

Concern of a young man with incidentally detected Chronic Hepatitis B infection

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Mr. Saral is a 24-y-old man hailing from a remote village of Birbhum district in West Bengal. He is currently staying in a shared accommodation in Kolkata for his higher education. He is married since 2-years and his wife is now 6 months pregnant. A few days back, Saral's roommate was diagnosed having Hepatitis B in a routine pre-employment health check-up for a job of health worker; he has lost the job offer. Therefore, Mr. Saral is very much anxious about Hepatitis B.

Mr. Saral visited me to know about Hepatitis B in more details and to find out if he himself has got it. Below is the conversation between me and Mr. Saral.

Q- Doctor, what is Hepatitis B?

A- Hepatitis B is an infection of liver and is caused by a virus called Hepatitis B virus. The infection leads to inflammation of liver which is technically referred to as 'hepatitis'. Inflammation means liver becomes swollen and red similar to what happens to any part of our body after an injury.

If this inflammation starts all on a sudden with great intensity then it is called acute hepatitis. Acute hepatitis usually resolves in a few weeks with complete disappearance of the infection in most patients.

However, if the inflammation continues with lesser degree of intensity for more than 6 months, it is called chronic hepatitis. Sometimes, the virus continues to stay inside liver indefinitely without

causing any inflammation and this is called carrier state.

Q- Is this a big problem and why?

A- Chronic hepatitis B is a big global problem because almost 350 million people are affected by it worldwide. More than half of them live in Eastern Asian countries like China, India and Japan (Fig. 1).

This is a major health problem because it causes life threatening liver diseases like cirrhosis of liver (Fig. 2). In India, most of these liver diseases are due to chronic hepatitis B.

Q- How does the infection take place?

A- 1. At the time of birth, if the virus is present in mother then it may contaminate the blood of the newborn. Fig. 3 shows the methods of transmission of hepatitis B virus.

2. Sharing contaminated needles, while injecting medicines or suturing accidental needle-stick injury

3. Unprotected sex (i.e. without condoms) with someone with high risk of infection (viz. commercial sex workers, prisoners).

4. Transfusion of infected blood.

5. Use of toothbrush or shaving razors belonging to someone infected.

6. Direct contact of blood or saliva of an infected person to an open wound.

Q- My roommate has been detected to have this infection but we do not share any contact as above. Is it still possible for us to have the infection from one another?

A- No, transmission is not possible by simple social contact like handshake, cuddling or even social kissing.

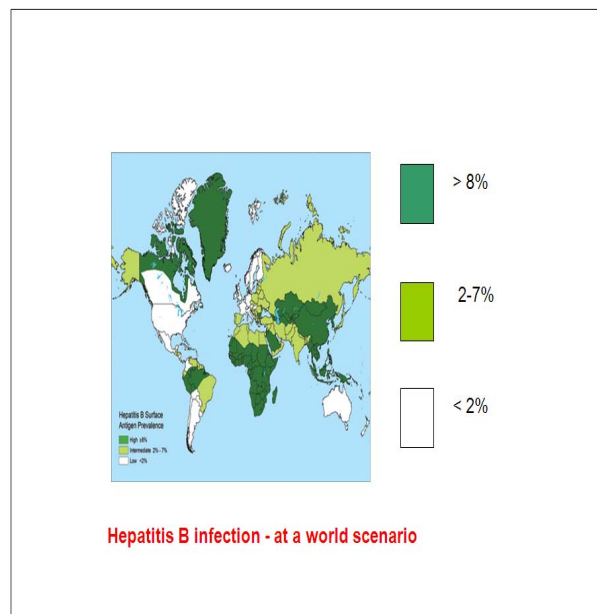


Fig 1: Worldwide distribution of Hepatitis B infection

Q- How does the virus produce inflammation and injury to liver?

A- Virus is an organism which lives and multiplies inside living cells (liver cells in this situation). When the body's immune system identifies the virus it tries to destroy it. As the virus resides inside liver cells, the later also get injured in the process. This produces inflammation and damage of liver.

