

# Hepatitis

Dr. Sahni BS

DHMS Hons, PGRT (BOM), FF Hom  
Deputy Chief Medical Officer (H),  
ONGC Hospital Panvel-410221,  
Navi Mumbai, INDIA

Website: <http://www.homoeopathyclinic.com>

Email: [drsahnibs@vsnl.com](mailto:drsahnibs@vsnl.com)

## Introduction

Hepatitis is a disease characterized by inflammation of and injury to the liver. Hepatitis has many causes, including misuse of alcohol and drugs, but viruses are the most common cause.

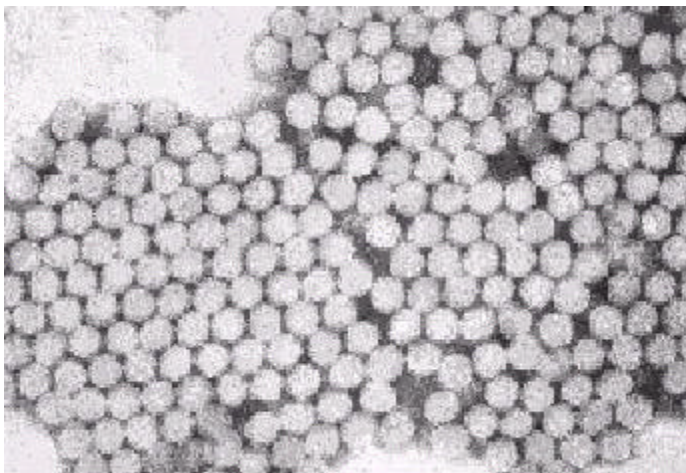
Symptoms of viral hepatitis appear from two weeks to six months after exposure to the virus. The first symptoms are usually fatigue, poor appetite, and nausea. Pain in the abdomen above the liver and a slight fever are also common. After a few days, the person's urine becomes dark and jaundice (a yellowish discoloration of the skin and eyes) appears. The jaundice and dark urine indicate the liver is not working properly in removing a reddish-yellow pigment called bilirubin from the blood.

Symptoms of viral hepatitis generally last two to six weeks. Severe cases can lead to liver failure and death. But most patients--even those with severe hepatitis--eventually recover completely.

In some patients, the disease becomes persistent and is called chronic hepatitis. People with chronic hepatitis may experience mild, vague symptoms of fatigue and poor appetite. Chronic hepatitis can lead to a liver disease called cirrhosis, and it is also a major cause of liver cancer.

There are **six** types of viral hepatitis: **(1) hepatitis A, (2) hepatitis B, (3) hepatitis C, (4) hepatitis D, (5) hepatitis E and (6) Hepatitis G**. Hepatitis types A, C, D, and E are caused by viruses that have a core of ribonucleic acid (RNA). The hepatitis B virus has a deoxyribonucleic acid (DNA) core.

## Hepatitis A



Hepatitis A is a highly contagious disease, but it is rarely fatal. It is also called infectious hepatitis. Hepatitis A is extremely common in developing nations. Outbreaks often occur due to unsanitary conditions, such as contamination of food or the water supply. **Figure shows the Hepatitis A virus.** The serum gamma globulin can prevent hepatitis A if given before or soon after exposure to the virus. A vaccine that prevents

hepatitis A is available. It is recommended for high-risk groups, including international travelers and some military personnel.

## **Symptoms of Hepatitis A**

- Fatigue
- Nausea
- Vomiting
- Fever/chills
- Jaundice
- Pain in the liver area
- Dark urine
- Light-colored stools
- Abdominal pain

The most important factor affecting the severity of the disease is age. Children less than a year old rarely show clinical signs of the illness. This means that parents and child-care workers handling soiled diapers can catch or transmit the disease without knowing they have been exposed.

Clinical manifestations of hepatitis A often pass unrecognized in children younger than two years of age. Overt hepatitis develops in the majority of infected older children and adults. In adults, approximately 22 percent will be hospitalized

The incubation period for hepatitis A ranges from 20 to 50 days, which means that infectious patients, such as food handlers or children, can spread the disease well before they are even aware they have it. Incubation is shorter with increasing age.

