VIRAL HEPATITIS
by
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Hepatitis is a major health problem not only in Pakistan but the whole world. It is the commonest cause of cancer of liver in many countries of the world including Pakistan. Acute hepatitis can result in deaths in few days to weeks. Chronic hepatitis results in cirrhosis liver and its complications like blood vomiting, brain and other organs involvement and liver cancer. The carrier rate of hepatitis B is estimated to be about 10% in Pakistani population, which means that almost every 10th person is carrying this deadly virus in his blood. Hepatitis C may be infecting an equal number of people or possibly even more. To our rough estimate about 1.2 billion rupees are annually lost on management of patients of hepatitis.

The disease is spreading like a jungle fire in our country and can be truly called as an epidemic which is unfortunately unrecognized not only by the common man but also by the educated class including the medical personells. It is a preventable disease and only simple hygienic measures are enough against the spread of hepatitis. However, once the hepatitis virus gets into the body it can lead to a chronic stage which is very difficult and expensive to treat.

In the following pages a general description about different serious types of hepatitis is given with an effort to make it as simple as possible for the understanding of common people who do not have any background medical knowledge.

The subject will be covered in two parts;

Part 1 of the discussion will deal with introduction of the subject, types of viruses causing Hepatitis, common signs and symptoms of hepatitis, course of the disease, and routes of spread of different types of hepatitis viruses.

Part 2 will cover the complications of hepatitis, treatment methods of prevention, and the role of public, doctors and Government in preventing this dreadful disease.

INTRODUCTION:
Before discussing the details of Hepatitis, let us have a little understanding of the normal functions of the liver. Liver is rightly known as the factory of the body as it manufactures many useful substances for the body and detoxifies and removes various dangerous substances from the body. Normally blood from the small intestine, large intestine and stomach flows into the liver carrying with it the digested food material required for the body. Liver manufactures various nutrients from these materials and stores some of them as well. The toxic substances which are produced in the gut and in the body are detoxified by the liver in healthy individuals and the body is saved from their toxic effects. Complications arise when these normal functions of the liver are lost.

Liver can get damaged by a number of drugs, toxins and viruses etc. When it leads to liver cells damage (i.e. inflammation), it is known as hepatitis. Depending on the cause it is known as
drug induced, toxic or viral Hepatitis. It most commonly presents as jaundice.

Our discussion is aimed at viral hepatitis.

**TYPES OF VIRUSES CAUSING HEPATITIS**

Many Viruses cause hepatitis. These are named as Hepatitis "A" virus, Hepatitis "B" virus and similarly "C", "D", "E", "F" and "G" virus. These viruses can be categorized into three main groups:

(i) Those which spread by faeco oral route (or through contaminated food etc.). It includes virus A and virus E

(ii) Those which spread through human secretions (primarily blood). It includes virus B, C, D and G

(iii) Other rare viruses like EB and Cytomegalo virus etc.

In the subsequent pages we shall limit our discussion to the first two groups only, with emphasis on virus A, E, B and C, due to their common prevalence and significance.

**WHAT DOES THE PATIENT FEEL WHEN INFECTED BY VIRUS.**  
**(ie SIGNS AND SYMPTOMS)**

When a patient gets hepatitis he may either develop vague complaints and feeling unwell or present with jaundice. Once jaundice appears the diagnosis becomes easy. However certain signs and symptoms may precede the appearance of jaundice and are important to recognize for early diagnosis. These are,

- Generally feeling unwell and lethargic with body aches.
- Low grade fever.
- Dark yellow colored urine.
- Loss of appetite.
- Distaste for cigarette.
- Pain and discomfort in the right side upper abdomen.

If there is history of jaundice in the contacts, one should always suspect hepatitis even with minimum of these complaints.

**COURSE OF THE DISEASE**

Once virus gets into the body it can lead to one of the following courses:

i) Cleared up by the body defence mechanism and thus no disease
ii) Produce acute disease with symptoms and signs including jaundice, and subsequent recovery in few weeks.

iii) May adopt a slow course without jaundice (anicteric Hepatitis) and subsequently clear up.

iv) Lead to quick and almost complete failure of the liver resulting in coma and death.

v) Go on to the chronic stage of carrier, and persistence of virus in the blood. This results in long term complications.

The viruses may affect patients either leading to jaundice, or there may be no jaundice and only mild fever, malaise and loss of appetite etc. Patients with hepatitis B infection usually develop jaundice on presentation and have more aggressive disease, however majority of these patients will clear up the virus within 6 months. Patients with hepatitis C usually have mild disease at the onset and it mostly goes un-noticed. However most of these patients do not clear up the virus and will develop chronic complications in the coming years.

