

“Co-relation of liver enzymes with HBsAg among suspected cases of hepatitis B infection”

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Abstract- *Hepatitis is infection of liver by a group of hepatitis viruses. among the hepatitis viruses hepatitis B virus is more common and transmitted by blood, semen and other infected body fluids. The present study was planned with aim to find out HBsAg prevalence in different age groups along with estimation of liver enzymes.*

Introduction – HBV is a major global health concern. In fact, in 2015, HBV-related liver disease caused around 887,000 deaths worldwide. For most adults, HBV is a short term condition that causes no permanent damage.

However, 2–6% of adults with HBV go on to develop a chronic infection that can potentially lead to liver cancer. HBV can cause infection and inflammation of the liver. A person can have HBV and transmit the virus to others without knowing that they have it. Some people experience no symptoms. Some only have the initial infection, which then resolves. For others, the condition becomes chronic. In chronic cases, the virus continues to attack the liver over time without detection, resulting in irreversible liver damage. Symptoms of a new HBV infection may not be apparent in children under 5 years of age or in adults with a suppressed immune system. Among those aged 5 years and over, around 30–50% will show initial signs and symptoms. Acute symptoms appear around 60–150 days after exposure to the virus, and they can last from several weeks to 6 months.

A person with a chronic HBV infection may have ongoing episodes of abdominal pain, persistent fatigue, and aching. HBV is transmissible when blood, semen, or another bodily fluid from a person with the virus enters the body of an individual who does not have it.

More specifically, infection can occur:

- when a woman with HBV gives birth
- during sexual activity
- as a result of sharing needles, syringes, or other drug injection devices
- as a result of practicing unsafe tattoo techniques
- by sharing personal hygiene items, such as razors and toothbrushes

Hence, present study planned to find out HBsAg with three liver enzymes in suspected

cases of hepatitis B virus infection

Aims and objectives-

- 1.Detection of liver enzymes (ALT,AST,ALP) in suspected case of Hepatitis B infection.
- 2.Detection of HBsAg among the suspected cases of Hepatitis B .
- 3.To assess the co-relation between liver enzymes (AST, ALT & ALP) and HBsAg.

Review of literature-

The earliest recognition of the public health importance of hepatitis B virus (HBV) infection is thought to have occurred when it appeared as an adverse event associated with a vaccination campaign. In 1883 in Barmen Germany, 15% of 1,289 shipyard workers inoculated with a small pox vaccine made from human lymph fell ill with jaundice during the week following vaccination. The etiology of “Serum Hepatitis” as it was known for many years, was not identified until the 1960s, and only following the subsequent development of laboratory marker for infection was the significance as a major cause of morbidity and mortality worldwide fully appreciated.

According to the most recent world health organization (WHO) estimate, two billion people worldwide have serological evidence of past or recent HBV infection, 360 million are chronically infected and at risk for HBV related liver disease. Approximately one third of all cases of cirrhosis and half of all case of hepatocellular carcinoma can be attributed to chronic HBV infection. HBV is estimated to be responsible for 500,000-700,000 deaths each year.HBV is one of the major global public health problems¹¹. In india, HBsAg prevalence among general population ranges from 2% to 8%, placing india in intermediate HBV endemicity zone and the number of HBV carrier is estimated to be 50 million, forming the second largest global pool of chronic HBV infections¹². Despite the wide population of infected person, effort to prevent the control HBV have met with increasing level of success and hold promise for large reduction in disease burden in future.

A great deal of credit for achievement to date stem from the introduction of hepatitis B vaccines. First licensed in the United states in 1981, hepatitis B vaccine is now one of the most widely used vaccines in the world and is part of the routine vaccination schedule for many of the world's infants and children. It is the world's first cancer prevention vaccine and the first vaccine to prevent a sexually transmitted disease. In countries where large scale vaccination efforts were made in the first decade after introduction of the vaccine, the epidemiology of hepatitis and HBV infection has been transformed, there are only signs that the burden of HBV-related sequelae will be significantly reduced as vaccinated population age¹³.