## **How Is Hepatitis A Spread?**

The fecal-oral route, through close person-to-person contact, or by ingesting contaminated food or water, transmits the hepatitis A virus. Infection has been shown to be spread by:

- Close personal contact with someone infected with hepatitis A.
- Eating foods contaminated by infected food handlers.
- Contact with infected children (who do not usually show symptoms), who can then infect non-immune children or adults at home or in child-care centers.
- Ingesting raw or undercooked shellfish (e.g. oysters, clams, mussels) from waters contaminated with the hepatitis A virus.
- Ingesting contaminated food or water during travel to underdeveloped areas.
- Transmission through blood transfusions or sharing needles with infected people using injectable drugs.

## **How Can Hepatitis A Be Prevented?**

Historically, the most common preventative has been immune globulin administration, which is effective for about three to six months. Now, however, there are two vaccines that provide longer-term protection and eliminate the need for repeated shots. These vaccines typically are administered as one initial shot followed by a booster shot in about six to 18 months.

Prior infection with hepatitis A confers lifetime protection against a second attack. If in doubt, a blood test can determine if an individual has had hepatitis A in the past or needs protection.

## HEPATITIS B



Hepatitis B is a serious public health problem that affects people of all ages around the world. A highly infectious virus that attacks the liver causes the disease. Hepatitis B virus (HBV) infection can lead to severe illness, liver damage, and, in some cases, death.

The best way to be protected from hepatitis B is to be vaccinated with hepatitis B vaccine, a vaccine that has been proven safe and effective.

### WHO IS AT RISK FOR HEPATITIS B?

You may be at risk for hepatitis B if you:

- Have a job that exposes you to human blood
- Share a household with someone who has lifelong HBV infection
- Inject drugs
- Have sex with a person infected with HBV
- Have sex with more than one partner during a six-month period
- Received blood transfusions in the past before excellent testing was available (1975)
- Are a person whose parents were born in Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe, or the Middle East
- Were born in an area listed above
- Were adopted from an area listed above
- Are an Alaska native
- Have hemophilia
- Are a patient or worker in an institution for the developmentally disabled
- Are an inmate of a long-term correctional facility
- Travel internationally to areas with a high prevalence of hepatitis B

### HOW DO YOU KNOW IF YOU HAVE HEPATITIS B?

It is important to know that if you are infected with hepatitis B. Millions of people around the world are infected with this virus. Many people have no symptoms but severe liver disease may occur after several years of silent infection. The only way to know your hepatitis B status is to have your blood tested. These Blood tests will tell you that your hepatitis B status is one of the following:

**Susceptible:** This means you never had the disease. You could get the infected in the future. If you are susceptible you should get vaccinated to protect yourself against hepatitis B.

**Immune:** You had hepatitis B infection in the past & your body was able to kill the virus that was causing the infection. You are safe from hepatitis B and cannot get hepatitis B again.

**Carrier:** If you are carrier of hepatitis B, you are infected with the virus. You usually don't feel sick but you can pass the infection to other people. You need to be under care of a physician and be checked regularly for the development of serious liver problems.

### **HOW IS HBV SPREAD?**

HBV is found in blood and certain body fluids of people infected with HBV, fluids such as serum, semen, vaginal secretions, and saliva. HBV is *not* found in sweat, tears, urine, or respiratory secretions. Contact with even small amounts of infected blood can cause infection.

#### **Hepatitis B virus can be spread by:**

- Unprotected sex
- Injecting drug use
- During birth from mother to child
- Contact with blood or open sores of an infected person
- Human bites
- Sharing a household with an infected person
- Sharing items such as razors, toothbrushes, or washcloths
- Pre-chewing food for babies or sharing chewing gum
- Using unsterilized needles in ear or body piercing, tattooing, or acupuncture
- Using the same immunization needle on more than one person

#### **Hepatitis B virus is not spread by:**

- Casual contact like holding hands
- Eating food prepared by a carrier
- Kissing on the cheek or dry lip kissing
- Sharing silverware, plates, or cups
- Visiting an infected person's home
- Playing with a child who is a carrier
- Sneezing or coughing

### **WHAT ARE THE SYMPTOMS OF HEPATITIS B?**

Most people who get hepatitis B as babies or children don't look or feel sick at all. Similarly, over half of adults who get hepatitis B never have any symptoms or signs of the disease.

