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# A General Review on Hepatatis.

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**ABSTRACT**

Hepatitis refers to the inflammation of liver tissue produced as a result of various factors including drugs, toxic materials, viruses, etc. Viral hepatitis is caused by different viruses and is classified as types A, B, C, D, F and G. Types A and E are mainly transmitted through the fecal-oral way and are often not manifest among children. However, among adults and pregnant women these types can have a progressive evolution and lead to fulminant hepatic failure. Infection or hepatitis types B and D have similar transmission ways and symptoms as well. Nevertheless, the infection of hepatitis type D should occur in the presence of hepatitis type B. without affliction with type B, the probability of affliction with type D is next to none. Simultaneous affliction with these two infections within an individual can quicken the process of liver failure and lead to fulminant hepatitis. Hepatitis type C occurs by means of blood or blood products and through sharing the use of a syringe among people highly prone to infection. Moreover, sexual relationship is a common case of affliction with hepatitis type C. As other viral hepatitis types are concerned, no comprehensive information is available. However, it can be estimated that such infections are more prevalent among individuals with a longer history of blood reception. Hepatitis is commonly without any manifest symptom, but it can show up in the form of such simple symptoms as the flu, weakness, lethargy, fatigue, stomachache, jaundice, nausea, vomit, loss of appetite, and muscular or skeletal pain. Abiding by personal hygienic rules, not consuming a pre-used syringe as well as following safe sexual relationships can help to cut down on affliction with hepatitis to a great extent. The majority of people suffering from the acute form of this disease recover through supportive treatments. However, patients suffering from the chronic types or those who suffer from the side-effects of hepatitis might need anti-retroviral drugs or even liver transplantation.

**Keywords:** liver, jaundice, hepatitis

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## INTRODUCTION

Hepatitis refers to the inflammation of liver tissue which can be caused by various reasons such as medication, viral, microbic and parasitic infections [1]. Viral hepatitis is one of the five infectious factors leading to pre-mature death in the world. Annually, at least one million people worldwide die due to viral hepatitis[2]. The last 2 decades of the twentieth century witnessed fast scientific advancements in diagnosing these viruses, the consequences of this disease, effective drugs and effective vaccines in their prevention[3]. In different types of hepatitis, due to liver inflammation and malfunctioning, the metabolism of a number of materials is not properly done by the liver[4]. Among such materials is blood bilirubin the over-accumulation of which can lead to jaundice. Jaundice is known as a prevalent symptom of liver disease.

Considering the significance of viral hepatitis, its prevalence and side-effects, in this study we will refer to its major types [1].

### Hepatitis

The inflammation of liver is known as hepatitis. Various factors can lead to hepatitis such as affliction with hepatic viruses (A, B, C, D, E,…), medication, toxins, anoxia, alcohol and so on[5]. Viral hepatitis is considered as a main cause of early death in human population[4]. According to the estimation of World Health Organization, there are 385 million hepatitis type B vectors and 170 million type C vectors in the world. Over a million mortalities occur annually as a result of hepatitis[2, 3].

Currently, 8 types of this virus are known:

1. Hepatitis type A
2. Hepatitis type B
3. Hepatitis type C
4. Hepatitis type D (always concomitant with type B)
5. Hepatitis type E
6. Hepatitis type F
7. Hepatitis type G

In fact, at the present time 10 to 15 percent of people do not belong to any of the above categories. Therefore a type H can be expected as well [3, 5].

### Hepatitis A

The underlying factor for hepatitis A is a RNA virus called HAV which can be spread through feces. It would contaminate drinking water and food [6]. This virus is transmittable through contaminated water, foods and milk and also consumption of raw oyster or fresh [uncooked] fish as well as through close contact with afflicted patients [7].

Hepatitis A is the most prevalent among children. Approximately 100% of children below the age of 10 are afflicted with this virus.

Only in about 1% of cases, that is one per thousand cases, this type of hepatitis is fatal. Therefore, heeding to it is essential [8].

