



## NEW AWARENESS REVIEW ON HEPATITIS B PREVALENCE, TRANSMISSION, AND RELATED COMPLICATIONS

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### ABSTRACT

Hepatitis B virus (HBV) infection is the major cause of morbidity and mortality worldwide. Chronic hepatitis B (CHB) infection is associated with an increased risk of cirrhosis, hepatic decompensation and hepatocellular carcinoma (HCC). The likelihood developing of CHB is related to the age at which infection is acquired; the risk being get infected is lowest in adults rather than neonates which is >90% whose mothers are hepatitis B e antigen positive. Treatment of CHB infection aims to clear HBV DNA and prevent the development of complications. Currently seven drugs available for the treatment of CHB: among them five are nucleotide analogues and other two are interferon-based therapies. Often long-term treatment is required, and the treatment is based on clinical assessment including the phase of CHB infection and the presence and extent of liver damage. Safe and effective HBV vaccine has been available in health care setting since the early 1980s. Vaccination plays a key role in HBV prevention strategies worldwide, and a decline is seen in the incidence and prevalence of HBV infection following the introduction of universal HBV vaccination programs, which has been observed in many countries including the USA and parts of South East Asia and Europe. Post-exposure prophylaxis (PEP) with HBV vaccine +/- hepatitis B immunoglobulin is highly effective in preventing mother to child transmission and in preventing transmission following sharps injuries, sexual contact and other exposures to infected blood and body fluids. Transmission of HBV in the health care setting has become an increasingly rare event in developed nations. However, still remains a significant risk in developing countries reflecting the higher prevalence of CHB, limited access to HBV vaccination and PEP and a lack of adherence to standard infection control precautions. In this review we will introduce the hepatitis B, mode of transmission, sign & symptoms, diagnosis complications and then draw a conclusion.

**Keywords:** HBV, INFECTION, COMPLICATIONS

## INTRODUCTION

Hepatitis is the inflammation of the liver tissue. <sup>1</sup> It affects the liver which is caused by viruses. In United States and worldwide it's a major public health issue. Viral hepatitis not only does carry a high morbidity, but it also stresses to medical resources and can have severe economic consequences as well. Most of the all viral hepatitis cases are preventable in recent age.

There are five main types of viral hepatitis: type A, B, C, D, and E.<sup>1</sup> Two of them hepatitis A and E are mainly spread by contaminated food and water. <sup>1</sup> Hepatitis B is mainly Transmitted by sexually contact, but may also be passed from mother to baby during pregnancy or childbirth.<sup>1</sup> Both hepatitis B and C are commonly spread through contaminated blood such as may occur during needle sharing by intravenous drug users.<sup>1</sup> Hepatitis D can infect people who already infected with hepatitis B [ Hepatitis A, B and D are preventable by immunization. <sup>2</sup> Medications can be used to treat chronic cases of viral hepatitis. <sup>3/4</sup> Autoimmune hepatitis may be treated with medications to suppress the immune system. <sup>5</sup> A liver transplantation may also be an option in certain cases. <sup>6</sup>