When they get the blood test results indicating they've had or have the disease they are taken by surprise. If people do have signs or symptoms, they may experience any or all of the following:

- Loss of appetite
- Yellow skin and eyes (jaundice)
- Nausea, vomiting
- Fever
- Weakness, tiredness, inability to work for weeks or months
- Abdominal pain and/or joint pain
- Dark urine

## IS THERE A CURE FOR HEPATITIS B?

As of this writing, there is only one FDA-approved allopathic medicine, interferon alfa-2b that may help or cure a person who is already infected with HBV. It often has side effects and is reserved for those whose liver enzyme tests are abnormal.

Ask your doctor if you are a candidate for interferon therapy.

## WHERE CAN I GO FOR HEPATITIS B TESTING AND VACCINATION?

Consult your physician. Call your local health department for more information.

## Liver cancer caused by hepatitis B



**This woman is not pregnant - she died of liver cancer caused by hepatitis B virus infection.**

*Photo courtesy of Dr. Patricia Walker, Ramsey Clinic Associates, St. Paul, MN*

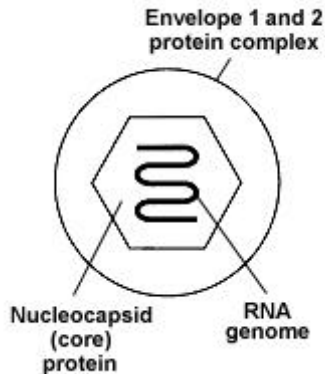
## Hepatitis B Vaccine: What you may have heard... and what you should know...

Here are the facts about Hepatitis B and the vaccine that can protect you:

- Hepatitis B is a serious disease, responsible for estimated more than 4000 to 5000 deaths each year in our country.
- Hepatitis B vaccine prevents hepatitis B disease, which can lead to liver cancer. This is therefore the first anti-cancer vaccine.
- Use of hepatitis B vaccine and other vaccines is strongly endorsed by the medical, scientific and public health communities as a safe and effective way to prevent disease and death.
- Hepatitis B vaccines have been shown to be very safe when given to infants, children and adults.
- There is no confirmed evidence that indicates that hepatitis B vaccine can cause chronic illnesses.
- Case reports of unusual illnesses following vaccines may be related to other causes and not related to a vaccine.
- Whenever large numbers of vaccines are given, some health effects may occur after vaccination.
- Anyone believing they have had a reaction or health effect from a vaccine should report it immediately to their Doctor.

## Hepatitis C

### HCV Viral Components



HCV is a small (40 to 60 nm in diameter), enveloped, single-stranded RNA virus of the family Flaviviridae. Because the virus mutates rapidly, changes in the envelope protein may help it evade the immune system. There are at least 6 major genotypes and more than 50 subtypes of HCV. The different genotypes have different geographic distributions. Genotypes 1a and 1b are the most common in the United States. Genotypes 2 and 3 are present in only 10 to 20 percent of patients. There is little difference in the severity of disease or outcome of patients infected with different genotypes. However, patients with genotypes 2 and 3 are more likely to respond to alpha interferon

treatment.

It is the most common cause of chronic hepatitis. Hepatitis C is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of persons who have this disease. A distinct and major characteristic of hepatitis C is its tendency to cause chronic liver disease. At least 75 percent of patients with acute hepatitis C ultimately develop chronic infection, and most of these patients have accompanying chronic liver disease.

Chronic hepatitis C can cause cirrhosis, liver failure, and liver cancer. About 20 percent of patients develop cirrhosis within 10 to 20 years of the onset of infection. Liver failure from chronic hepatitis C is one of the most common reasons for liver transplants. Hepatitis C is the cause of about half of cases of primary liver cancer in the developed world. Men, alcoholics, patients with cirrhosis, people over age 40, and those infected for 20 to 40 years are more likely to develop HCV-related liver cancer.

### Clinical Symptoms of Hepatitis C

Many people with chronic hepatitis C have no symptoms of liver disease. If symptoms are present, they are usually mild, nonspecific, and intermittent. They may include:

- Fatigue
- Mild right-upper-quadrant discomfort or tenderness
- Nausea
- Poor appetite
- Muscle and joint pains

Similarly, the physical examination is likely to be normal or show only mild enlargement of the liver or tenderness. Some patients have vascular spiders or palmar erythema.

