype as compared with genotype 1 in the West.<sup>[3]</sup> Approximately 12–18

million people are thought to be infected with HCV in India.<sup>[4]</sup> The prevalence of HCV was 5.2% in Punjab.<sup>[5]</sup> The genotypic distribution of HCV in the state of Punjab matches that of the rest of India. HCV is principally transmitted by blood (medical and surgical procedures, intravenous drug use and blood transfusions). In industrialized countries, where the risk from transfusion has been controlled and nosocomial transmission has diminished, 60–70% of new cases of HCV infection are related to intravenous drug use.<sup>[6]</sup>

Hepatitis C can present as acute or chronic hepatitis. Most of the cases of acute hepatitis C are asymptomatic with patients unaware of the underlying infection.<sup>[7]</sup> Most patients with chronic hepatitis have asymptomatic enzyme elevations and detectable HCV antibodies. Fatigue is the most common complaint in symptomatic patients in chronic hepatitis C, followed by abdominal pain, anorexia, and weight loss. Jaundice is unusual except in patients with advanced cirrhosis.<sup>[8,9]</sup> Approximately a fifth of the patients with chronic hepatitis C progress to cirrhosis over a time spanning nearly a decade. Development of portal hypertension in these patients leads to ascites, variceal haemorrhage, hepatic encephalopathy, spontaneous bacterial peritonitis and hepatorenal syndrome.<sup>[10]</sup> When liver cells are necrotic to a certain extent, the variables measured by routine blood tests, the coagulation function test, and the liver function test such as serum transaminase levels, platelet count, coagulation factors and serum albumin concentration may change. These indicators reflect the changes of the function of synthesis, metabolism, and reservation in hepatic cells.<sup>[11]</sup>

AST to Platelet Ratio Index (APRI) and Fibrosis 4 score (FIB-4 scores) are two of the most popular scoring systems for liver fibrosis and have been reported to achieve high accuracy for the diagnosis of advanced fibrosis.<sup>[12,13]</sup>

APRI score = [(AST Level/ULN)/platelet count (109/L)] \*100

FIB-4 score= [age \* AST/platelet count (109/L) \* √ALT]<sup>[14,15]</sup>

APRI =2.0 indicates the presence of cirrhosis (F4).<sup>[16]</sup> FIB-4 defined the cut-off of 1.45 and 3.25, respectively, to rule out and rule in cirrhosis.<sup>[17]</sup>

The role of ultrasound in predicting cirrhosis has been a subject of interest for decades, with liver surface nodularity being the most commonly used ultrasound feature for detection. Surface nodularity was the most sensitive of the three features. Ultrasound evaluation of the three liver features (surface, edge, and echotexture) were reliable predictors of the full spectrum of liver fibrosis.<sup>[18]</sup> Transient elastography (FibroScan; Echosens, Paris, France) is a novel, rapid and non-invasive technique that measures liver stiffness.<sup>[19]</sup>

## MATERIALS AND METHODS

The present study was conducted on 342 patients diagnosed with HCV infection who presented to Outpatient Department and Indoor of Department of Medicine of Government Medical College and Rajindra Hospital, Patiala over a period of 1 year from December 2019 to November 2020.

**Inclusion Criteria:** Patients with age 18 years and above having hepatitis C i.e. positive HCV antibodies

**Exclusion Criteria:** HBV positive patients, HIV positive patients, Patients with significant intake of alcohol, age less than 18 years, Pregnancy, Patients with cirrhosis due to other causes of liver disease  
**Methods-A** detailed history about the symptoms asked from the patients and clinical examination was done for the presence of icterus, ascites, hepatomegaly, splenomegaly, signs of hepatic encephalopathy and stigmata of chronic liver disease. Patients were investigated for HCV viral RNA load, Hemoglobin, TLC, DLC, Platelet count, RBS, Renal function test, Serum Electrolytes, Liver Function Test (AST, ALT, Bilirubin, ALP), TSP, DSP and PTI/INR. APRI (AST to platelet Ratio Index) Score and FIB-4 score calculated. USG abdomen was done to see liver echotexture, size and surface, presence of features of portal hypertension like dilated portal vein at porta hepatis (Portal vein diameter >13 mm), splenomegaly and ascites. Mean value of liver stiffness was measured in Kilopascal (kPa) after screening multiple sections of liver. Patients were divided into non-cirrhotic and cirrhotic based on following: Presence of clinical features of decompensation, APRI score > 2, FIB-4 score > 3.25. Ultrasound abdomen showing evidence of cirrhosis and LSM value > 12.5 kPa. Cirrhotic patients were further divided into compensated cirrhotic and decompensated cirrhotic based on signs of decompensation like jaundice, ascites, variceal bleed and hepatic encephalopathy. CTP (Child Turcotte Pugh score) and Modified MELD-Na score (Model for end stage liver disease incorporating Sodium) was calculated for cirrhosis patients.