### Transmission and risk factors

The main way through which hepatitis type A is transmitted is oral-fecal. As some researches have showed, the chance of transmitting this infection is higher in individuals of lower socioeconomic as well as poor hygienic status [9]. Moreover, in America, the primary factor of transmitting hepatitis type A has been found to be international trips especially to central and South America[7]. Other risk factors such as sexual or domestic contact with a patient suffering from hepatitis type A also increase the probability of transmitting this disease [6]. A body of research has revealed that food materials, drinking water and living in populated places as well as drug injection can be involved in the occurrence of hepatitis type A. so far, no reports have

been made concerning the transmission of hepatitis type A from mother to child. Hepatitis type A has been observed more as an acute infection and not of a chronic one. Once one is afflicted with this disease, there would be no next affliction and the person would be immune permanently through the rest of his/her life [8, 10].

**Diagnosis of hepatitis type A**

Blood test is the best way of diagnosing this disease. In patients with hepatitis A infection the liver enzyme may be increased even up to 10 times higher the normal range and also, direct and indirect bilirubin can be raised in some patients [11]. Anti-HAV Ab (IgM) is the first diagnostic Ab that should be evaluated in suspected patients which is produced 5 to 10 days before the appearance of symptoms by the immune system and disappears within six months [12].

**Symptom of disease**

Not all the symptoms appear together within the afflicted individual and patient may experience a incubation period of 4 weeks. Children almost, show no symptoms of infection at all. However, in teenagers and adults the symptoms might be severe and appear in the form of fulminant hepatitis [13]. In case, hepatitis type A shows up, it manifests itself in the form of flu-like syndrome, diarrhea, stomachache, vomit, loss of appetite, dark urine, jaundice, cholestasis, restlessness and fatigue, weakness and lethargy [11]. Since these symptoms are mild, only through blood tests, the presence of this virus can be ensured. Hepatitis type A is often a self-limited disease and doesn't need hospital admission and any medication [12].

**Prevention and prophylaxis**

Fruit and vegetables should be disinfected before consumption. Hands should be carefully washed after defecation and before serving one's meal. In case, there is an afflicted person in the family, his/her personal stuff need to be disinfected. Nevertheless, the best and most effective way is hepatitis A immunoglobulin (HAIG) and vaccination (HAVa) [10].

The individuals which have close contact with afflicted patients should be received HAIG during the 2 weeks after contact. In addition HAIG can be effective in prophylaxis of hepatitis A infection for 3 months before traveling to an endemic region [12]. There are two types of vaccine for this disease: VAQTH and HAVRIX. Their side-effects are very limited and include minor flu-like symptoms and pain in the vaccinated body spot. A combinational vaccine can be used for both hepatitis A and B [9].

TWIRIX is a very effective vaccine and 99% of people vaccinated by that were proved never to get afflicted with the disease again. Since in patients suffering from AIDS, the immune system is dysfunctional, after vaccination there still is a chance of affliction with hepatitis type A. vaccination is best to be done once CD4 is within its normal ranges [13]. However, HAVa should be considered for some individuals including children, military personnel, diagnostic laboratory personnel, homosexual men, chronic liver disease and peoples who are going to travel to endemic areas for hepatitis A. the HAVa should be injected in two doses with an interval of 6-12 months. The first dose of HAVa should be injected at least 4 months before traveling to endemic areas to prevent from hepatitis A infection [12].

**Treatment**

No medical treatment is needed for hepatitis type A. It improves on its own within 3 to 6 months. However, among adults this infection can be hazardous and even fatal. In children, supportive treatments aiming to remove the symptoms do suffice. Only 20% of children might need to be hospitalized[9].