### **Clinical Features of Cirrhosis**

Once a patient develops cirrhosis or if the patient has severe disease, symptoms and signs are more prominent. In addition to fatigue, the patient may complain of muscle weakness, poor appetite, nausea, weight loss, itching, dark urine, fluid retention, and abdominal swelling.

Physical findings of cirrhosis may include:

- Enlarged liver
- Enlarged spleen
- Jaundice
- Muscle wasting
- Excoriations
- Ascites
- Ankle swelling

### **How is Hepatitis C Spread?**

HCV is spread primarily by exposure to human blood. You may have gotten hepatitis C if:

- You **ever** injected street drugs, even if you experimented a few times many years ago.
- You were treated for clotting problems with a blood product made before 1987.
- You received a blood transfusion or solid organ transplant (e.g., kidney, liver, heart) from an infected donor.
- You were ever on long-term kidney dialysis.
- You were ever a health care worker and had frequent contact with blood in the work place, especially accidental needle sticks.
- Your mother had hepatitis C at the time she gave birth to you.
- You ever had sex with a person infected with HCV.
- You lived with someone who was infected with HCV and shared items such as razors or toothbrushes that might have had blood on them.

### **HCV is NOT spread by:**

- |   |                  |
|---|------------------|
| • Breast feeding                              | • Hugging        |
| • Coughing                                    | • Sneezing       |
| • Food or water                               | • Casual contact |
| • Sharing eating utensils or drinking glasses |                  |

## **Serological Tests for Hepatitis C**

1. The best approach to confirm the diagnosis of hepatitis C is to test for HCV RNA using a sensitive polymerase chain reaction (PCR) assay. The presence of HCV RNA in serum indicates an active infection. Testing for HCV RNA is also helpful in patients in whom EIA tests for anti-HCV are unreliable.
2. Western blots
3. PCR Amplification: PCR amplification can detect low levels of HCV RNA in serum. Testing for HCV RNA is a reliable way of demonstrating that hepatitis C infection is present and is the most specific test for infection. Testing for HCV RNA by PCR is particularly useful when aminotransferases are normal or only slightly elevated, when anti-HCV is not present, or when several causes of liver disease are possible. This method also helps diagnose hepatitis C in people who are immunosuppressed, have recently had an organ transplant, or have chronic renal failure.

## **Diagnosis of Hepatitis C**

Hepatitis C is most readily diagnosed when serum aminotransferases are elevated and anti-HCV is present in serum. The diagnosis is confirmed by the finding of HCV RNA in serum.

### **Acute Hepatitis C**

Acute hepatitis C is diagnosed on the basis of symptoms such as jaundice, fatigue, and nausea, along with marked increases in serum ALT (usually greater than 10-fold elevation), and presence of anti-HCV or de novo development of anti-HCV.

Diagnosis of acute disease can be problematic because anti-HCV is not always present when the patient presents to the physician with symptoms. In 30 to 40 percent of patients, anti-HCV is not detected until 2 to 8 weeks after onset of symptoms. In this situation, testing for HCV RNA is helpful as this marker is present even before the onset of symptoms and lasts through the acute illness. Another approach to diagnosis of acute hepatitis C is to repeat the anti-HCV testing a month after onset of illness.

### **Chronic Hepatitis C**

Chronic hepatitis C is diagnosed when anti-HCV is present and serum aminotransferase levels remain elevated for more than 6 months. Testing for HCV RNA (by PCR) confirms the diagnosis and documents that viremia is present; almost all patients with chronic infection will have the viral genome detectable in serum by PCR.

Diagnosis is problematic in patients who cannot produce anti-HCV because they are immunosuppressed or immunoincompetent. Thus, HCV RNA testing may be required for patients who have a solid-organ transplant, are on dialysis, are taking corticosteroids, or have agammaglobulinemia. Diagnosis is also difficult in patients with anti-HCV who have another form of liver disease that might be responsible for the liver injury, such as alcoholism, iron overload, or autoimmunity. In these situations, the anti-HCV may represent a false-positive reaction, previous HCV infection, or mild hepatitis C occurring on top of another liver condition. HCV RNA testing in these situations helps confirm that hepatitis C is contributing to the liver problem.



