Seminar Third Year MBBS. Modular System. What is Hepatitis A Virus, HAV and how it is diagnosed in Lab?

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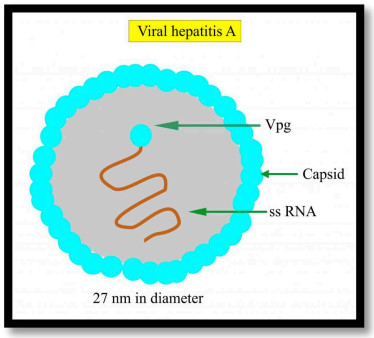
Hepatitis virus A is a non enveloped virus that belonged to the hepatotropic virus family and is ***27 nm*** in diameter. HAV belongs to the ***Picornaviridae family***. The is a picornavirus. Genus is a hapatovirus. It consists of a single-stranded RNA **virus (ssRNA).** The VPg is Viral protein genome-linked. This is a protein attached to the positive strand of viral RNA. **The VPg acts as a primer during the RNA synthesis.**

It's Hepatitis A viral infection is also called Infectious hepatitis. ***Figure 1***



What Sample is required?

1) Venous blood is needed to prepare the serum. A random sample can be used. The serum can be stored at 4 °C for 5 days.
2) Feces can be taken for immuno-electron microscopy.

What is the Purpose of the test?

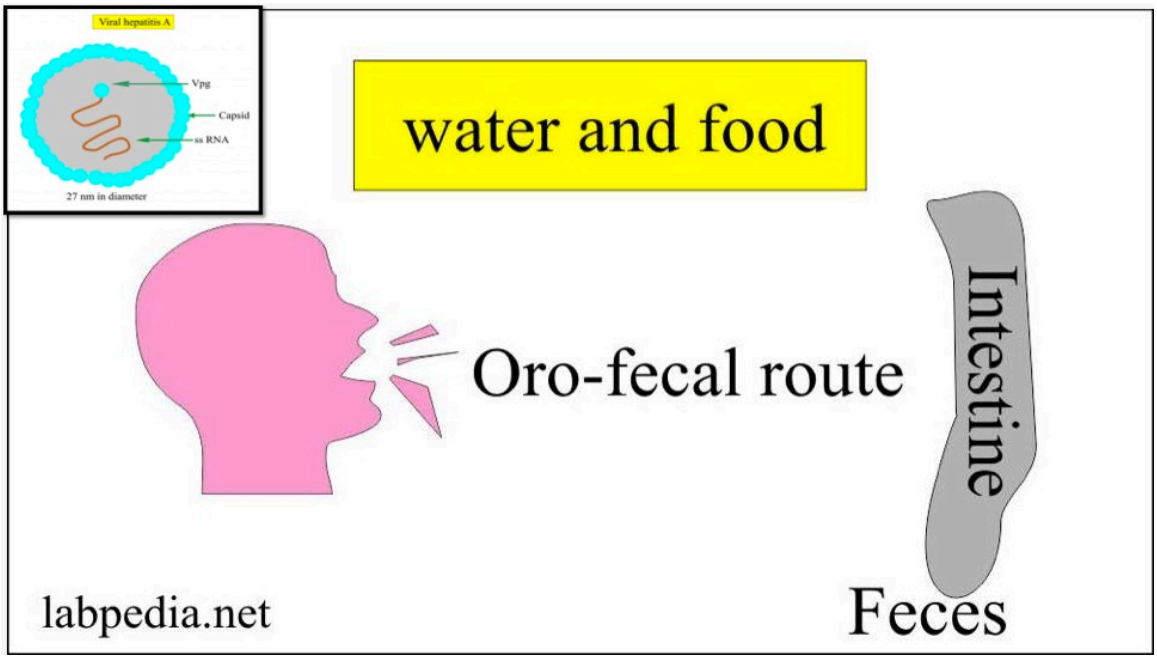
1) To diagnose viral hepatitis A (HAV) infection.
2) To differentiate from other hepatitis infections

What is the Hepatitis A virus Infection?

1) HAV is a self-limiting acute liver disease.
2) The incubation period is short which is 2 to 6 weeks.
3) This is highly contagious of viral infection and most common in children.
4) Most children recover from the disease and develop lifelong immunity.

What is the Mode of infection Hepatitis A virus

1) Comments rout is orofecal Inactive stage, this virus is excreted in the stool. So there is an oro-fecal spread because of the contamination of food and drinks.
2) Sexual transmission between male homosexuals has been reported.
3) Transmission via blood transfusion and I/V drug use is rare. Figure 2



What are Clinical course:

1) Mostly asymptomatic.
2) The most common age group is children.
3) There may be a prodromal period of fever, chills, fatigue, malaise, and headache.
4) The above symptoms will be followed by nausea and vomiting.
5) There is anorexia.
6) Sometime there may be abdominal pain which is usually in the upper quadrant.
7) Sometime there may be gastroenteritis.
8) When jaundice appears then there is rapid improvement in the clinical symptoms.