About 1/3 of the World populations has been infected at one point in their lives with hepatitis B, including 343 million who have chronic infections. <sup>7</sup> China has 120 million infected people, followed by India and Indonesia with 40 million and 12 million, respectively, as of 2010. According to the latest WHO data published in 2017 deaths with hepatitis B in Pakistan reached 2,226 or 0.18% of total deaths. An estimated 600,000 people die every year related to the infection, according to World Health Organization (WHO). <sup>8</sup> In 2013 another 129 million new infections occurred. <sup>9</sup> Over 750,000 deaths with hepatitis B have been reported per year. <sup>7</sup> About 300,000 deaths of these are due to liver cancer. <sup>10</sup> Some new research says, 887,000 people die from HBV-related liver disease each year, Globally. An estimated 850,000 people in the United States have chronic HBV infection, according to the Centers for Disease Control and prevention (CDC). The most recent data showed that nearly 1,900 people died from hepatitis B-related causes. About 19,000 new cases occurred in 2011 down nearly 90% from 1990, in the United State. Now the disease is only common East Asia and sub-Saharan Africa where between 5 and 10% adults are chronically infected. <sup>7</sup> In Europe and North America rates are less than 1%. <sup>7</sup> It was originally known as "serum hepatitis". <sup>11</sup> Research is looking to create foods that contain HBV vaccine. <sup>12</sup> The disease may affect other great apes as well. <sup>13</sup> Hepatitis B is an infectious disease which caused by the hepatitis B virus (HBV) that affects the liver. <sup>7</sup> It can cause both acute and chronic infections. <sup>7</sup> According to the age at the time of infection hepatitis B infection will become chronic. In United States approximately 90% of infants and 25 to 50 % of children under the age of 5 years will remain chronically infected with HBV. In adults, roughly 95% recover completely. Many people during the initial infection phase have no symptom. <sup>7</sup> Some of them develop a rapid onset of sickness, with yellowish skin, vomiting tiredness, dark urine and abdominal pain. <sup>7</sup> Often these symptoms last for few weeks and rarely does the initial infection result in death. <sup>7/9</sup> It may take 3 to 6 months of incubation period for the symptoms to begin. <sup>7</sup> In those 90% cases develop chronic hepatitis B during the time of birth while less than 10% of those infected after the age of 5 years. <sup>14</sup> Most of them with chronic disease have no symptoms; however, cirrhosis and liver cancer may

eventually develop being a complication.<sup>15</sup> in 15 to 25% these complications may result in the death of those with chronic disease.<sup>7</sup>

Chronic hepatitis B virus (HBV) is the ninth leading cause of death and approximately 300 million chronic carrier of hepatitis B virus (HBV) Worldwide. Hence, control of HBV infection is extremely important to study. Some people have no symptoms, whereas others develop yellow discoloration of the skin and whites of the eyes, vomiting, poor appetite, tiredness, abdominal pain, or diarrhea.<sup>3</sup> Worldwide the most common cause of hepatitis is viruses <sup>2/3</sup>. Other causes include toxins, heavy alcohol use, certain medications, other infections, autoimmune diseases,<sup>1/3</sup> and non-alcoholic steatohepatitis (NASH).<sup>16</sup> Hepatitis B commonly spread through contaminated blood such as may occur during needle sharing by intravenous drug users.<sup>1</sup> Medications can be used to treat chronic cases of viral hepatitis <sup>3/4</sup> Autoimmune hepatitis may be treated with medications to suppress the immune system.<sup>5</sup> A liver transplantation may also be an option in certain cases.<sup>6</sup>

### **Mode of Transmission:**

The HBV is primarily transmitted by perinatal, percutaneous and sexual routes. The virus can also be transmitted by inapparent percutaneous routes and close contact from person to person, presumably via open cuts and sores, especially among children in endemic areas (eg, sub-saharan Africa, which has nearly 10% prevalence of chronic HBV infection). But The most common mode of transmission are sexual and percutaneous (exposure to contaminated instruments and needles etc). The virus can also be transmitted by contaminated blood, semen or other body fluids.<sup>7</sup> Infection during the time of birth or from contact with other people's blood during childhood is the most frequent method by which hepatitis B can be acquired in areas where the disease is common.<sup>7</sup> Intravenous drug use, sexual intercourse, infectious blood and body fluid are the most frequent routes of infection in the area where the disease is rare.<sup>7</sup> Other risk factors include sex worker, working in healthcare center, dialysis, blood transfusions, living with an infected person, travel in countries where the infection rate is high, and living in an institution<sup>7/14</sup> In the 1980 Tattooing and acupuncture led to a significant number of cases ; however, this has become less common with improved sterility.<sup>17</sup> The hepatitis B viruses cannot be spread by sharing eating utensils, holding hands, kissing, hugging, sneezing, coughing, & breastfeeding.<sup>18</sup>

