

***Sheet no. : 8***

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**Liver diseases and their relation with teeth**

**\* Liver is one of the most important organs in our body, it’s one of the vital organs (liver, heart, kidney, brain).**

**\* Main functions of the liver: 1- Metabolism of drugs. 2- Storage of vitamins and glycogen. 3- Synthesis of growth factors, hormones, proteins, and clotting factors.**

**\* Liver relation with teeth:**

**- There are three things that affect our job with patients with liver diseases: 1- Liver disease patients has an impaired drug metabolism: so if we want to prescribe drugs for him, we should change the drug of choice or decrease the dose. 2- Bleeding tendency: due to lack of synthesis of the clotting factors. 3- Increase the probability of the transmission of infection due to hepatitis.**

**\* Note: not every patient with hepatitis has a bleeding tendency and vice versa.**

**\*\*\* Hepatitis:**

**\* They are five in number. \* They are called hepatitis viruses because they have the tendency to affect the liver more than other organs (although they can affect other organs).**

**1- Hepatitis A:**

**- Common infection affects always school students. - Symptoms like common cold (fever, malaise, weakness). - Acute infection. - Transmitted mainly through contaminated food and drinks. - Clinical features : nausea, fatigue, fever, abdominal pain, jaundice. \* Jaundice: characteristic sign of liver and biliary\*(not sure) diseases. \* The patient has dark urine and clay colored stool.**

**\* Diagnosis: - According to the clinical features, the patient has an elevation of the liver enzymes and IgM antibodies.**

**- Like any infection in acute stage IgM antibodies are elevated.**

**\* Management: - We told the patient to rest and drink fluids, eat sweet things ( (حلاوة طحينيّةand no fat diet. ( Too much fat will increase the gallbladder secretions and this will cause more pressure on the liver, so they have to decrease fat and increase sugary intake as an energy source instead of fat).**

**\* Oral manifestations : - It has no specific oral manifestations. - The patients may have jaundice, sometimes appears on the oral mucosa (yellowish mucosal surfaces).**

**\* Dental treatment: - There is no elective dental treatment for the patient who has acute hepatitis until he is cured. – There is a debate on salivary transmission of hepatitis A, but the main rout of transmission is feco-oral through contaminated food, there is no transmission through saliva.**

**2- Hepatitis B:**

**- Common: there are a lot of people who are infected with it and they don’t know. - We have to treat all the patients as they are hepatitis patients. - DNA virus. - Transmitted through body fluids in general: all body secretions contain hepatitis B ( blood, saliva,…………..) - There are some patients who have higher risk of transmission like: 1-IV drug abuse. 2-Addictive to certain drugs. 3-Patients who are treated by acupuncture (الوخز بالإبر الصينيّة (. 4-Tattoo (not sterile places). (Most patients are infected with hepatitis in the barbershop or dental clinic). 5-The patient who works in health care setting (nurses, doctors, hygiene hospital workers) has a higher risk of hepatitis. 6-Patients who had blood transfusion in the past especially old people. 7- Chronic renal failure patients (renal dialysis). - More than half of the patients are subclinical so there is a high percentage of patients don’t know that they have hepatitis. ( Some people discover that they are infected with hepatitis virus when they go to donate blood).**

**\* Symptoms: - All the liver diseases and infections have the same symptoms: jaundice, weakness, abdominal pain, fatigue, mild fever, change in the color of the urine and the stool.**

**\* Why do we care about hepatitis B: - It is a source of cross infection. – The patient may undergo chronic hepatitis C infection and this causes liver cirrhosis ( تشمّع الكبد ), and on the long term it may cause hepatocellular carcinoma (liver cancer).**

**\* Antibodies and titers are very important, if someone has a needle stick injury he asks what tests should he do?. We have to know these things to be able to analyze the results.**

**\* Management of this acute liver infection: - Like hepatitis A the patient needs follow up to ensure that there is no chronic damage in the liver. - Chronic hapatitis has no cure so we have to commit to the cross infection control.**

**\* Oral manifestations: - Jaundice (like A). - Cross infection: (6-40)% of needle stick injuries from a patient who has hepatitis cause infection especially if the person who has the needle stick injury is not vaccinated or he is vaccinated but he doesn't know that the titer is low (the titer decreases with time). - Can transmit from saliva (although the amount of virus in the saliva is very low but the saliva itself is not the problem, when we work the saliva will be mixed with blood (Endo, surgery, perio) so the saliva will be infective, but if we take saliva from the duct it may not contain virus or contains small amounts, but this is not important for us, we care about the saliva that we are prone to it). - Some patients undergo chronic liver disease and liver cirrosis, this causes impaired drug metabolism and bleeding tendency.**

**3- Hepatitis C:**

**- It is the only RNA virus. - Hepatitis B and A are DNA viruses. - It is chronic not acute (high percentage of the patients have chronic complications). - Doesn't have a vaccine (although it's infectivity is lower than hepatitis B, it can be more dangerous because it doesn't have a vaccine). - It's way of transmission is like hepatitis B through parentral fluids.**

