

Hepatitis

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It's inflammation of the liver parenchyma. It can be induced by different agents which includes: infections, chemicals, drugs, toxins, plants. The most important type is the infected viral type hepatitis because of its high prevalence and it's endemic in Iraq, plus it occurs in epidemic pattern.

- **Viral Hepatitis:**

- It's infection of the liver parenchyma by many viruses, hepatitis A,B,C,D,E,F,G, NON A-G. A & E are transmitted feco-orally, they are called infectious hepatitis, the recently discovered viruses are mainly of sexual transmission. Other viruses can cause hepatitis such as EBV, adeno virus, herpes simplex type I & II, yellow fever virus, IMN virus, CMV virus and coxsacki B virus. These viruses can cause hepatitis, but the most important from epidemiological point of view are A & B.

- **Hepatitis A**
- **Epidemiology:**

It's a worldwide disease mainly developing countries, it mainly affect young people while older people are rarely affected because they get immunity during childhood. By the age of 5 years 50 % of children are affected because of bad sanitation, while by the age of 15 years 95 % of children are affected. In developed countries the feco-oral transmission is broken because of good sanitation.

The cases are usually sporadic but can affect day care centers, kindergartens and health centers in the form of an outbreak, in addition to those who are practicing oral or anal sex (so it can be considered as STD) and among homosexuals.

- Note: Hepatitis A virus is a small RNA virus, about 22 nm in diameter related to entero viruses, it can be inactivated by the ordinary detergents e.g. ethanol 70 %, chlorozinenol (detol) 1-5 %, chlorhexidin hydrochlorid (hepdin), benzolconnum (septicin) and hydrogen peroxide at any concentration.
- **Seasonal Variation:** There is an increase in incidence during autumn and spring (due to crowding).
- **Sex Distribution:** both sexes equally affected.
- **Reservoir:** Human, sea food can be a secondary reservoir.
- **Mode of Transmission:** feco-oral, sexual, drug abusers and parentrally.

- **Period of Communicability:** one week before the beginning of fever till 2 weeks after the end of the fever. Infectivity is high especially in the prodromal stage, the establishment of jaundice indicate large decrease in the infectivity.

- **Clinical forms:**

- 1) Subclinical form: mainly affect young age group, about 80 % of infections are in children below 5 years of age are subclinical, this form is rare in adults 2-5 % of adult infections are subclinical.
- 2) Clinical form: it's divided into mild, moderate, sever and fulminant.