## Differential Diagnosis

The major conditions that can be confused clinically with chronic hepatitis C include:

- Autoimmune hepatitis
- Chronic hepatitis B and D
- Alcoholic hepatitis
- Non alcoholic steatohepatitis (fatty liver)
- Sclerosing cholangitis
- Wilson's disease
- Alpha-1-antitrypsin-deficiency-related liver disease
- Drug-induced liver disease

**Allopathic Treatment:** Hepatitis C is treated with drugs called alpha interferons.

*There is no vaccination available for Hepatitis C.*

**How can I protect myself from getting hepatitis C and other diseases spread by contact with human blood?**

- Don't ever shoot drugs. If you shoot drugs, stop and get into a treatment program. If you can't stop, never reuse or share syringes, water, or drug works, and get vaccinated against hepatitis A and hepatitis B.
- Do not share toothbrushes, razors, or other personal care articles. They might have blood on them.
- If you are a health care worker, always follow routine barrier precautions and safely handle needles and other sharps.
- Consider the health risks if you are thinking about getting a tattoo or body piercing. You can get infected if: 1) the tools that are used have someone else's blood on them. 2) the artist or piercer doesn't follow good health practices, such as washing hands and using disposable gloves.

## Hepatitis D (Delta Virus)



Hepatitis D is the most serious and also the rarest form of viral hepatitis. It only infects people who also have hepatitis B. Many cases of hepatitis D are fatal, and most chronic cases lead to cirrhosis. Blood and blood products transmit hepatitis D virus infection. The risk factors for infection are similar to those for hepatitis B virus infection. The hepatitis D virus most often infects intravenous drug users.

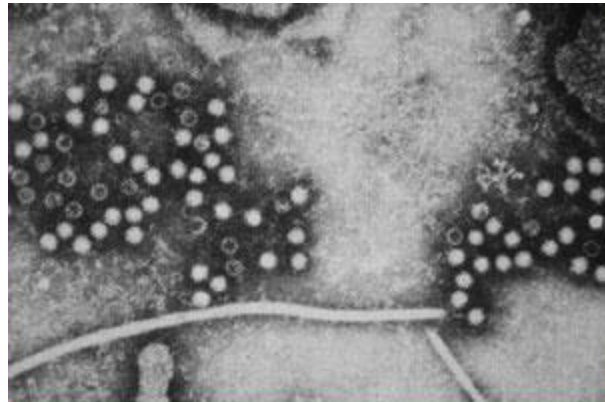
A patient can acquire hepatitis D virus infection at the same time as he/she is infected with the hepatitis B virus. This is called co-infection. A patient with hepatitis B can be infected with hepatitis D virus at any time after acute hepatitis B virus infection. This is called super-infection.

Hepatitis D virus super-infection should be suspected in a patient with chronic hepatitis B whose condition suddenly worsens. There is usually an obvious history of continued exposure to blood or blood products (e.g. an active intravenous drug user). A particularly aggressive acute hepatitis B infection could suggest hepatitis D co-infection. Co-infection or super-infection with hepatitis D virus in a patient with hepatitis B is diagnosed by the presence of antibodies against the hepatitis D virus. IgM antibodies indicate acute infection.

Interferon-alpha is used to treat patients with chronic hepatitis B and hepatitis D infection. Some studies have suggested that a dose higher than that usually used for hepatitis B infection may be beneficial.

## Hepatitis E

Hepatitis E virus (HEV), the major etiologic agent of enterically transmitted non-A, non-B hepatitis worldwide, is a spherical, non-enveloped, single stranded RNA virus that is approximately 32 to 34 nm in diameter. Based on similar physicochemical and biologic properties, HEV has been provisionally classified in the Caliciviridae family; however, the organization of the HEV genome is substantially different from that of other caliciviruses and HEV may eventually be classified in a separate family.



It often occurs in epidemics that can be linked to poor hygiene and contaminated water. It is particularly likely to lead to serious illness in pregnant women. The disease has been reported almost exclusively in developing countries.