**Hepatitis B**

Though there exists an effective vaccine to fight it back, hepatitis type B is known as a global problem in the field of health. Hepatitis B virus is a DNA virus and the leading cause of vertical transmission through pregnant mother to the neonates in especially its chance is higher among infected mothers with positive HBe Ag[14]. Nevertheless, the prevalence of hepatitis B infection has been decreased during the past few decades

due to early vaccination at the time of birth. However, still in regions where more immigrants are allowed to enter this infection is highly prevalent. In this disease, infection is transmitted through the blood and body fluids of the patient[15]. It is possible that one is not aware of his/her illness, since this disease could have no manifest symptoms or just mild clinical presentation such as the serum sickness like reaction[14].

**Transmission ways**

The following ways are the most probable ways for transmission of hepatitis B infection [16].

- Sexual contact with an infected individual without using condoms
- Use of a shared syringe
- Tattoos made by unsterilized tools
- Use of shared personal stuff such as a toothbrush, blade, tweezers, contact lenses and any other tool that could be in touch with blood or body fluids [15].
- Transmission from mother to infant during delivery

Transmission does not occur through sneezing, coughing, feces or ordinary contact.

**Symptoms**

Patients afflicted with acute hepatitis might show no symptoms at all. Serological tests can only help us to diagnose it [17]. Sometimes after a one to four month incubation period, patients might begin to show flu-like symptoms, serum sickness like reaction, excessive fatigue, mild fever, and headache, loss of appetite, right upper quadrant abdominal pain, vomit, diarrhea, constipation, muscular pain, arthralgia, hives, yellowish sclera and jaundice. These are generally late-coming symptoms [18].

The majority of patients afflicted with hepatitis type B reveal no symptoms and most of them are also unaware of their disease since there are usually mild flu-like or no manifest symptoms[16]. After a one to three month period, still these patients might not reveal to have any symptoms. Only through serological tests, this disease can be diagnosed [19]. In case, it becomes symptomatic, chronic hepatitis reveals to have external liver symptoms such as polyartheritis, polyarthritis nodosa and Glomerulonephritis [17].

**Diagnosis**

Hepatitis B is diagnosed through serologic tests. Patients with no manifest symptoms can also be recognized by these evaluations. Tests show whether the vaccine managed to have adequate protection or not. In later stages, kidney function test as well as liver biopsy might be considered in order to find out the degree of damage to liver[18]. In the acute phase of this disease, several tests including HBs Ag, anti-HBc Ab (IgM)should be requested for diagnosis. Both HBs Ag and anti-HBs Ab (IgM) may neutralize each other and may not be detectable in patient's serum with progression of disease which called window period. This event does not mean that the disease has been relieved and during this period anti HBc Ab (IgM) should be requested for diagnosis[19]. As the disease progresses HBe Ag may be presented in patients' serum which indicating high production of virus and its transmission. HBe Ag disappears in serum while the anti HBe Ab presented[17]. Although hepatitis B infection may not be symptomatic however, some conditions have a high chance of disease chronicity including immunocompromised and immunosuppressed patients, vertical transmission and hemodialysis patients. In order to diagnosis of high production of virus and its transmission, several laboratory tests can be effective including HBe Ag, HBV DNA and DNA polymerase. These tests can predict the development of disease to cirrhosis and consequently hepatocellular carcinoma [15].

In chronic phase, HBs Ag should be requested and in patients with positive HBs Ag, the virus replication and its transmission probability can be diagnosed by HBe Ag and anti HBe Ab.

In patients with chronic hepatitis B infection and severe manifestation of hepatitis, hepatitis D infection should be rolled out [20].

**Prevention and prophylaxis**

Several protective advises have been introduced for decreasing the risk of hepatitis B infection. It is recommended to peoples who have deal with blood or body fluids of infected patients using gloves and eye glasses [20]. Also, using condom should be considered in sexual contact of infected partner. The best prophylaxis way for decreasing the risk of hepatitis B infection is hepatitis B vaccination which is injected three times in zero time, 1 month and 6 months later [18, 19]. High risk individuals including peoples less than 18 years old, health care personnel, hemodialysis patients, IV drug abusers and multi partner sex of individuals should be received hepatitis B vaccine. In some including vertical transmission of hepatitis B and unprotected contact with an infected patient such as needle stick without previous vaccination, hepatitis B immunoglobulin should be injected immediately after birth and as soon as possible after unprotected contact respectively [21]. In addition, HBVa should be injected within 12 hours after birth and during the first week after needle stick in another different site with IG [16].