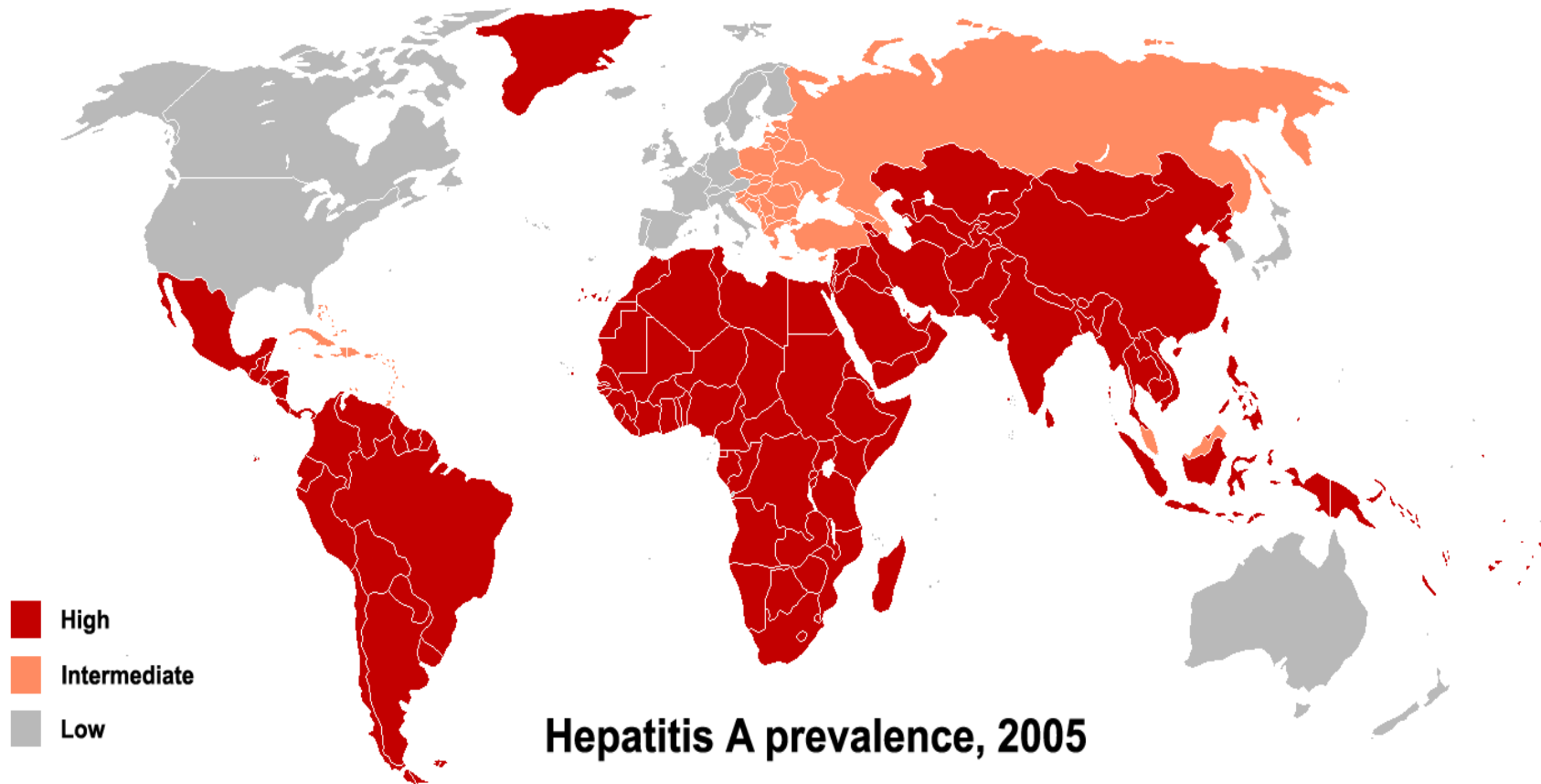
- **Prevention & Control:**

- A. Preventive measures:**

- 1) Education of public about mode of transmission.
- 2) Water sanitation.
- 3) Food sanitation (suspected sea food should be boiled).
- 4) Proper sewage disposal.
- 5) Immunization:
 - a) Passive: by giving IgG to certain risk groups e.g. post exposure protection.
 - b) Active (vaccination): for high risk groups like those traveling to endemic area, day care centers and those practicing illegal sex. It's a killed vaccine, efficient and immunogenic, it gives 95 % protection after 1 month.

B. Control measures:

1. Report to the local health authority.
2. Isolation with enteric precautions.
3. Concurrent disinfection of urine and stool.
4. Immunization of contacts by giving IgG.
5. Investigation of contacts.
6. No specific treatment.



Hepatitis A prevalence, 2005

• Hepatitis B

- **Epidemiology:**
- It's a major worldwide health problem, the estimated number of cases in the world is about 500 hundred million, the world is divided into three epidemiological areas for epidemiological purposes:

- **1. High Prevalence Area:**
- Prevalence rate is 7-30 %, this area include Africa, south east Asia, few countries from South America, India, Indonesia and also Egypt.
- **2. Intermediate Prevalence Area:**
- Prevalence rate is 2-7 %, this area include Middle East (excluding Egypt), previous USSR countries, South America and East Europe countries.
- **3. Low Prevalence Area:**
- Prevalence rate is 1-2 %, this area include west Europe, North America, Japan and Australia.
- In Iraq the prevalence is about 2-5 %, this is according to different studies in different provinces.
- Hepatitis B vaccine was introduced into the Iraqi immunization program in 1990.

- **Age Distribution:**

- It affects all age groups, but in high prevalence countries it's more common in infancy and early childhood because of vertical transmission from the mother to her baby. While in low prevalence countries it's more common in young age groups mainly because of sexual contact, the vertical transmission here is low because the infected mother will be given gamma interferon which prevents the transmission.