### Clinical Features of Hepatitis E

The incubation period following exposure to HEV ranges from 15 to 60 days (mean, 40 days). Typical clinical signs and symptoms of acute hepatitis E are similar to those of other types of viral hepatitis and include abdominal pain anorexia, dark urine, fever, hepatomegaly, jaundice, malaise, nausea, and vomiting. Other less common symptoms include arthralgia, diarrhea, pruritus, and urticarial rash. The period of infectivity following acute infection has not been determined but virus excretion in stools has been demonstrated up to 14 days after illness onset. In most hepatitis E outbreaks, the highest rates of clinically evident disease have been in young to middle age adults; lower disease rates in younger age groups may be the result of an icteric and/or sub clinical HEV infection. No evidence of chronic infection has been detected in long-term follow-up of patients with hepatitis E.

### **How is Hepatitis E Spread?**

Primarily the fecal-oral route transmits HEV and fecally contaminated drinking water is the most commonly documented vehicle of transmission. Although hepatitis E is most commonly recognized to occur in large outbreaks, HEV infection accounts for >50% of acute sporadic hepatitis in both children and adults in some high endemic areas. Risk factors for infection among persons with sporadic cases of hepatitis E have not been defined. Unlike hepatitis A virus, which is also transmitted by the fecal-oral route, person-to-person transmission of HEV appears to be uncommon. However, nosocomial transmission, presumably by person-to-person contact, has been reported to occur.

### **How Can Hepatitis E Be Prevented?**

Prevention of hepatitis E relies primarily on the provision of clean water supplies. Prudent hygienic practices that may prevent hepatitis E and other enterically transmitted diseases among travelers to developing countries include avoiding drinking water (and beverages with ice) of unknown purity, uncooked shellfish, and uncooked fruits or vegetables that are not peeled or prepared by the traveler. No products are available to prevent hepatitis E. IG prepared from plasma collected in non-HEV-endemic areas is not effective in preventing clinical disease during hepatitis E outbreaks and the efficacy of IG prepared from plasma collected in HEV-endemic areas is unclear.

## **Hepatitis G**

During the 1960's a virus was recovered from a surgeon with hepatitis and termed GB virus after the surgeons initials. This virus does not induce antibodies specific for the other known viral hepatitis viruses and can be transmitted serially in primates. More recent work on this virus has led to the discovery of three novel RNA sequences, designated GBV-A, GBV-B and GBV-C, which code for flavivirus-like genomes that are distinct from hepatitis C. Separate to this work, an RNA sequence was detected in a patient with chronic hepatitis at the US Centers for Disease Control, which coded for a flavivirus related to hepatitis C and given the name hepatitis G virus. Subsequent work has shown that GBV and HGV is probably the same virus.

Hepatitis G virus is an RNA virus within the flavivirus group and is distinctly related to hepatitis C.

### **How is Hepatitis G Spread?**

HGV is thought to be a parenterally transmitted virus as it is found more frequently in blood transfusion recipients and intravenous drug users. HGV RNA is found in 1-2% of blood donors in most countries and serological tests suggest that 9-16% of the population may have had exposure to this agent.

### **Clinical features**

HGV appears to cause persistent infection in most patients (75%) with viraemia persisting for many years. It may be that many patients will eventually clear the infection but the extent or likelihood of this is unknown.

Most infected patients do not develop abnormal liver function tests and direct evidence of liver cell infection is lacking. Persistence in white cells has also been suggested but again there is no evidence confirming this as yet. Viral RNA can be found in saliva.

Studies of patients with acute viral hepatitis (non A-E hepatitis) have found very few cases of HGV RNA in serum. These patients do not develop biochemical evidence of chronic hepatitis, although persistence of infection can be shown. Studies of patients with known acute hepatitis infection have shown a high rate of concomitant HGV infection (25% of those with hepatitis A, 32% with hepatitis B and 44% with hepatitis C). However the presence of HGV infection does not seem to alter the clinical picture or severity when compared to those with hepatitis A, B or C alone. Similarly, patients with chronic hepatitis C who are co-infected with HGV do not seem to fare any worse than those without.

There is no association between hepatitis G infection and autoimmune hepatitis.

### **Diagnosis**

Acute infection is diagnosed by seroconversion or detection of RNA in a person previously RNA negative.

### **Homoeopathic Treatment**

At Homoeopathic Clinic, two cases of Hepatitis B were treated successfully with **Cardus Q, Chelidonium & Phosphorus**.

