

Acute hepatitis b

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Acute Hepatitis B GNUR543 St. John Fisher College Mr. Wilson is a 47 year old man being evaluated for complaints of fatigue, anorexia and abdominal distention. On examination, it is noted that the skin is jaundiced and the liver enlarged. D. W. denies significant alcohol or drug use. He denies any known exposure to hepatitis and has never been vaccinated for hepatitis. He is taking no medication. Laboratory tests reveal the following and a diagnosis of acute hepatitis B is made: 1. Review and analyze the laboratory data.

What diagnosis is supported by these values? Give your rationale. Mr.

Wilson's lab work is reviewed below: * AST142 IU/L * AST (Aspartate aminotransferase) is an enzyme and blood sample results can detect if there is liver damage. AST is found in the heart and liver with much lower levels in muscles and kidneys. In a healthy person the AST is between 10-40 IU/L. If the liver is damaged, AST is released into the blood stream (Hepatitis B, 2011). * ALT120 IU/L * ALT (Alanine aminotransferase), if elevated can also be an indication of liver damage. ALT is an enzyme that is normally in the liver and kidneys. If the individual is healthy, the ALT is low, between 7-56 IU/L.

Elevated ALT is an early indicator of liver damage usually elevating prior to a patient becoming jaundice (Hepatitis B, 2011). * GGT 42 IU/L * GGT (Gamma-glutamyl transferase) is an enzyme that is found in the liver but may also be in the spleen, kidneys and pancreas. As with AST/ALT, GGT is elevated when there is liver damage. The normal test range is 0 - 51 IU/L. GGT will be elevated when there is acute damage to the liver (or bile ducts) (Hepatitis B, 2011). * Alk Phos 84 IU/L * Alk Phos (Alkaline Phosphatase or ALP) is an

enzyme found in the liver, bone, kidney and GI tract. Normal range for this blood test is 44 – 147 IU/L.

Alk Phos, if elevated generally indicates that there is a blockage in the bile ducts. Also, if it is found to be high this means the patient can either have kidney disease or bone disease. To differentiate, a GGT test is also taken. If that result is high as well, a liver disease is present; if the GGT is within normal limits then the patient has bone disease (Hepatitis B, 2011). * Total Bilirubin 1.0 mg/dl * Total bilirubin is the product of damaged or broken down red blood cells in the body. The bilirubin is processed through the liver and the normal levels in the body are; 0.3 – 1.9 mg/dL.

If this level is increased, it means that the liver is not processing the bilirubin due to liver disease (Hepatitis, 2011). * Albumin 4.3 g/dl * Albumin (ALB) measures the level of albumin in the patient's plasma. Albumin is a protein that is made in the liver and is sensitive to any changes in liver function. Albumin mainly ensures that the cells in the body don't leak, keep the tissues nourished and transports vitamins, calcium, hormones through the body. The normal range for Albumin is 3.4 – 5.4 g/dL. Albumin will be lower than normal in the case of malnutrition or liver disease (Hepatitis, 2011).

HBsAg positive * Anti-HBs negative * Anti-HCV negative * HIV negative
 Test Name | Mr. Wilson's Result | Normal Ranges | | AST | 142 IU/L | 10-40 IU/L | Elevated | ALT | 120 IU/L | 7-56 IU/L | Elevated | GGT | 42 IU/L | 0 – 51 IU/L | Normal | Alk Phos | 84 IU/L | 44 – 147 IU/L | Normal | Total Bilirubin | 1.0 mg/dl | 0.3 – 1.9 mg/dL | Normal | Albumin | 4.3 g/dl | 3.4 – 5.4 g/dL | Normal | Mr. Wilson's labs indicate that he has chronic Hepatitis B. This is chronic because the indicators for acute liver damage are within normal limits. For example, if

the patient were having an acute onset of Hepatitis B his Albumin would be low.

Albumin is made in the liver and is very sensitive to any changes in the liver. If there was acute damage to the liver the Albumin value would not be in normal range. Also, Mr. Wilson's bilirubin would be higher if he was having acute hepatitis B. For the skin to be noticeably jaundiced the bilirubin level would usually be > 2.0 mg/dL (Hepatitis, 2011). The patient's GGT would be elevated also if he was experiencing an acute episode of hepatitis B. Additional tests that might be helpful to making an accurate diagnosis would be; IgG-anti-HBc and IgM-anti-HBc.

These tests show if the hepatitis is acute or chronic. The IgG-anti-HBc is positive if the patient is chronically infected. The IgM-anti-HBc would show positive if the patient is acutely infected with hepatitis B. The HBs-Ag will be positive in both acute and chronic cases. See the table below for an overview of the assessment and tests that are generally given when a new Hepatitis B diagnosis is reached. (Lok A. S. , 2011) 2. Explain the hepatocellular changes that occur with the above diagnosis. The liver has many roles in the body that associate it with many systems.

For example, it acts as a digestive organ by secreting bile for the breakdown of fat (Copstead, 2010). The liver also removes bilirubin from the blood, temporarily stores blood and synthesizes the blood clotting factors (Copstead, 2010). Other functions of the liver are; removing toxins from the blood, metabolizing both sex hormones and steroid hormones. Any damage to the liver can in turn disrupt any of these processes and functions that it performs. Some of the processes and functions can be changed in the

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following ways: * Liver inflammation: Inflammation in chronic hepatitis is associated with scarring.