- **Sex Distribution:** both sexes equally affected.
- **Seasonal Variation:** No seasonal variation, usually increase in tourism seasons.
- **Source Of Infection:** diseased human only.
- **Reservoir:** only human.
- **Incubation Period:** 6 weeks.
- **Period Of Communicability:** as long as HB_s Ag present in the blood.
- **Susceptibility:** any human is susceptible regardless of his/her age.

- **Infectious Agent:**
- Hepatitis B virus HBV, hepadenovirus, DNA double stranded about 42 nm in size. Antigenically it's composed of surface Ag (HB_s Ag) which is spherical or cylindrical about 20 nm in size, Core Ag (HB_c Ag), Envelope Ag (HB_e Ag), the virus strain depend on (HB_s Ag).
- There is only one type of virus but with different serotypes and we can differentiate between different strains of depending on surface HB_s Ag .

- **Infectivity & Potency:**

- The virus shed in all body secretions and excretions (blood, blood products, saliva, CSF, peritoneal, pleural, pericardial, synovial, amniotic, semen, vaginal secretions & any other bodyfluids).
- The excretion contain low concentration of virus, so they are not important for the transmission. Transmission during sexual contact from male to female is 3 times more than transmission from female to male. The risk of single breach in the skin by contaminated needles have chance of 25 % for infection and this depend on the age i.e. in the age extremities of there is high chance for infection. In HIV single breach have risk of 0.2 % for infection.

- **Mode of Transmission:**

1. Percutaneous: IV, IM, subcutaneous and intradermal from contaminated syringes.
2. Sexual: homosexuals and heterosexuals with multiple pattern.
3. Blood and its products: due to improper screening before transmission.
4. Vertical: mother to child transmission, during labor and after it by breast feeding.
5. Mucous membranes and contaminated subjects and fomites.
6. Simple contact (house hold contacts).
7. Cultural habits e.g. tattooing.

- **Notes:**

- Main M.O.T in high prevalence countries is via vertical transmission.
- Main M.O.T in intermediate prevalence countries is via blood products and medical-legal problems.
- Main M.O.T in low prevalence countries is via sexual transmission.
- The probability to become a chronic carrier and the severity of the disease are directly related to the age of the patient, in younger patients the disease is more severe and has greater chance to become a chronic carrier, in adults 5-15 % of cases become chronic carrier.
- HBV can be inactivated in the same methods used to inactivate HAV.

- **High Risk Groups:**

- 1) Medical personal (blood banks, surgeons, lab workers, gynecologists, dentists and even statistics researchers).
- 2) Those practicing extra martial or illegal sex.
- 3) Immunocompromised.
- 4) Patients needing frequent blood transfusion e.g. patients with thalassemia or uraemia.
- 5) Tourists and those getting tattoos.

- **Prevention & Control:**

- **Preventive measures:**

- 1) Health education for general population and high risk groups.
- 2) Vaccination of the new generations, in high prevalence area vaccination should be done in the labor room for all newborns, they should be vaccinated if the proper resources are available, if not then the vaccine should be given to the high risk groups, the vaccine gives 99 % protection against HBV.
- 3) Sterilization of medical and dental instruments in addition to using disposable instruments if available.
- 4) Control of the sexual transmission.

- **Control measures:**

- 1) Report to the local health authority.
- 2) Disinfection of the instruments.
- 3) Immunization of the contacts either by IgG or by vaccine.
- 4) Control of high risk groups.

- **Other Types Of Hepatitis:**

- **Hepatitis C:**

- Very similar to hepatitis B with certain differences in the causative agent, epidemiology and the complications.

- **Hepatitis D:**

- Can only occur as a super infection in a case of hepatitis B, because HDV is a defective virus, it's similar to hepatitis B in epidemiology. The most serious complication of hepatitis D is hepatocellular carcinoma.

- **Hepatitis E:**

- Similar to hepatitis A in mode of transmission and epidemiology, it causes liver failure in pregnant women.

- **Hepatitis G**

END