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A Study on Viral Hepatitis in Hoshiarpur District of Punjab, India

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Abstract: Liver is an important metabolic organ which participates in all the functions of body. Due to the heavy workload of liver and its role of biotransformation, liver is prone to attack of microbes, drugs, toxicants etc. The present study was designed to update the status of viral hepatitis in Hoshiarpur, district of Punjab, India. A questionnaire was formulated containing six different questions in order to collect data from civil hospital authorities of Hoshiarpur. Data collected from hospital authorities was arranged, analysed and interpreted. From March 2021 to March, 2022, 5815 cases were registered for testing of viral hepatitis, only 1031 (17.73%) cases were found positive for viral hepatitis, while 4784 (82.26%) were confirmed as negative. The anti-hepatitis drugs were used to treat viral hepatitis and were given to 355 patients, only 222 were cured completely whereas 59 cases does not cured completely. Among the positive cases only 222 showed interesting facts about the status of viral hepatitis in Hoshiarpur. Significant improvement has been taken place with respect to the cases of viral hepatitis. This might be due to implementation of "Mukh Mantri Punjab Hepatitis-C Relief Fund (MMPHCRF)" which has spread awareness in the public. These results suggested that the available treatments for viral hepatitis are efficient, however it could be conferred that these treatments are 100% efficient. However, treatment options were not found 100% efficient to completely cure the disease. This indicated that some other treatment options must be examined to eradicate the disease from the root level.

Keywords: Hepatitis B, Hepatitis C, Liver, Viral hepatitis, Anti-hepatitis

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Introduction

The liver is a key metabolic machinery which plays important role in controlling the energy metabolism in the body. Liver works like a nucleus

of a cell, as it is metabolically connected with other tissues including skeletal muscle and adipose tissue. Following the digestion of food in the

gastrointestinal (GI) tract, glucose, fatty acids, and amino acids are absorbed into the circulatory blood and then transported into the liver through portal vein circulation. During the postprandial stage, liver transforms it into glycogen and/or converts into fatty acids or amino acids.

Considering functional role of liver, it is second largest organ in the body which participates in more than 5000 different functions such as clotting, clearing of toxins in blood, converts food into nutrients, regulates the level of hormones, fights against the infectious diseases, having power of regeneration and metabolizes cholesterol, glucose, iron and maintain their level (Waugh and Grant, 2014). However, people do not pay attention for the safe guard of liver, which in turn results in the development of hepatic diseases. Some studies reported that hepatic diseases are very common; one in every ten persons suffer from liver disease. Hepatic diseases may be inherited or caused by different factors or agents which damages the liver. Liver is affected by various disease causing microbes, drugs, chemicals, obesity, diabetes or sometimes attacked by its self immune system. If these hepatic ailment remained left untreated, they can turn into life threatening situation and can everlasting hepatic injury or in the bile duct. This damage/injury may lead to develop hepatic malignancy and hepatic cancer. Sometimes environmental contamination and viral infection may also causes hepatic dysfunctioning and liver injury. Viral hepatitis is a systematic infection which affects the liver and causes hepatic inflammation. This viral infection may be acute or chronic. One of the well-known liver diseases namely hepatitis is caused by hapatotropic viruses such as hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), and hepatitis E virus (HEV). These viruses varies in their structure, epidemiology, routes of transmission, incubation period, clinical symptoms, natural history, diagnosis and precautionary measures and treatment options. The common clinical symptoms of hepatitis infection are HAV or HEV featured by occurrence

of fever and in later stage it may cause jaundice.

World Health Organization (WHO) states that 354 million individuals worldwide today suffer from chronic hepatitis B and C infections (Nelson *et al.*, 2014). In 2019 WHO reported that there are 296 million people suffering with chronic hepatitis B, and 1.5 million new cases were reported each year (Flores *et al.*, 2022). Viral hepatitis is an international public health challenge, comparable to other major communicable diseases, including HIV, tuberculosis and malaria. Despite the significant burden it places on communities across all global regions, hepatitis has been largely ignored as a health and development priority until recently. It will no longer remain hidden, however, with the adoption of the resolution on the 2030 Agenda for Sustainable Development (WHO, 2016). Target 3 is of particular relevance: it calls for specific action to combat viral hepatitis (Rajasekaran *et al.*, 2003). Present study was under taken to screen out the status of hepatitis in Hoshiarpur, Punjab, India.