**Treatment**

The treatment of infectious hepatitis B depends on the activation level of the virus and the extent to which one is prone to the risk of liver damage such as cirrhosis. The acute type of hepatitis B is recovered by itself. Supportive and symptomatic treatments are used to cut down on its symptoms and to impede the epidemic of virus [21]. In the chronic infection of hepatitis B, the treatment involves examining patient's conditions and the use of antiviral medication in order to stop damages to liver. In case the liver is severely damaged by the disease, liver transplantation can be considered as a treatment [17].

**Medical treatment**

Antiviral medication is not recommended to those afflicted with acute hepatitis B. However, it is recommended to those afflicted with chronic hepatitis B in which the virus has a proliferating activity or in which the destruction process of liver has already begun [16]. Patients with chronic HBV should be treated in order to prevent developing the severe chronic liver disease, cirrhosis, H.C.C and its transmission to other peoples[20]. Common indications for treatment in chronic HBV including patients with positive HBe Ag, ALT two times higher than upper limit normal and HBV DNA above 20000 int.unit/ml. In fact, the reception of antiviral medication in the chronic cases of hepatitis B depends on the potentiality of virus replication, the amount of DNA of this virus and liver enzymes [17].

**Antiviral medications**

Several antiviral medications con be employed in the treatment of chronic HBV such as interferone [pegylated] and Nucleoside Reverse Transcriptase Inhibitors [NRTIs] such as tenofovir, adefovir, telbivudine, lamivudine and entacavir [22].

Interferons: This group of medication indicated in infected peoples with chronic HBV and compensated liver disease. Several advantage have been reported tor these group including short term duration and long term response to treatment also, resistance to treatment is lower by prescribing interferons compared with other medications [14].

NRTIs are approved by FDA for treatment of chronic HBV infection in adult and children with mechanism of slow the HBV replication in human body.

Lamivudine: it is a safe medication in especially during pregnancy and relatively effective against the viral replication. Lamivudine is cheaper than other oral agents and can be prescribed in children aged over 2 years[16]. Some studies demonstrated that at the end of first year and fifth year of treatment HBV may be resistance to lamivudine in about 30 and 50% of individuals. Lamivudine also, should be adjusted in patients with renal failure. Patients with co-infection of HBV and HIV should be received higher dose of lamivudine in combination with other antiretroviral agents [21].

Adefovir: Although lamivudine has a higher effect against the viral replication compared to lamivudine however, adefovir is preferred to prescribed in cases who were resistant to lamivudine. Some studies

demonstrated that combination therapy with adefovir and lamivudine has a similar effect against the viral replication but, this strategy is suitable in patients who need long term medication and with lower risk of resistance to adefovir. A major limitation for adefovir is its nephrotoxicity and physicians should be aware of this complication [22].

Telbivudine: although telbivudine is potentially more effective against the viral replication compared to lamivudine and adefovir, however higher rates of resistance have been reported for telbivudine compared with adefovir, entecavir and tenofovir. In addition, the prescription of telbivudine is limited due to its high cost and its complication such as myopathy and peripheral neurophay in especially when combinated with interferones [20].

Entecavir: It is indicated that antiviral activity of entecavir is significantly higher than lamivudine and adefovir. This medication is usually used as the primary treatment of HBV and also in patients with decompensated cirrhosis due to its high activity against the viral replication and lower rate of drug resistance compared to lamivudine[21]. Although, lamivudine resistance is low [about 1% after 5 years] but, several studies demonstrated that it is not suitable for patients with lamivudine resistance [23].

Tenofovir: This medication can be used the first line treatment of HBV due to its high antiviral activity and rare drug resistance. Several investigations indicated, tenofovir can be employed in the treatment of patients who were resistant to lamivudine, telbivudine and entecavir[20]. In the other hand, some other studies showed that tenofovir is not a suitable choice for the treatment of patients with adefovir resistance but, it can be initially started as first line instead of adefovir [16].