Q- How does acute, chronic hepatitis and carrier state develop?

A- Acute hepatitis develops when body's immune system first identifies the virus and tries to destroy it very aggressively.

But if the immune system fails to destroy the virus completely, it manages to live inside the liver cells indefinitely. When the virus is present above a definite number, a constant struggle ensues between it and the immune system which results in chronic hepatitis. But when the virus is present in small

number, it is ignored by the immune system; this is called a carrier state.

When the infection takes place in adult life, immune system usually gets active very quickly within 6 to 8 weeks and destroys the virus completely. But if infection occurs at the time of birth or early in childhood, the virus continues to multiply inside liver for a long time (15 to 20 years). This results in chronic infection / inflammation in majority.

Fig. 2: Appearance of normal and cirrhotic liver

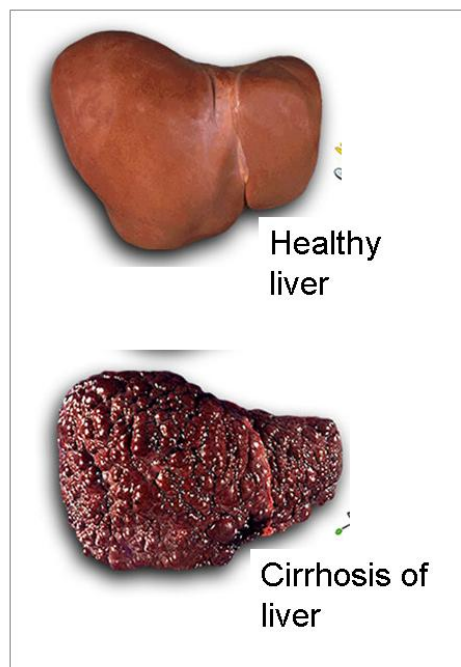




Fig. 3: Modes of transmission of Hepatitis B virus

Q- How would I know if I have this infection?

A- A simple blood test is enough for this. This is called Hepatitis B surface antigen or HBsAg test.

Surface antigen is a protein present on the surface of the virus (Fig. 4). The result of this test is either positive or negative.

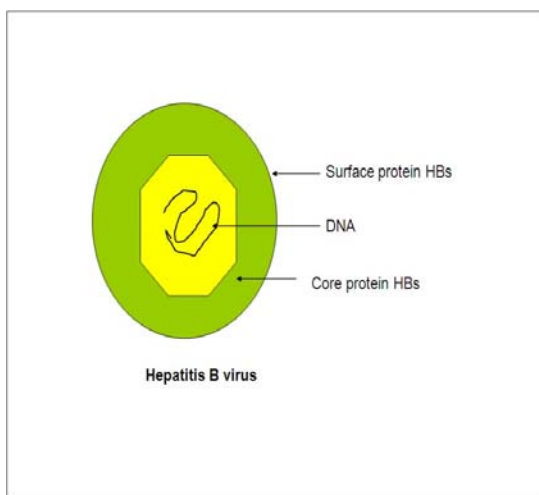


Fig. 4: Hepatitis B virus

A positive result means that the virus is present intact inside the liver cells, either as a carrier state or as acute or chronic hepatitis. A negative result generally means there is no infection.

However, in order to know if there was an infection in the past we have to test for antibody against the virus because antibody stays in blood for ever even if the virus has been destroyed. In this case

we test for antibody against the core antigen of the virus called anti-HBc.

Q- Doctor, I do not have any symptom now. Is it still possible that I have the infection? Do I need to do the test?

A- Yes, it is very much possible to have the infection even in absence of any symptom. There may not be any symptom in carrier state or in the early stages of chronic hepatitis. Symptoms start to manifest only after cirrhosis develops.

However, acute hepatitis starts with fever, aches and pain, loss of appetite and discomfort over the right upper part of abdomen.

Nevertheless, it is not possible to distinguish Hepatitis B from other causes of liver diseases, solely on the basis of symptoms, even in presence of cirrhosis or acute hepatitis.