**Analysis of Data:** Data was analysed using computer software, statistical package for social sciences (SPSS). Univariate and multivariate analysis was done with Chi-Square test. P value of less than 0.05 was found to be significant.

## RESULTS

Maximum patients were in 21 - 30 years of age group and mean age was 42.31±17.25 years. Out of 342 patients, 241 (70.47%) patients were males and 101 (29.53%) were females. Out of total 342 patients, the majority of patients were non-cirrhotic, 256 (74.85%), 70 patients (20.47%) were compensated cirrhotic and 16(4.68%) were decompensated cirrhotic. 186 patients (54.39%) were asymptomatic. Most common symptom was Fatigue present in 116 patients (33.92%) followed by Dyspepsia seen in 47 patients (13.74%) and abdominal discomfort seen in 41 patients (11.98%). Most common decompensating event was Ascites seen in 13 patients (81.25%) followed by Upper gastrointestinal bleeding seen in 8 patients (50%), Hepatic encephalopathy seen in 7 patients (43.75%), followed by Jaundice (18.7%), Spontaneous bacterial peritonitis (12.5%) and Hepatorenal Syndrome (12.5%).

Mean AST level in Non Cirrhotic (NC) patients was 52 IU/L, in Compensated Cirrhotic(CC) patients was 86 IU/L and in Decompensated Cirrhosis (DC) patients was 89 IU/L. Mean ALT (Alanine Aminotransferase) level in Non-Cirrhotic (NC) patients was 78 IU/L, in Compensated Cirrhotic (CC) patients was 63 IU/L and in Decompensated Cirrhosis (DC) patients was 66 IU/L. SBP was present in 2 (15.38%) out of 13 patients with ascites. In cirrhotics, majority of patients i.e. 70 patients (81.3%) belonged to class A and 11.6% (10) belonged to class B and 6.9% (6) belonged to class C.

Out of 342 patients, 86 patients were classified as Cirrhotic based on Clinical, Biochemical (APRI>2, FIB-4 >3.25) and Radiological profile (USG, Fibroscan score LSM >12.5kPa). Out of these 86 patients, 25 patients had an APRI value more than 2. All the 25 patients who had APRI more than 2 had FIB -4 values more than 3.25. LSM values of more than 12.5kpa on fibroscan were present in 23 out of these 25 patients. FIB-4 value more than 3.25 was present in 57 out of 342 patients. In these 57 patients, APRI >2 was present in 25 out of these 57 patients and the LSM value of more than 12.5 kPa was present in 51 out of 57 patients. LSM value of more than 12.5 kPa was present in 80 patients. There were only 6 patients who had normal LSM value but

they were classified as Cirrhotic based on APRI-FIB4. Probable reason for classifying these patients into cirrhotics based on APRI and FIB-4 was advanced age which is part of FIB4 formula. Increased AST (Numerator in APRI and FIB 4 formula) and decreased ALT levels (ALT is denominator in FIB-4 formula).

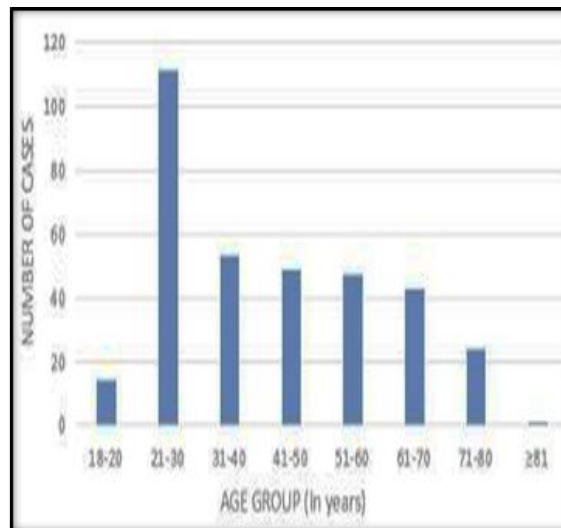


Figure 1: Age distribution of patients

Table 1: Clinical Presentation

Clinical Presentation	Patients	Percentage
Asymptomatic	186	54.39%
Fatigue	116	33.92%
Abdominal Discomfort	41	11.98%
Dyspepsia	47	13.74%
Jaundice	3	0.88%
Ascites	13	3.80%
Hepatic Encephalopathy	7	2.05%
Upper G.I. Bleed	8	2.34%
Features of SBP (Spontaneous bacterial peritonitis)	2	0.58%
HRS	2	0.58%