**Liver transplantation**

Hepatitis infects the liver and does not normally require a surgery. Those who suffer from a chronic hepatitis and move towards a progressive liver failure also known as fulminant hepatic failure might need liver transplantation[14].

**Hepatitis C**

Hepatitis C virus [HCV] is a RNA virus that affects the liver with different intensities. In some people, this disease only lasts a few weeks while in others it takes during life time and threatens their life severely[24]. This disease occurs as a result of contamination with the virus which is the main factor for hepatitis C (HCV) and enters body primarily through contact with infected blood. Hepatitis can be either acute or chronic[22].

Acute hepatitis C: This type of hepatitis is a short-term disease which appears within the first six months of infection of this virus. In the majority of people, the acute type of hepatitis C turns into the chronic type [23]. Chronic hepatitis C: This type of hepatitis is a long-term disease and occurs when hepatitis C virus remains in body for a long time. The viral infection of hepatitis C can lead to severe problems of liver including liver cirrhosis or hepatocellular carcinoma [22].

**Symptoms**

Hepatitis C generally reveals no manifest symptoms in acute phase. Once some symptoms appear, these could include fatigue, fever, nausea, loss of appetite, arthralgia, jaundice, white stool, dark urine and right upper quadrant abdominal pain[25].

**Transmission ways and risk factors**

- Sharing infected syringe with blood of HCV positive patient in IV drug abuser or needle stick in health care personnel [22].
- Contact of contaminated blood with mucosa and injured skin
- sexual relationship with a person afflicted with hepatitis C
- Vertical transmission from infected mother to her neonate
- Transplantation of infected organ

- Dialysis patients

**Ways through which hepatitis C is not transmitted**

Using shared dishes, breastfeeding, embracing, kissing, shaking hands, coughing, blowing one's nose do not help to transmit hepatitis C. Moreover, this virus is not transmitted through eating foods or drinking water [23].

**Side effects of hepatitis C**

The infection of hepatitis C can remain in body for years and cause serious problems such as:

- Cirrhosis: occurs after 20 to 30 years of affliction with hepatitis[24].
- Hepatocellular carcinoma: this is not prevalent in HCV however, it could be a consequence of cirrhosis is HCV
- Hepatic failure

**Diagnosis**

Different blood tests are used to diagnose affliction with hepatitis C. These tests are given to diagnose the virus in body and also estimate the level of virus. In addition, different liver tests are used to diagnose the severity of damage made by hepatitis to liver. In the acute type of hepatitis C, the level of liver aminotransferase would become 10 to 20 times as high [25]. Total bilirubin would also rise in some patients. Moreover, in this disease, the serum level of HCV RNA and anti-HCV Ab goes up as well. Discriminating between the acute and chronic types of hepatitis is based on the personal description and clinical symptoms of the patient as well as the duration of high or positive serologic tests. Pathologic findings of liver biopsy can be beneficial in diagnosis of chronic HCV [18].

**Prevention of hepatitis C**

Unfortunately, there exists no vaccine for preventing hepatitis C. The existent vaccines are only useful for hepatitis A and B. To prevent affliction:

- Not sharing needle
- Avoid tattooing in illegal and insanitary centers
- Avoid risky and illegal sexual contact

**Treatment of hepatitis C**

The majority of patients with acute HCV may not need to treatment therefore, in acute HCV treatment should be initiated after 12 weeks because of successful possible response of immune system to HCV [24]. Nevertheles, asymptomatic patients and those who had infected via blood transfusion treatment should be initiated as soon as possible due to the higher risk of chronicity[26]. Mon-therapy with Pegylated interferon alpha is widely used in the treatment of acute HCV without concurrent disease. Patients with acute HCV and HIV coinfection should be received combination therapy of Peginterferon and ribavirin [27]. Duration of treatment in acute HCV is depending of the HCV genotype. Treatment of patients with HCV genotype type 2,3 and 4 should be undertaken for 12 weeks while, in genotype 1 longer duration up to 24 weeks should be considered [25].