### **Symptoms & Signs:**

Hepatitis B often has no symptoms. About half of the patients with hepatitis B are asymptomatic. Acute infection with hepatitis B virus, is associated with acute viral hepatitis, an illness that begin with general ill-health, headache, pain abdomen, nausea, vomiting, feeling tiredness, loss of appetite, joint pain, body aches, dark urine and mild fever, and then progresses to development of jaundice. Chronic hepatitis B interferes with functions of liver hormones resultant in hirsutism (abnormal hair growth), acne, and amenorrhea (lack of menstrual period) in women.<sup>19</sup> It has been noted that itchy skin is the indication of possible symptoms in all types of viral hepatitis. The illness last for few weeks than gradually in most of affected people. A few of people may have a more severe form of liver disease which is known as fulminant hepatic failure (FHF) and they may die as a result. The infection may be entirely asymptomatic and may go unrecognized.<sup>20</sup>

## Diagnosis:

The infection can be diagnosed after 3 to 6 months of exposure.<sup>7</sup> Hepatitis B can be diagnosed with a simple blood draw, if positive for surface antigen, negative for the surface antibody and positive for the core antibody, the patient is infected with the hepatitis B.<sup>21</sup> The diagnosis usually confirmed for antibodies against the virus by testing the blood for parts of the virus.<sup>7</sup> A core antibody immunoglobulin (IgM) test may be used to determine whether the infection is chronic or acute.<sup>21</sup> If the test is positive, then the patient is acutely infected. If the surface antigen test remains positive continuously after 180 days, this indicates chronic hepatitis B.<sup>21/22</sup>

## Treatment & Management:

Since after 1982 the infection has been preventable by vaccinations.<sup>7</sup> If possible, vaccination is recommended by the World Health Organization in the first day of life.<sup>7</sup> Later on for full effect two or three more doses are still required.<sup>7</sup> About 95% of the time this vaccine works.<sup>7</sup> Up to 2006 about 180 countries has been given the vaccine as part of national programs.<sup>23</sup> It is also recommended that all blood should be tested for Hepatitis B before transfusion and condoms be used to prevent infection.<sup>7</sup>

The care is based on symptoms that a person has, during an initial infection.<sup>7</sup> There are many antiviral medications including entecavir (Baraclude), lamivudine (Epivir), tenofovir (Viread), adefovir (Hepsera) and telbivudine (Tyzeka), can help fight the virus and slow its ability to damage your liver. Interferon alfa-2b (Intron A) is a man-made version of a substance which is produced by the body to fight infection. Antiviral medication such as tenofovir or interferon may be useful, in those subjects who develop chronic disease; however, these drugs are expensive.<sup>7</sup> Sometimes liver transplantation is the final way, used for cirrhosis.<sup>7</sup>

## Complications:

Over a period of several year's chronic infection with hepatitis B virus either may be asymptomatic or may be associated with a chronic inflammation of the liver (chronic hepatitis), and leading to cirrhosis. This type of infection dramatically increases the incidence of hepatocellular carcinoma (HCC; liver cancer). The incidence of hepatocellular carcinoma (HCC) varies according to the prevalence of hepatitis B and C infections worldwide. Across Europe, approximately 50% of HCC are because of hepatitis B and C.<sup>24, 25</sup> Hepatitis B virus has been linked to the development of membranous glomerulonephritis (MGN).<sup>26</sup> Extrahepatic symptoms are present in 1–10% of HBV-infected people & are they are included serum-sickness-like syndrome, membranous glomerulonephritis, acute necrotizing vasculitis (polyarteritis nodosa), and popular acrodermatitis of childhood (Gianotti-Crosti syndrome).<sup>27/28</sup> According to Turkish study in 2005, oral lichen planus was found to have a high prevalence in patients with HBsAg positivity.<sup>29</sup>

## CONCLUSION

As mentioned above hepatitis B is becoming seriously health issue world widely as well as in Asia pacific region too. Being aware to its prevalence, mode of transmission, diagnosis and complications mentioned

above, we all should be aware of it and should let our community to be aware of some new risk factors & related complication and how to take preventive measures of it.

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