Material and method-

the present study was carried out in department of microbiology, santosh medical College and hospital, gzb, up from January 2017 to may 2018. Total sample were 358 and were processed for rapid (kit method) detection by chemiluminescent micro particle immunoassay based (CMIA) together with liver enzymes (SGPT, SGOT and ALP) by biochemical method on fully automated analyzer. it is a chemiluminescent microparticle immunoassay (CMIA) for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma. It is rapid detection test for HBsAg. HBsAg the first serological marker after

infection with HBV appearing one to ten weeks after exposure and two to eight weeks before the onset of clinical symptoms and clears late in the convalescence period. Failure to clear HBsAg within six months indicates a chronic HBsAg carrier state. HBsAg assays are used to identify persons infected with HBV and to prevent transmission of the virus by blood and blood products as well as to monitor the status of infected individuals in combination with other hepatitis. In most countries, testing for HBsAg is part of the antenatal screening program to identify HBV infected mothers and to prevent perinatal HBV infection by subsequent immunization. While for estimation of liver enzymes in HBsAg positive cases, I used ERBA kits on fully automated biochemistry analyser. Kits were based on end point reaction and required no incubation period. Liver enzymes, including aminotransferases and alkaline phosphatase enzymes have been valuable in screening for liver disease, as well as in diagnosing and monitoring patients with acute and chronic hepatobiliary disorders. Patients with predominantly aminotransferase elevations are thought to have acute or chronic hepatitis from a variety of causes. In patients with predominantly alkaline phosphatase elevations, imaging evaluation is undertaken upfront to exclude large bile duct disorders and infiltrative/mass lesions.

Results and Discussion-

A total 358 suspected cases of Hepatitis B were included in this study. Of these 210 were (58.65%) males, while 148 (41.34 %) were females.

Out of 57 HBsAg Positive cases, maximum increased level of liver enzyme ALT was seen in all 57 (100%) Patients. While increased level of AST was seen in 56 (98.24%) Patients. And increased level of ALP was seen in 53 (92.98%) Patients.

In present study all biochemical parameters (ALT, AST, ALP) are higher in HBsAg Positive patients i.e- ALT is higher (100%). The present study shows 15.92 % seroprevalence of HBsAg among clinically suspected infectious Hepatitis patients. In our study seroprevalence was higher (66.66%) in age group of 51-60 years.

Age wise distribution of HBsAg positive patients-

Out of total 358 sample, in males highest HBsAg positive cases were in age group 51-60 years, and lowest positive cases were in age group 1-10 & 11-20 years

In case of females highest HBsAg positive cases were in age group 41-50 years, and lowest HBsAg positive cases were in age group 21-30 years

Co-relation of HBsAg positive patients with increased level of enzymes- ALT, AST & ALP.

Out of 57 HBsAg Positive cases, maximum increased level of liver enzyme ALT was seen in all 57 (100%) Patients. While increased level of AST was seen in 56 (98.24%) Patients. And increased level of ALP was seen in 53 (92.98%) Patients.

Conclusion –

In our study a total number of 358 suspected cases of Hepatitis B were included in

this study.

Of these 58.65% were males, while 41.34% were females. Patients having > normal range (5-35 IU/l) of ALT were found in 70.67% of patients, while patients having > normal range (5-40 IU/l) of AST were found in 67.59% of patients. ALP > normal range (306 IU/l) were found in 18.43% of patients. The total number of positive cases was 57 (15.92%) of which males were 42 (58.65%) and females were 15 (41.34%).

Highest positive cases were in age group 51-60 years in cases of males, while in females the highest number of patients were found in 41-50 years. On co-relating HBsAg and increased level of enzymes it was observed that all 57 HBsAg Positive cases had increased level of liver enzyme ALT. Increased level of AST was seen in 56 (98.24%) patients while Increased level of ALP was seen in 53 (92.98%) patients.

The study revealed that the seroprevalence of HBsAg was alarmingly higher in such a population, which probably reflects a high background prevalence of HBV infections and should be taken into consideration and implementation of community based preventive measures and improved strategies for safe blood supply which might prove useful to decrease the seroprevalence.

Since there is no specific treatment, prevention has been the major aim in managing viral Hepatitis B both pre-exposure and post-exposure of hepatitis B vaccine being recommended. The policy to give pre-exposure prophylaxis to general population should be adopted as soon as possible, to prevent it emerging as a public health problems.

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