What is the Outcome HAV infection:

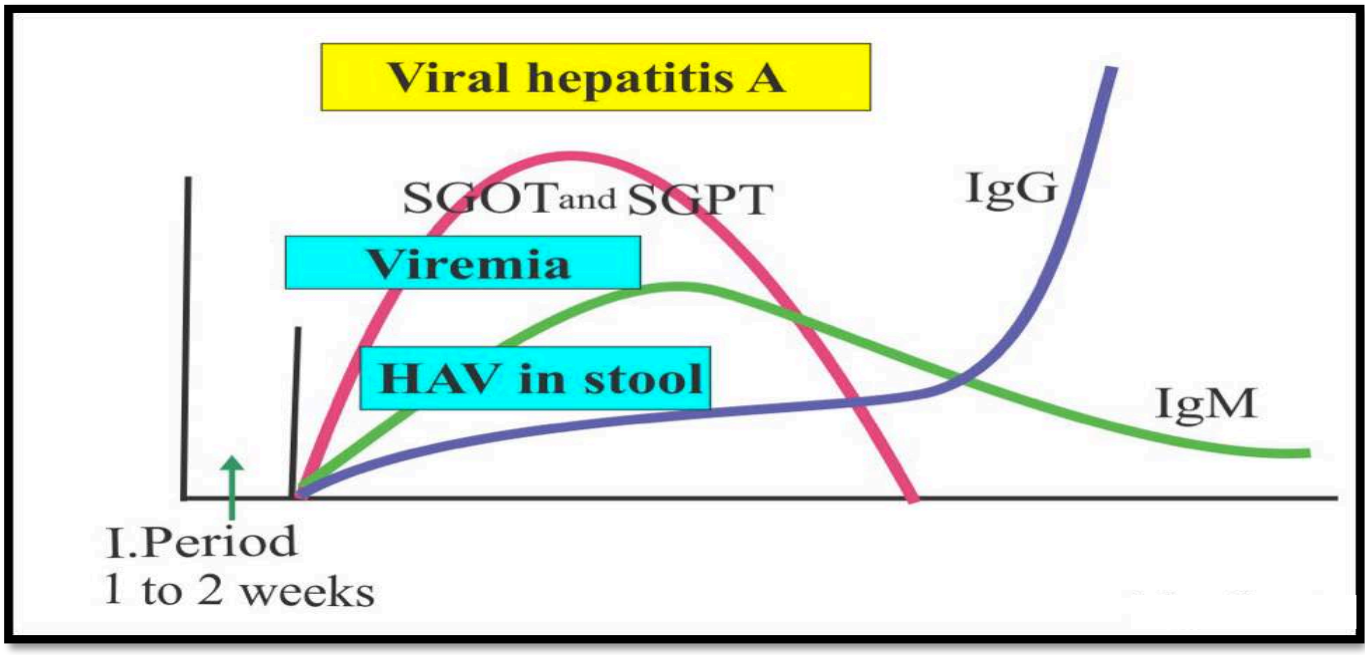
1) There is mild to severe disease.
2) Mostly recovered from the HAV infection and gets life-long immunity.
3) Very few die of HAV infection with fulminant hepatitis.

High-risk group:

1. Children care centers.
2. The family members who are in close contact with the patient.
3. In the summer camps.
4. People working in correctional centers.
5. In homosexual peoples.

Immunology:

1. The first antibody in acute infection is IgM type (HAV-IgM)
2. IgM appears 3 to 4 weeks after the exposure to the virus or just before the liver function tests are raised.
3. IgM returns to normal in roughly 8 weeks, or disappear in 3 to 4 months.
4. HAV-IgG appears after 2 weeks when IgM is increasing.
5. Now IgM slowly comes to normal and IgG will be present in the blood.
6. HAV-IgG will be detectable in the blood even after 10 years. Figure 3



Disease stage IgM IgG

1) Acute infection

   When high gG

2) Immunity Positive

Diagnosis of HAV

1) HAV-IgM indicates acute infection
2) HAV-IgG positive and HAV-IgM negative indicate convalescent or chronic stage.
3) HAV total antibody indicate present or past infection.
4) HAV total antibody also indicate vaccination.
5) PCR: In the early stage antibodies are not detectable then only PCR for RNA can be found in the stool and blood. PCR for RNA may be found in the saliva as well.
6) Fecal HAV is positive 2 weeks before the symptoms appear.

HAV serological profile

Prevention:

1) The best is to give the vaccine in epidemic areas and to the children.

2. Improve:

1) Safe water supply.
2) Safe food supply, which is the best hygienically.
3) Have a good sanitation.
4) Washing of the hands before taking the foods.

Treatment:

1) These patients recover without any treatment.
2) Mainly there is a need for supportive treatment.

What are the screening test of Hepatitis A

It is a DNA virus and spreads through orofecal route. It has vaccine The screening depends on the detection of Antibodies against the HAV. HAV screens sometimes are referred to as hepatitis A antibody tests or hepatitis A total antibody tests.

Positive test

A positive antibody test result indicates three things

1) A person has or had HAV infection
2) A person had been vaccinated against hepatitis A.
3) This person is immune to future HAV infection.

Negative Test

A negative test result indicates that antibodies were not detected in a person's blood.

1) 1-A person without antibodies has never been infected with HAV,
2) 2-He or She has never been vaccinated against HAV,
3) 3-The person is still susceptible to HAV infection.