Materials and Methods

North-western Punjab, a province of India, covers a total area of 50,362 km² (19,445 sq mi). It is located at 30° 4' north latitude and 75° 5' east longitude. Punjab is surrounded by the province of Punjab in Pakistan to the west, Jammu and Kashmir to the north, Himachal Pradesh to the east, Haryana to the south, and Rajasthan to the north. Eleven districts make up the central Punjab region, often known as Malwa. Ludhiana, Bathinda, Mansa, Sangrur, and Patiala are principal districts of this region. Hoshiarpur is located to the east of the Punjabi state. The town's extensive forest reserves and steep terrain contribute to its comparatively mild temperature at an elevation of 296 meters above sea level. The administrative divisions of Hoshiarpur district include four tehsils, ten blocks, and five sub-tehsils. Hoshiarpur city serves as the district's administrative center. The largest cities in this district are Hoshiarpur I and Hoshiarpur II.

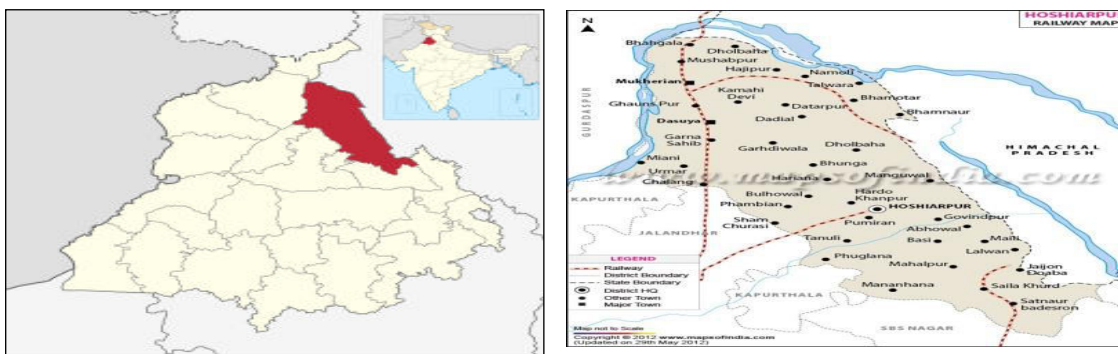


Fig.1: Map showing Punjab with district Hoshiarpur.

A questionnaire with various questions was developed to collect data for the years 2020-2021. The questionnaire contained six different questions as- (i) Total number of registered patients, (ii) Total number of positive cases, (iii) Total number of negative cases, (iv) Total number of Treated patients, (v) Total number of patients healed, and (vi) Total number of Failure Results

Results and Discussion

Viral hepatitis is well-known and well documented foremost public health issue that needs immediate attention. It has been estimated that 1.34 million deaths in 2015 was due to viral hepatitis (Chen, 2018). HAV and HEV are important causes of acute viral hepatitis and Acute Liver Failure (ALF). Due to the scarcity of data, the accurate reason responsible for the disease in the country is yet to be explored. However, available literature indicates a wide range and suggests that HAV is responsible for 10-30% of acute hepatitis and 5-15% of acute liver failure cases in India. It is further reported that HEV accounts for 10-40% of acute hepatitis and 15-45% of acute liver failure (Kumar and Sarin, 2014).

The current study was conducted to determine the prevalence of viral hepatitis in the Punjabi district of Hoshiarpur. According to the finding, between March 2021 and March 2022, 5815 patients were registered in civil hospital of district that was suspected to have hepatitis (Fig. 2a). Out of these total number of registered cases, 1031 (17.73%) were tested positive results for viral

hepatitis, while 4784 (82.26%) were declared negative for viral hepatitis (Fig. 2b). According to the data, the prevalence of viral hepatitis has decreased due to behavioral modifications made to sexual activity and advanced screening procedures for blood products, which have reduced the risk of hepatitis contacted during blood transfusions. Government of Punjab has started a program namely “Mukh Mantri Punjab Hepatitis-C Relief Fund (MMPHCRF)” in 2016 under the Punjab State Viral Hepatitis Control Program, Department of Health and Family Welfare, Punjab. In India as well as in Punjab treatment with injectable medicine is very efficient and rapid therapeutic option (Rajasekaran *et al.*, 2003). This approach has been practicing the physician themselves from many years and the government is providing financial incentives to treat via a “protocol” like injection (Rajasekaran *et al.*, 2003). However, availability of disposable syringes at large number decreases this threat among healthcare workers.