Table 2: Liver Function Test

Biochemical Parameter	Severity	N	Mean	Std. Deviation
AST(IU/L)	Non-Cirrhotic (NC)	256	52.13	35.79
	Compensated (CC)	70	86.21	58.10
	Decompensated (DC)	16	89.25	53.96
	Total	342	60.84	44.68
ALT(IU/L)	Non-Cirrhotic (NC)	256	78.68	76.84
	Compensated (CC)	70	63.09	35.34
	Decompensated (DC)	16	66.19	59.51
	Total	342	74.90	69.76

Table 3: Prevalence of Spontaneous Bacterial Peritonitis (SBP) in patients with Ascites

Total no of patients with ascites	13	100%
Presence of SBP on ascitic fluid analysis	2	15.38%
Absence of SBP	11	84.61%

Table 4: CTP (Child Turcott Pugh) SCORE in Patients with Cirrhosis

CTP Score	Patients	Percentage
Class A (5-6)	70	81.3%
Class B (7-9)	10	11.6%
Class C (10-15)	6	6.9%
Total	86	100%

**Table 5: No of Patients with Cutt-off values for Cirrhosis on APRI, FIB 4 and FIBROSCAN**

Parameter	Number of patients
APRI (>2)	25
FIB -4 (>3.25)	57
FIBROSCAN (> 12.5kpa)	80

**Table 6: FIBROSCAN Score (Liver stiffness measurement (LSM) in kPa)**

FIBROSCAN	N	Mean	Std. Deviation	p value
Non-Cirrhotic (NC)	256	5.93	1.48	0.001
Compensated (CC)	70	22.90	14.45	
Decompensated (DC)	16	26.76	16.75	
Total	342	10.37	10.77	

## DISCUSSIONS

In our study, majority of patients were in the age group 21-30 years. However, majority of patients in the previous studies done by Sood et al,<sup>[5]</sup> and Mahajan et al<sup>[20]</sup> presented two decades later. The probable reason for this disparity in the present study is early detection of HCV, free treatment and awareness program started by Punjab Government in 2016 under Mukh Mantri Punjab Hepatitis-C Relief Fund (MMPHCRF).<sup>[21]</sup> In the present study, more number of males were affected than females which is comparable with the studies done by Singh et al,<sup>[22]</sup> Mahajan et al,<sup>[20]</sup> and Dhiman et al,<sup>[23]</sup> This may be explained from the fact that males are more prone to high risk behavior for this infection. In our study percentage of non-cirrhotic patients was more than cirrhotic patients which is not comparable to previous studies done by Goel et al,<sup>[24]</sup> and Mahajan et al,<sup>[20]</sup> The reason for patients presenting at non-cirrhotic stage is that maximum number of patients presenting to our Hospital are being regularly screened for HCV antibodies. Moreover, risk of cirrhosis increases with increasing age at the time of diagnosis and longer duration of infection,<sup>[25]</sup> in the present study most prevalent age group is of younger population. In the present study, majority of patients presented were either asymptomatic or had mild and non-specific symptoms like fatigue, dyspepsia and abdominal discomfort. Our finding is in concordance with the results obtained in study done by Mahajan et al,<sup>[20]</sup> Easy accessibility and free treatment provided by Punjab Government is the reason for most patients getting an early diagnosis of HCV at the asymptomatic stage.

## CONCLUSION

In the present study, majority of patients were young, predominately affecting males, detected incidentally and 74.85% patients were non cirrhotic. Non invasive markers of cirrhosis like APRI, FIB-4, USG and Fibrosocan are very useful for ruling out and ruling in the cirrhosis. Whenever there is doubt in one parameter, can be correlated with other parameters. Also, it can be stated that early detection of HCV infection and treatment would lead to attenuation of HCV infection complications like cirrhosis.

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