CARRIERS:

It is important to realize that although a patient may apparently recover from acute hepatitis symptomatically and clinically but he still may carry the virus in his blood and develop chronic stage. These patients who persistently carry the virus in their blood six months after the initial episode are known as carriers. Therefore all patients with hepatitis must check their blood at three months and than six months after the first episode, so as to know whether they still have the virus in their blood or not.

After getting an acute attack of Hepatitis "B" the chances of becoming carriers are about 10% in hepatitis B in adults However if a baby is born of Hepatitis B positive mother he stand 100% chance of becoming carrier unless active and passive immunization is done immediately after birth. In case of hepatitis C most of the patients (ie 60% to 70%) will continue to have the virus in their blood after the first episode. We studied to find out the incidence of "carrier state" in apparently healthy blood donors in Hayat Shaheed teaching hospital and found out that almost 5% of them are positive for hepatitis "C" and about a similar number positive for hepatitis "B". The carrier rate in general population in Pakistan has been reported from 5 to 15% in different studies.

These are the people who are at a very high risk of developing complications and transmitting the disease to others

DISCUSSION

GROUP (i) VIRUSES

Virus 'A' causes hepatitis primarily in children and only 10% or less of adult hepatitis is due to this virus. Virus 'E' however, accounts for a significant number of viral hepatitis in adults. It is of most importance in pregnant ladies where it can lead to severe complications and the disease carries a bad prognosis with relatively high mortality.
Both hepatitis A and E are excreted in the stool of infected patients and spread through contaminated water and food contents, most commonly Ice Creams, Juices, Sweet dishes etc. The "epidemic" of hepatitis in Islamabad two years ago was due to Virus 'E'. These viruses are easily killed by heat and thus rarely spread through fresh cooked food. However, stored food can later on get contaminated through handling by a patient and thus can be a source of the disease. Contaminated spoons, utensils, clothing and towels etc. are all potential sources of spread of the infection.

Maintaining good personal hygiene is very important in preventing these two types of hepatitis. Proper washing of hands before meals (and not drying them with handkerchief or towels which could be contaminated) can prevent the spread of infection. Patients with Virus A and E hepatitis should wash their hands thoroughly after attending the bathroom to avoid contaminating other things. They should also properly cut their nails to avoid sticking of the contaminated materials in the nail bed which could be a potential sources of continuous infection.

Luckily, both these viruses generally have a relatively benign course and the disease is usually self limiting. All one needs is to have good diet and rest. Medications have little role in the management of this type of hepatitis. I/V fluids (drips) should only be restricted for those who can not take oral feeds due to persistent vomiting or severe loss of appetite. Children with this type of hepatitis should preferably avoid going to school for the initial three to four weeks.

GROUP (ii) VIRUSES

In this group virus B and C are the most important and most dangerous of all the hepatitis viruses. Virus D can only cause the disease in presence of virus B and then carries a bad prognosis, however it does not cause the disease on its own.

These viruses appear to have the same route of transmission and are spread through the following means:-

i) Contaminated blood and blood products
ii) Sexual transmission (particularly homosexual)
iii) Mother to child transmission during delivery
iv) Probably through orthopodes like bed bugs etc.

The most important of these factors in our society is the first one where patient's blood is in some form transmitted to healthy individuals. In a pilot study we found that in apparently healthy blood donors, about 4% are positive for Hepatitis "B" and 6% for Hepatitis "C". In various studies in Pakistan the carrier rate for hepatitis "B" in healthy individuals, has been reported from 5 to 10% or even more in some areas. About 50% of our admitted patients of acute hepatitis are positive for Hepatitis "B". From this one can easily get an idea of the gravity of the problem and the risk of transmission in our
circumstances

The amount of blood required to spread the disease in case of hepatitis B is only .0001 ml. i.e. 400th part of a single drop of blood. This amount may be slightly more in case of hepatitis C. It obviously means that if a needle is used for an infected individual and then the same is used for another person the later stands a very high chance of getting the infection. Similarly if blood of infected individual is transmitted through blades or razors (eg in a barber shop) from a patient to healthy person, he stands even chances of getting the infection. Thus emphasis should be made on;

i) use of disposal of syringes

ii) avoiding shaving by barbers or at least insisting on use of a new clean blade.

Hepatitis B and C are more common in close contacts of patients suffering from hepatitis but it is not exactly known why this is so. Therefore, strict hygienic measures and proper cleaning of utensils bath rooms and washing of hands should be observed in such circumstances.

PART II

COMPLICATIONS:-

Complications could either be acute or chronic.

ACUTE COMPLICATION

Apart from the common acute problems of vomiting and loss of appetite etc. the most dreadful complication is Acute Hepatic Coma (liver failure), in patients with previously normal liver. It has almost 90% mortality even in the most developed countries like UK and USA, where all the possible facilities for treatment are available. Liver gets completely damaged and loses its functions. Toxic substances accumulate in the blood, they act on the brain and other organs of the body and the patient becomes unconscious. He also develops bleeding from the stomach and other sites and usually dies within few days. Majority of our patients admitted with Hepatic coma are those suffering from Hepatitis "B".