Chronic HCV should be treated in order to prevented from mortality and morbidity of patients and reduce the need for liver transplantation caused by cirrhosis and H.C.C. patients with HCV treated till HCV RNA eradicated.

Chronic HCV should be treated in patients over 18 year old with positive HCV RNA and with normal function of heart, lung, kidney and desirable biochemical and hematologic indices. Concomitant disease, disease stage, progression and response to treatment can be estimated by liver biopsy [28].

Patients with chronic HCV and mild liver disease are suggested to treat with combination of peginterferon and ribavirin. Protease inhibitors should be added to peginterferon in patients with HCV genotype 1 [28].

Although, recurrence of HCV is a common event in liver transplantation, however, the treatment of choice among individual with decompensated cirrhosis is liver transplantation [26].

The prognosis of HCV in children is usually better than adults so, several investigators recommended, children with mild histopathologic finding in liver biopsy in especially in HCV genotype 1 is better to observed and those with moderate to severe histopathologic finding in HCV genotype 1, 2 and 3 should be treated with combination of peginterferon and ribavein [25].

Combination therapy with peginterferon and ribavirin is associated with several side effects including flue like syndrome, pancytopenia, irritability, depression, cough, and dyspnea and thyroid dysfunction [28].

In addition to optimal treatment which is employed in HCV, the patients should be careful not to consume alcohol or drugs. The former speeds up the damaging to liver and can also reduce the efficacy of medications [26].

**Hepatitis D**

Its factor is called delta or HDV. This virus reveals itself concomitant with hepatitis B and does not lead to a disease on its own. Within an individual already afflicted with type B, however, this can intensify the disease and its symptoms [29]. It cannot be transmitted through the oral-fecal way. However, it can be transmitted through injection with an infected syringe, sexual contact and from a pregnant mother to its embryo. In case hepatitis B and D accompany each other, stoppage of liver functioning and fatal inflammation is increased. Hepatitis D virus makes use of hepatitis B virus and the host cell in order to replicate [30].

Similar to hepatitis B, this virus is transmitted through body fluids. Both viruses get connected to the host cell in a similar way. An individual might be infected with both hepatitis types B and D. Virus replication is accompanied by damages made to the host cell [liver cell]. Unlike hepatitis B virus, that of hepatitis D causes damages to the immune response of the host cell and beyond [29].

Hepatitis D afflicts children and adults suffering from hepatitis B. Laboratory diagnosis is based on increasing liver enzymes in a patients with chronic HBV. Examining blood antigen and genome is also helpful in the diagnosis of HDV[30]. No exclusive treatment has been, so far, suggested for hepatitis D. However, since virus replication is dependent on the presence of hepatitis B, preventing hepatitis B is effective in preventing this virus. Vaccination against hepatitis B, omission of infected blood products, avoiding the use of infected drug injection and controlling virus vectors can help to prevent the spreading out of hepatitis D [29].

**Hepatitis E**

Its factor is virus HEV and is transmitted orally. It gets epidemic at the time of floods. The infection induced by hepatitis E virus or other similar viruses have been proved to exist in swine, sheep, cows, rodents and many other animals in the world[30]. However, in the majority of references, human being has been introduced as the only natural source of hepatitis E virus [31]. On the other hand, the epidemic of this hepatitis indicates that the origin of infection is human or animal feces [32]. A higher risk of this disease among higher socioeconomic groups indicates that in the intervals of epidemics, the virus circulates among people and in lower age groups it leads to long term immunity by causing infection [33].

The alternative occurrence of this disease on the one hand and scarcity of its transmission from one person to another on the other hand has led to this hypothesis that the virus which is the factor of hepatitis E is a kind of zoonosis [32].