The details of the medicines used along with some of the other medicines that are commonly used are as under:

#### **CARDUS MAR:**

The main action of this remedy is on Liver and portal system causing jaundice. The enlargement of the Liver is in the transverse direction (vertical: Chelidonium). Dropsy due to liver disease. Liver disorder especially after Alcohol and specifically to the BEER. Hemorrhages connected with liver disorder.

#### **CHELIDONIUM MAJ:**

Main liver remedy listed in Homoeopathic literature. Any liver disorder with main keynote symptom “ pain at the inferior angle of the right scapula”. Marked yellowness in the key feature of this remedy. Aversion to cheese. Cirrhosis of liver.

#### **PHOSPHORUS:**

Cirrhosis of Liver, fatty degeneration of liver, liver congested with Pancreatic disease, Acute yellow atrophy of liver, jaundice, Sensitiveness in hepatic region < lying on right side and painful to touch. Enlargement of Spleen, Ascites.

#### **CHOLESTERINUM:**

Cancer of liver with GB Stones.

#### **CHOINANTHUS:**

Liver enlarged, jaundice, constipation. Pancreatic disease, Gall Stones. Hepatic region tender with enlarged spleen.

#### **MAG MUR;**

Liver enlargement, jaundice, ascites, pain in liver region < lying on right side. Constipation, stools like dry sheep dung.

#### **MYRICA CER:**

Cancer of Liver with bronze yellow skin.

**LEPTANDRA:** Reoccurring liver problems with burning and dull pain in liver region with drowsiness and despondency.

**Hepatitis B:** A Nosode. May be used inter currently in hepatitis B cases.

Vibronic preparation **Immunity CM**, which also contains **Interferon**, works nicely if used with **Back up 30**. However, if patient is coming after heavy allopathic medication then it is advisable to start the treatment for such cases after using **Cleansing 6x** (Vibronic).

Presently there are 8 cases of Hepatitis “B” and 3 cases of Hepatitis “C” under treatment. All these patients are showing good clinical results but still they are **not CLINICALLY** cured.

Hope in the coming years after the patients are CLINICALLY cured and if these patients agreed for putting these cases on this website, I will definitely put the case report in the CASE REPORT SECTION along with all the clinical records and treatment.

## **Hepatitis Vaccination: Questions and Answers**

**Question: Is the new hepatitis A vaccine effective and who needs it?**

**Answer:** Yes, the new hepatitis A vaccine (Havrix) is very effective. It induces protective titres of anti-bodies in greater than 95%, and 99% of people after the first and second doses, respectively. If time does not permit two doses six months apart, then a single Havrix-1440 (double strength) dose may be given. The first dose of the vaccine probably requires at least three weeks to induce significant antibodies, so those travelers who did not have the foresight to have the first dose administered at least three weeks before departure to a high-endemic area should also have standard gammaglobulin to assure protection. Protective antibody titres to the vaccine last at least three years. At this time the need for booster doses is unclear, but it's likely that, similar to hepatitis B, they will be unnecessary. The vaccine should be administered as an IM injection into the deltoid. Children can be given half-strength (0.5 mL) doses.

**Question: Who Should Receive Hepatitis A Vaccination?**

**Answer:** Although the manufacturer has suggested a very broad range of people to be targeted for vaccination, the National Advisory Committee on Immunization (NACI) only recommends vaccinating:

- 1) Long-term or frequent travelers to endemic regions (which means basically everywhere except Canada, USA, Western Europe, Japan, Australia, and New Zealand).
- 2) Residents of communities with high endemic rates of recurrent outbreaks of hepatitis A, and
- 3) Residents and staff of institutions for the mentally handicapped.

**Question: Is there any role for standard gammaglobulin in viral hepatitis prophylaxis?**

**Answer:** Basically no. Development of highly effective hepatitis A vaccines has obviated the need for gammaglobulin. Note that standard gammaglobulin is useless for immunoprophylaxis against hepatitis B and C.

**Question: What is universal hepatitis B vaccination?**

**Answer:** This refers to vaccination of the entire population, usually at the neonatal or childhood level. The rationale for this is that targeted vaccination of high-risk groups has failed to achieve its aims, because most people in these risk groups are unaware or unwilling to be vaccinated. Moreover, 30% to 40% of hepatitis B virus (HBV) infections occur in people who deny any known risk factor.