LONG TERM COMPLICATIONS:

As far the development of long term complications is concerned, the only difference between hepatitis B and C is that, patients with virus B tend to develop the complications earlier and more aggressively while those with hepatitis C develop it slowly over the years. Both of these types of patients, in their chronic stage (carriers) are a potential source of risk to themselves and others.
The two most common complications are:

i) Liver Cirrhosis
ii) Liver Cancer

Other complications includes involvement of the Kidney, bone marrow, joints and may results in kidney failure, severe anaemia (blood deficiency) and arthritis (a disease of joints)

CIRRHOSIS LIVER:

When the virus infects the liver it leads to destruction of the normal tissues and scaring occurs in the liver. The normal liver tissue is ultimately replaced by fibrous bands and nodules leading to shrinking of the liver size. This is known as cirrhosis liver. As most of the normal liver cells are destroyed and replaced by fibrous tissues it results in mal-function of the liver. The ultimate result is:

i) Decrease production in nutrient elements which are necessary for the normal growth of the body. (e.g. Albumin, Vitamins, Glucose, Amino acids etc.)

ii) Inability to get rid of the toxic substances produced in the body and absorbed from the gut.

ii) Changes in the blood flow pattern of the liver.

Due to loss of these normal function in cirrhotic patients, the liver, on one hand can not produce the required substances for the body and on the other hand the toxic substances starts accumulating in the body to dangerous level.

Albumin is a protein which is exclusively produced by the liver and in addition to it's other important functions, it also helps to maintain the water balance of the body. When its level falls below a certain limit, it leads to disturbance of the normal mechanism of maintaining water balance. As result the body cannot get rid of water efficiently. It thus results in accumulation of fluid in the body tissue which manifests itself in the form of swelling of the legs and ascites (fluid in the abdominal cavity). Initially only the feet become swollen but as the condition worsens the whole body including the face and the trunk may become swollen which is very uncomfortable for the patient. Fluid may keep on accumulating in the abdomen leading to marked swelling, and resultant increasing pressure in the abdomen may even produce hernia in the umbilical area. Patient starts developing muscle wasting and effects of under nutrition of various elements and he becomes very weak.

When the level of toxic substances crosses certain limit they start affecting the brain. Patient gradually develops tremors (flapping tremors) sleep disorder (more sleep in day and no or less sleep at night), drowsiness, disorientation, aggressiveness and ultimately unconsciousness i.e. hepatic
coma. This is also known as hepatic encephalopathy. These patients carry very bad prognosis and they usually survive from few months to two to three years. Certain events like increase intake of proteins (Karai Tikka), constipation, infections, sedative drugs, pain killers and antibiotics etc. may precipitate hepatic encephalopathy and thus must be avoided or treated well in time.

**VARICES:**

As scaring increases in the liver it leads to involvement of the blood vessels within the liver, resulting in increased pressure in these vessels and also changes in the blood flow pattern. As pressure increases in these vessels (veins), blood is redirected to the side channels of blood vessels (collateral). These collateral gradually start opening up getting more and more blood in due course of time.

Normally the veins in the oesophagus, stomach, rectum have low pressure and blood from these vessels (veins) flow into the liver veins. As pressure in the liver vessels increase, pressure in these vessels also has to rise to keep the circulation of blood. As a result of increase pressure these vessels (veins) swell up. These dilated vessels (veins) in the lower end of oesophagus and stomach are known as varices and those in the rectum hemorrhoids (piles). These vessels can get ruptured due to increase in pressure and patient may start bleeding into the stomach. The bleeding may become more severe as the normal clotting mechanism is also disturbed due to low or no production of clotting factors by the liver. Patient may vomit the blood (Hematemesis) or pass it in the stool (melena). The normal color of blood is red but as it is mixed with acid in the stomach it is changed to black. Patients may therefore complain of passing "Black Stool" or "Black vomitus". Severe bleeding can lead to low blood pressure, shock, renal failure and death.

**LIVER CANCER:**

Unfortunately this is one of the most common cancer of our population, and is the commonest gastrointestinal tract tumor in NWFP. It can result from drinking alcohol, and some other rare cause but the commonest cause in our population is Hepatitis B and next in order is Hepatitis C.

Patients who carry the virus in their blood are at a high risk of developing cancer and the chances increase by multiple when both B & C are present simultaneously. In our patients 50 to 60% of the liver cancers are associated with hepatitis B and possibly 25 to 30% with Hepatitis C.