The present study revealed that total 355 patients were treated; 222 were cured after therapy; and 59 patients do not cured completely after treatment (Fig. 3). A further examination of viral loads revealed that 651 patients had higher viral loads. These results suggested that the available treatments for viral hepatitis are efficient, however, these treatments are 100% efficient. Therefore, there is still need to search new treatment options, one of them might be phytomedicine based drugs from plants/parts,

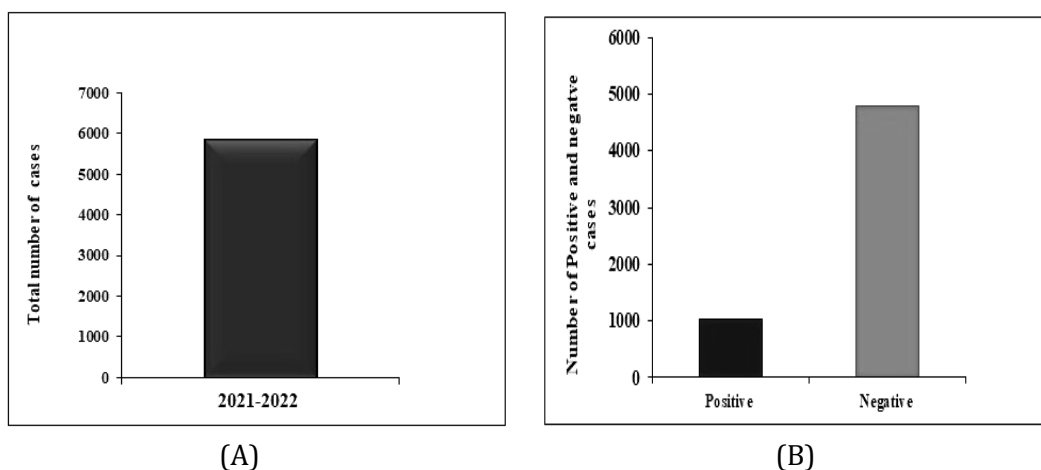


Fig. 2: (A) Total number of cases registered for hepatitis infection; (B) Number of positive and negative cases of hepatitis infection.

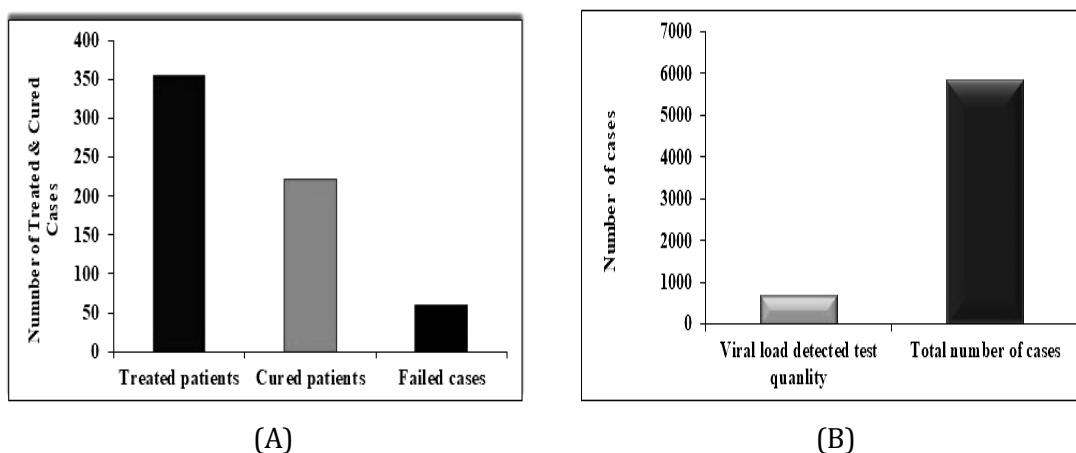


Fig. 3: (A) Number of treated patients, cured patients and number of failed cases for hepatitis treatment; (B) Viral load among the total number of patients.

because plants are rich in various compounds which includes polyphenols, flavonoids, flavones, flavonols, steroids, terpenes etc. The compounds show various pharmacological activities such as anti-oxidative, antiviral, anti-allergic, antibiotic, hypoglycaemic and anti-carcinogenic. Because traditional options of treatment could be better substitute of allopathic drugs, due to various reasons such as ease of availability, cost-effective and devoid side defects (Sharma *et al.*, 2022; Rani *et al.*, 2022) or manipulate the available treatment to make them more efficient so that this disease can be eradicated at root level.

Conclusion

Viral Hepatitis is one of the most common

infectious diseases in the world affecting million of people in the world. Viral hepatitis in Hoshiarpur showed significant decline in comparison to the past. However, disease has not been eliminated at root level. Therefore, there is need to some efficient therapeutic remedies to eradicate this life threatening disease from Punjab. The fact that the prevalence has been decreasing over the last two years, meanwhile, provides encouraging evidence that the prevalence of primary liver infection is also dropping. Hepatitis A is uncommon in adults, but hepatitis B and C infections cause both acute and chronic liver damage in a sizable proportion of patients. Hepatitis E is the cause of acute symptoms; however, HDV exposure is still extremely rare in this country. In India, viral

hepatitis is a major issue that demands strategic management in a larger context.

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