**Question: What is the schedule for neonatal protection if the mother is a hepatitis B carrier?**

**Answer:** For this patient, hepatitis B vaccine 0.5 mL i.m. is administered within the first 12h after birth, along with HBIG, 1 mL, at the same time (but different injection site). The second dose of vaccine should be given at one week, and the third at one to six months. Without intervention, the replicative HBV carrier (HBeAg-positive) mother has a greater than 80% chance of transmitting the infection to the newborn, while the HBeAg negative mother still has 15% to 20% rates. Because protection is not totally effective even with this immunoprophylaxis, there is still a 5% to 10% transmission rate of HBV.

**Question: What are the immunoprophylaxis recommendations for household contacts if an individual is found to be positive for HBsAg or develops acute hepatitis B?**

**Answer:** All household contacts should be screened for HBsAg and anti-HBs. If the spouse or sexual partner is negative for both, then he or she should be given 5 mL of HBIG and a course of vaccine, if the index case has acute hepatitis B, whereas vaccine alone should suffice for partners of chronic HBsAg carriers. Other household contacts, if serologically negative, require only a course of vaccination.

**Question: I have a general practice with very little ER work; why should I be vaccinated for HBV?**

**Answer:** If your practice involves no work in emergency rooms, hospital wards, institutions for the handicapped and no administration of needles or minor surgery, and you never have hangnails, minor cuts and abrasions on your hands, then it is likely that you would not be susceptible to occupationally-acquired hepatitis B. There are very few practices that fit this description, and all other physicians would benefit from this safe and effective vaccine. Or, put another way, there has been several cases of unvaccinated physicians who died from occupationally-acquired acute hepatitis B; isn't your life worth the cost of a course of vaccine?

**Question: I had a standard course of three deltoid injections of full-dose hepatitis B vaccination, but failed to make protective antibody titres. What does this mean and what should I do now?**

**Answer:** Lesser response rates to HBV vaccination are associated with age, increased body mass and smoking. For example, only 60% to 80% of those aged over 60 years make protective antibody titres. No one can reverse aging, but if you are overweight and smoke, losing weight and quitting smoking, followed by revaccination, might be effective. Even in healthy immunocompetent adults, about 5% will not develop protective antibodies after a course of vaccination. Recent work has discovered that the immune response to hepatitis B surface epitopes is genetically determined. If a second complete course of vaccinations fails to induce protective titres, you will have to sadly accept that you are not protected against hepatitis B.

**Question: Is a booster dose needed after five or ten years for recipients of hepatitis B vaccination?**

**Answer:** No. If you originally demonstrated an adequate antibody response, even though anti-HBs titres may gradually fall below the critical 10 IU/L level, the immune system will mount a sufficiently protective anamnestic response if rechallenged with hepatitis B.

**Question: Is there anything on the horizon for a vaccine against hepatitis C?**

**Answer:** No.

## **Glossary**

**Immune globulin (IG):** is a sterile preparation of concentrated antibodies (immune globulins) recovered from pooled human plasma processed by cold ethanol fractionation. Only plasma that has tested negative for a) hepatitis B surface antigen (HBsAg), b) antibody to human immunodeficiency virus (HIV), and c) antibody to hepatitis C virus (HCV) is used to manufacture IG. IG is administered to protect against certain diseases through passive transfer of antibody. The IGs are broadly classified into five types on the basis of physical, antigenic and functional variations, and labelled respectively IgM, IgG, IgA, IgE and IgD.

**Interferon** a class of proteins processing antiviral and anti-tumour activity produced by lymphocytes, fibroblasts and other tissues. They are released by cells invaded by virus and are able to inhibit virus multiplication in non-infected cells. Interferon preparations have been shown to have some clinical effect as antiviral agents. The preparations so far available have produced side effects, such as fever, lassitude, and prostration, not dissimilar from those accompanying acute virus infection itself.

**Prophylaxis** the prevention of disease, or the preventive treatment of a recurrent disorder.

## **Warning**

The above given information of the disease is for the general awareness for the commoners. Homoeopathic medicines should not be taken without the proper guidance of qualified and registered Homoeopathic physician.

## **Bibliography**

1. CDC Atlanta, GA
2. Mosby's Medical Encyclopedia
3. Various other sources of the WWW.

Kindly note that that photographs of the virus published in this document are taken from CDC website.