A few days later Mr. Saral returned to my clinic. He looked extremely anxious. I noticed he had not groomed or shaved and instantly realized that report might not be good. Mr. Saral lung the report desperately on my table and asked-

Q- My surface antigen test has come positive. Now what?

A- First, we will have to do a few more tests – some related to liver and some to the virus.

Liver function test (Fig. 5)- This tells us two things; 1) is there hepatitis? and, 2) how much damage liver might have already sustained.

Ultrasound scan of liver- This shows if there is any sign of cirrhosis or its complications.

Virus related tests: HBeAg- This is another antigen. Positive test indicates that the virus is multiplying in large numbers inside the liver. Subsequently, it may become negative when body's immune system is active against the virus.

HBV DNA- By this test, we can measure the exact number of virus in the body.

Hepatitis C and HIV- As these two viruses may also be transmitted at the same time as the B virus.

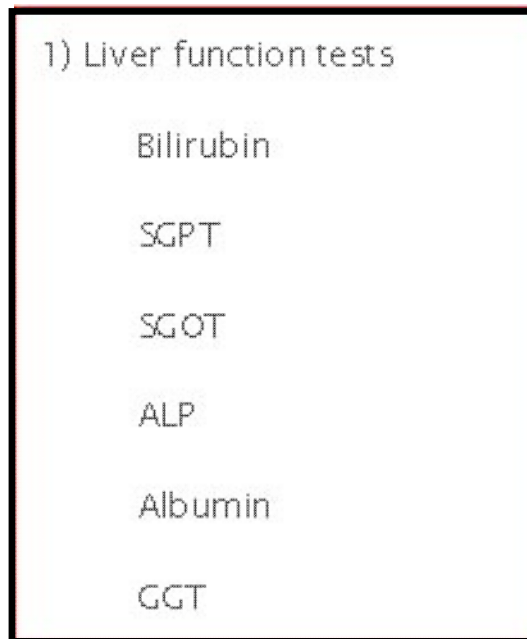


Fig. 5: Tests required to assess liver function

Q- Doctor, one of my friends had a test called liver biopsy. What is liver biopsy? Do I need to have it done?

A- Liver biopsy is a procedure by which a needle is introduced into liver and a small piece of liver tissue is scraped out. When that piece of tissue is examined under microscope, liver cells can be seen directly and this is the best test to find out if there is any damage to the liver. But for you, we would decide do it only in some special situation.

Q- Do all HBsAg-positive patients require treatment against the virus?

A- No, antiviral treatment is not always necessary.

Q- Well, then what are the situations it may not be necessary?

A- If the preliminary tests reveal

1. There is acute hepatitis as the virus clears up in many cases after an acute hepatitis. Antiviral treatment does not have much role to play in acute hepatitis.

OR

2. The virus is in a carrier state. This means liver function tests are completely normal, HBeAg is negative and HBV DNA is low and ultrasound scan does not show any sign of liver cirrhosis.

A few days later, Mr. Saral came with the rest of the reports. These were as follows:

Liver function test	Normal
HBeAg	Positive
HBV DNA	20-million units/ml
Ultrasound	No abnormality
Hepatitis C	Negative
HIV test	Negative

Q- Doctor you said that antiviral treatment may not be necessary if the LFTs are normal even if the virus is present in large numbers. Is this right thing to do?

A- Generally speaking (in absence of cirrhosis) normal liver function test means that body's immune system is not active against the virus and there is not much 'hepatitis'. In that situation antiviral medicines may not serve much extra role, though there is difference in opinion among experts on this. I monitor the LFTs every 3 months to see if the immune system has become active by producing 'hepatitis'. This active immunity alone may sometimes clear or reduce the number of virus enough so that medicines are not needed. So, we wait for another 3 months after the 'hepatitis' develops and start medicines only if the virus has not yet cleared.