Like many other cancer there is no satisfactory treatment. Partial hepatectomy (cutting the affected part of liver by surgery) and liver transplant (costing about Rs. 3 million and only possible abroad) may only be of help in selected cases.

**TREATMENT:**

A very well said proverb "Prevention is better than cure" holds true exactly about this dreadful disease.

It must be emphasized that routine restriction of diet to only carbohydrate (sweet things) has
no justification. Restriction of proteins (meat, chicken) and fats etc. is only required in few patients with complications (see above). I/V fluids (drips) should only be used in patients with protracted vomiting, otherwise a few tablespoons of glucose or sugar by mouth, is better than 1000 cc of I/V glucose (drip).

Liberal food intake may actively enhance recovery and shorten the course of the disease. Syrups and tablets of "Tonic" may not have any definite role. Toxic drugs like some antibiotics and analgesic (pain killers) must be avoided.

Treatment of the complication of hepatitis is only symptomatic and not curative in the majority of cases. However, patient with chronic hepatitis who have not yet developed advance complications can be cured partly with expensive medications. One course of these drugs costs more than one 1.75 lacs rupees with only 40-60% chance of remission of the disease and still having a chance of recurrence in future after stopping the medications.

**PREVENTION**

Prevention costs nothing but just a little knowledge of the disease and adopting adequate protective measures. Prevention of hepatitis should be considered at two levels;

i) Patients and doctors

ii) Government

**PATIENTS AND DOCTORS:**

The most important is education of patients by the doctors, specially about the route of transmission of the disease and appropriate protective measures. Virus A and E can be prevented by adopting simple clean hygienic measures. Mothers have a very important role to play. They must refrain their children from purchasing food stuff (specially like unpacked ice creams, "kheer" etc) from streets and bazar, develop clean habits in their children, like washing hands after attending the bath room and before taking food, and thorough washing and cleaning of all fruits and vegetables before eating.

Some important points in prevention of virus "B" and "C" are;

a) Dirty and non-disposable syringes are one of the main source of spread of hepatitis in our society. Therefore;

i) Patient should insists on use of disposable syring doctors/technicians for giving injections or collecting blood samples.

ii) They should make sure that disposable syringe is opened in front of them.

iii) Always get a good quality syringe, preferably with plastic on one and paper on the other side of covering. This will abolish or at least decrease the chances of recycled syringes, (It is easy to pack a syringe with both side of the covering made of plastic
and thus increase chances of recycling i.e. repacking the syringe for more than one time use). We have seen packed syringes containing blood or dirty fluid.

iv) Syringe and the needle should be immediately broken and destroyed after use, never throw it in open places where children may pick it and thus prick themselves.

b) Avoid shaving by barbers and use your own razor etc, or at least insist on, using a new blade by barbers. Remember that even when there is no visible blood stain on an apparently clean and thoroughly washed blade or knife, it may still carry enough virus from a previously infected patient, that can give you hepatitis.

c) Piercing of nose and ears of children should only be done by sterilized, new needles. Circumcision should also be done only with clean and preferably new sterilized instruments.

d) Take care of your personal hygiene.

i) Long nails and tattooing of body by patients should be discouraged.

ii) Never share tooth brush and tooth picks.

iii) When in contact with a patient of hepatitis, extra precaution of cleaning utensils, clothing and day to day use objects, should be taken. If possible let them use a separate bath room or at least thoroughly clean hands and bathroom after use. However, there is no need to isolate patients of hepatitis from the rest of the family.

e) Avoid sexual intercourse if the spouse has developed Hepatitis B - and get vaccinated at the earliest. The chance of transmission of "B" are much more compared to "C" through sexual route. Condoms may be used if desired and required. Homosexuals have a very high chance of getting and transmitting hepatitis.

f) Doctors must avoid injections as much as possible. Insistence of patients on getting injections should be strongly discouraged and it may be the best opportunity for a doctor to educate them.

g) All doctors, nurses and paramedical staff who are at risk of getting or transmitting the disease should be vaccinated.

Doctors should be educated to restrict use of blood and blood products as much as possible. Remember when you think that one transfusion is required for a patient he actually does not need it or needs more than one.
GOVERNMENT RESPONSIBILITIES:

a) To utilize the public media for creating awareness about this dreadful disease which is in no way of less importance than AIDS in our society and is in an enormous burden on the health and economy of our nation.

b) Provision of safe blood transfusion services:
   To ensure that facilities are available and utilized for screening of blood for hepatitis B and C in all the government and private transfusion services.

c) Ban on un-qualified persons -- to avoid indiscriminate use of syringes for the so called "Garam Injections" etc. This is possibly the most common causes of spread of Hepatitis B and C in our community.

d) To ensure availability of safe and effective vaccine at cheaper rates for the use of common man.

e) Provision of clean water for human consumption.