**- Hepatitis C: more than 90% of the patients are subclinical or asymptomatic. - Hepatitis B: half of the patients are subclinical.**

**\*\* So it doesn't appear until the patient undergoes chronic complications, then they discover that he had hepatitis C long time ago.**

**- Hepatitis C is common in Egypt, it is the most country in the world that has hepatitis C. - The diagnostic test is the same: antibodies against hepatitis virus.**

**\* Oral manifestations: hepatitis A differs from the other hepatitis viruses as it has oral manifestations: 1- Xerostomia. 2- Parotid swelling. 3- Lichen planus (especially with certain ethnic groups like Egypt). 4- Sjogren syndrome (dry mouth+ dry eyes+ dry skin): it’s cause is unknown but one of the causes is hepatitis C.**

**- Hepatitis C is less infective than hepatitis B, but it can be more dangerous because it doesn’t have a vaccine. - Hepatitis C & B nearly have the same route of transmission because the saliva contains blood.**

**\*\*\* Liver cirrosis:**

**- Fatty liver differs from liver cirrhosis, fatty liver means fat tissue in the liver. - cirrosis \_ fibrosis \_ scaring , so the surface appears like wax. And instead of hepatocytes there is fibrous tissue and this leads to impaired liver function: 1- Impaired drug metabolism. 2- No synthesis of growth factors. 3- No clotting factors. 4- No hormones.**

**\* Symptoms: 1- Hormonal disturbances. 2- Portal hypertension. 3- Hepatoencephalopathy. 4- Liver cancer (on the long term). 5- Bleeding tendency (no synthesis of the clotting factors).**

**\* Causes of liver cirrosis other than hepatitis C virus: 1- High alcohol intake. 2- Hepato-toxic drugs (high doses of paracetamol). 3- Auto-immune diseases (Wilson disease, hemochromatosis) 4- alpha-1-antitrypsine deficiency.**

**\* Clinical features: \* Note: when the clinical features increase, the importance of the organ increases (like the endocrine system diseases which have a lot of clinical features because the endocrine system is one of the most important systems, so does the liver and this helps in early detection).**

**- Patients may have non-specific symptoms: 1- Weight loss. 2- Hair loss. 3- Fatigue. 4- Jaundice. 5- Palmar erythema. 6- Fingers clubbing (associated with large number of diseases). 7- Contractures of the hands (characteristic of the liver disease). 8- Easy bruising (No synthesis of the clotting factors). 9- Skin pigmentation.**

**\* Diagnosis: 1- History & clinical examination. 2- Testing liver enzymes (Elevated). 3- Hepatitis serology (To know the cause and to ensure that it is not hepatitis related). 4- Auto-immune profile (Because some auto-immune diseases lead to liver cirrhosis). 5- Iron (hemochromatosis, increase iron). 6- Copper ( Wilson disease, increase copper).**

**\* Management: - Depends on the underlying cause (If it is alcohol then the patient has to stop drinking alcohol, if it’s hepato-toxic drugs then we have to avoid anything makes hepato-toxicity) . - In severe cases without any cure we may need liver transplant. \* Liver transplantation doesn’t exist in Jordan although there are a lot of hepatitis and liver failure patients!!!**

**\* Dental aspect: 1- Sialosis (bilateral enlargement of the parotid gland) 2- Halitosis. 3- Lichen planus. 4- Nutritional deficiency (glossitis, candidal infections, angular chelitis). 5- Hemorrhage after dental procedures. 6- Jaundice.**

**\* We should make bleeding profile for any patient with liver cirrhosis history especially if we want to do extraction or any procedure with bleeding: - INR (international normalized ratio): coagulation pathway (intrinsic & extrinsic). - Bleeding time: if it is high then it is thrombocytopenia (no platelets) because liver patients have splenomegaly (the spleen destroys blood cells including platelet).**

**\* There is an impaired drug metabolism, so it is hard to prescribe drugs to chronic liver diseases patients, even paracetamol which is considered the safest drugs is dangerous for them, so we have to talk with the hepatologist before prescribing any drug especially in the severe cases.**

**\*\*\* Drug prescription: - we can prescribe any drug but after reducing the dose according to specific calculations depending on the liver enzymes but there are some drugs safer than the others like which are metabolized in the kidney. - Most of the drugs are metabolized in the kidney, but some of then=m are metabolized mainly in the liver and little in the kidney.**

**- Antibiotics: That are mainly metabolized in the kidneys like amoxicillin (mostly in the kidney and little in the liver).**

**- Analgesics: paracetamol is hepato-toxic, profen is metabolized in the kidney but it is contraindicated because it increases bleeding tendency.**

**4- Hepatitis D and E: - They are rare and usually are co-infection (can’t cause infection alone). -Hepatitis D is usually with hepatitis B virus and makes more severe disease.**