Overall, since there is no specialized serologic test to diagnose hepatitis E, no adequate information is available about its ecology and the probability of the presence of mediating hosts. Reports on the epidemic of

the disease in the camps of the homeless where human and animals coexisted and hygiene level was low created the hypothesis that the virus might have a natural resource [34].

Hepatitis E is transmitted through infected water and probably through an interpersonal contact [anal-oral]. However, since this disease cannot become chronic [unlike type C] it would not be transmitted by chronic vectors[35]. Overall, no sufficient information is available concerning how this disease is transmitted in sporadic cases which is not related to epidemic cases [33]. One epidemiological feature of hepatitis E which distinguishes it not only from other classic hepatitis but also from intestinal infections is the scarcity of its transmission inter-personally during close contacts [33]. It needs to be reminded that the probability of its transmission through blood transfer is next to none. Hospital infection does rarely occur as well [34].

During the epidemic of this disease especially in hospitals where these patients are hospitalized, the feces and other waste of patients should be hygienically expelled so that underground water sources and drinking water are not infected by the cesspool [35]. Other ways that help are: determining the way the virus is transmitted within the epidemic period, getting rid of shared sources, identifying the population at risk, preventing the contamination of water and foods by feces and the like [31].

**Hepatitis F**

Hepatitis F refers to a kind of viral hepatitis that seems to occur for an unknown reason by some viruses leading to Hepatitis AG. Whether this type of hepatitis is produced as a result of a separate virus or by another hepatitis type virus has been open to controversy. For instance, some believe it to be a variety of hepatitis type B [34].

**Hepatitis type G**

Its virus [HGV] is an RNA virus, a hepatotropic kind made of flavivirus of an unknown significance which is primarily transmitted parentally. The prevalence of HGV RNA and E2 antibody [HGV antibody] is respectively 1-4 and 3-14 percent in blood donators[36]. Its genome in patients afflicted with acute/chronic hepatitis types other than A-E, has been diagnosed to be liver cirrhosis and Hepatocellular carcinoma [36, 37].

The prevalence of HGV RNA in individuals who recurrently use blood products transfusion including thalassemic and hemodialystic patients has reached 16%. 75% of patients afflicted with positive HGV have normal liver enzymes without any symptoms of liver disease. However, HGV infection could lead to acute or chronic hepatitis [37].

## CONCLUSION

In all aforementioned types of viral hepatitis the absolute diagnosis of the disease is made possible only through finding the antiviral antibody or viral antigens of patient's blood. Flu-like symptoms, fever, fatigue, nausea, vomit, diarrhea, loss of appetite appear first [12]. A couple of days later, yellowing of eyes and skin as a result of accumulation of blood bilirubin, darkening of urine due to the entrance of surplus bilirubin, light feces [white in color] also appear [11]. Hepatitis A and E viruses generally enter body through foods and water particularly through fresh oyster infected by cesspool[38]. Hepatitis B is normally transmitted through sex, blood injection or injection using an infected syringe. A mother afflicted with hepatitis type B might transmit it to its baby [39]. In some cases people have been infected with this virus without any known reason. Hepatitis C is often transmitted through the intravenous injection of drugs, blood injection and other ways of exposure to blood products. However, in 40% of cases, the means of transmission is unknown[40]. Hepatitis D cannot occur independently from type B. Hepatitis G has a similar transmission pattern to that of hepatitis C [41]. it is normally transmitted through blood. From among its side effects mention can be made of liver failure, cirrhosis, cancer and even death as a result of chronic hepatitis. These patients are normally vectors of the virus and are considered as potential sources of transmitting the disease to other family members. They might look lively and healthy and unaware of the infection [39].

Diagnostic examinations include: blood test to diagnose infection, examinations of liver functioning, liver biopsy. In severe or chronic cases, the majority of hepatic patients can be taken care of at home without any risks. Total segregation of the patient is not essential. However, s/he should have separate personal stuff

for eating and drinking or can use disposable dishes. Despite loss of appetite, eating small and balanced meals help the patient to improve [42].

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