However, we do take a few other issues in consideration as follows:

1. Those who are HBeAg positive: if the virus is present in large number for a long period of time it may produce liver damage and this may not be reflected by LFTs (Fig. 5). So, if someone is more than 40 years old and the number of virus is on the higher side, we recommend liver biopsy to see if there is any liver damage.

2. Those who are HBeAg negative: if the number of virus is more than 2000units, there is an increased chance of liver damage even if LFTs are normal because HBeAg-negative persons usually harbor the virus for a long time. So, we recommend liver biopsy for them as well.

In both the situations, if biopsy shows significant liver damage or cirrhosis, antiviral treatment is started even if the LFTs are normal.

Q-What are the medicines used?

A- There are different kinds of medicines available for treatment of chronic hepatitis B viz. an injection called Interferon or oral medicines like Lamivudine, Adefovir, Entecavir etc. These medicines may be started singly or in combination. The best approach is dictated by individual situations.

Q- How long does the treatment continue?

A- For HBeAg positive: there is a definite target i.e till they become HBeAg negative and anti-HBe positive; this may take 1 to 2 years. Treatment may be stopped afterwards.

For HBeAg negative: In these patients, there is no such definite target. Sometimes, treatment may be withheld if HBV DNA level comes down to a very low level. But if the initial biopsy showed significant damage, even if there is no cirrhosis, it is justified to continue treatment indefinitely.

In presence of cirrhosis of liver, treatment must be continued indefinitely, irrespective of HBeAg status.

Q- Can there be any side-effect from treatment?

A- Of course there can be side effects and this needs detailed discussion about each individual medicine.

Q- Does Hepatitis B get cured with treatment?

A- Cure in hepatitis B infection is a relative term. Generally, antiviral treatment can keep the multiplication of the virus and number of virus low. Consequently, if the treatment is started before the development of cirrhosis, chances of development of cirrhosis of liver can be significantly reduced.

If cirrhosis has already developed, then also antiviral treatment can keep it stable and prevent the need of liver transplantation for a long time.

Q- What other precautions do I need to follow?

A- You must abstain from alcohol completely because the virus and alcohol together can lead to development of liver cancer. You should be under supervision

of a physician. Do not allow anyone else to use your toothbrush or shaving razor. Encourage your family contacts to get tested for the virus and vaccinated if they are not already infected.

You should inform your sexual contact, if there is one, because he/she should also get tested and appropriately treated. Also, he/she should get vaccinated if not infected already and you should refrain from unprotected sex (see above) till vaccination is complete and successful.

Do not donate blood or register your name as organ donor.

Q- Do I need to follow any specific food habit?

A- No, as long as you are eating a balanced diet.

Q- If my wife has already got the infection from me, would our baby be infected as well? Is there any way to protect him? I am really feeling guilty about all these.

A- Listen, even if your wife is infected there is no reason to believe that she has

got it from you only. She might have got the infection by several other ways as mentioned already.

However, if she has the virus, your baby is safe as long it is inside her womb. The risk of infection is mainly at the time of birth. This can be prevented if the baby is injected with hepatitis B immunoglobulin (ready made antibodies) and vaccinated right at the time of birth. Also, antiviral treatment given to the mother in last trimester of pregnancy, reduced risk of infection of the baby.

On the contrary, if your wife is not already infected, vaccination should be started immediately and you should refrain from unprotected sex (see above) with her till she is fully immunized.

Q- How is the vaccine administered?

A- Usually 3 doses. When immunity is necessary very rapidly (e.g. baby of infected mothers), first dose is given at time of birth and then at 1 and 2 months from first dose. In other situations, second and third doses can be given at 1 and 6 months after the first dose.

For kidney failure patients waiting to undergo dialysis, 4 double strength doses at 1, 2 and 6 months from first dose are generally recommended.

Mr. Saral is currently under my treatment for last 1 year. We are doing liver function tests every 3 months, which are normal. So, we have not started him on any antiviral treatment. His son and wife have been vaccinated fully and they are doing well.

Note: Mr. Saral is an imaginary patient

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