Severe inflammation can bridge together portal tracts within the liver, this is called “ bridging necrosis” (Mani & Kleiner, 2009). It can also bridge to central veins, confluent necrosis (Mani & Kleiner, 2009). This leads to scarring, the creation of fibrous strands and in many cases will lead to fibrosis. Throughout the liver cells are becoming damaged therefore blocking and limiting the livers functionality. Hormone secretion, chemicals and toxins in the blood, clotting factors and other defense fighting macrophages are interrupted (Copstead, 2010).

Along with the inflammation, the patient will feel fatigued and will have a lowered immunity. * Ascites and peripheral edema: Abdominal distention, ascites, is a result of the damaged cells within the liver and more specifically the membrane of the cell has been damaged. There is an intra-abdominal buildup of sodium, water and protein. The cells in the liver are unable to maintain the appropriate osmotic gradient across the pleura (Copstead, 2010). This extra fluid is likely to accumulate in the dependant areas of a person’s body, such as ankles, legs, and arms (Kukka, 2010). Jaundice: Red blood cells have a short life p and as they die and/or are damaged the body will break them down and dispose of them. This is referred to as bilirubin metabolism and this happens in three phases; pre, intra and posthepatic. (Copstead, 2010). The red blood cells should be broken down, delivered to the liver and then transported through the biliary system and thus be wasted via the kidney’s or the colon. With damaged liver cells, the bilirubin is not

excreted from the liver and there is a buildup of the conjugated bilirubin and the result is jaundice (Copstead, 2010).

Other changes due to the liver damage are portal hypertension, gastric and esophageal varicies, vitamin mal-absorption, poor blood clotting and altered mental status (Copstead, 2010). The liver has such far reaching effect on so many organs and systems in the body that any damage to the liver will result in decreased functioning of other systems. Immediate tests to determine the cause and extend of the damage would be imperative to managing the disease going forward. 3. How should the disease be managed and monitored? Explain your rationale.

If pharmacotherapeutics are used, explain your rationale and their mechanism of action. First steps would be to order additional labs including, IgM-anti-HBc, IgG-anti-HBc, HBeAg, HBV DNA, CBC with PT and electrolytes. In cases of acute hepatitis B, symptoms sometimes go unnoticed. The virus will normally go away on its own and if treatment is given, it is for the symptoms and most adults recover fully (Hepatitis B, 2011). But in the case of chronic HBV, the patient will need to be monitored to see if the virus is replicating (Lok A. S. , 2011). In patients with chronic HBV, the treatment oals are to reduce the long term effects of liver damage, prevent the transmission of the virus to others and manage any complications along the way (Lok A. S. , 2011). A clear diagnosis of chronic hepatitis B is needed. Results of blood work will determine the course of treatment. In Mr. Wilson's case, with only the first lab results, it appears that he is in the active chronic infection stage. At this point the liver damage is still minimal. Because there

does not seem to be significant liver damage a liver biopsy would not be indicated at this point (Lok A. S. , 2011).

As the practitioner, I would recommend more blood tests, as noted above, and ongoing monitoring of the virus every few months. This will help in determining the activity of the virus. The medications used to treat chronic hepatitis B tend to have serious side effects. The patient must be willing to make a commitment to continue the therapy and adhere to close monitoring during any drug treatments (Hepatitis B, 2011). Supportive medicines are important to assist in treating side effects of the virus. For example, diuretics are prescribed if edema is not resolving on its own.

Vitamins and minerals are indicated if labs show deficiency due to decreased liver function. If it is determined that Mr. Wilson's virus is active (meaning he is able to infect others) there are new drugs available to choose from. Antiviral treatments include (Hepatitis, 2011): 1. Entecavir – a. A pill taken once a day for up to a year b. Used when DNA viral cells are actively replicating 2. Interferon Alpha c. Injection a few times per week for up to a year d. Used when patient has compensated liver disease 3. Pegylated Interferon e. Injection once per week for up to a year f.

Used when patient had compensated liver disease and evidence of viral replication and liver inflammation 4. Lamivudine g. A pill taken once a day for a year or more h. Used when patient has active liver inflammation and active viral replicating 5. Adefovir Dipivoxil i. A pill taken once a day for a year or more j. Used in patients with chronic HBV 6. Telbivudine k. A pill taken once a day for a year or more l. Used in patients with active viral replication, persistent elevations in ALT or AST or histologically active

disease 7. Tenofovir m. A pill taken once a day for a year or more n. Used in patients with chronic HBV

The medicines listed above are used alone or more likely in conjunction with others. These are currently the only hepatitis B drugs that are approved by the FDA (Lok & McMahon, 2009). According to the American Association for the Study of Liver Diseases (AASLD) Practice Guidelines, the ultimate goal of therapy is to suppress the replication of the virus and put the liver disease into remission (Lok & McMahon, 2009). This is monitored by watching the patients ALT, AST and other liver, viral and blood tests. The viral tests are imperative to determine the proper adjustments in medications.

For example, interferon has been shown to reduce the viral replication and inducing liver disease remission (Lok & McMahon, 2009). Also, a newer drug, tenovir has shown significant promise in reducing viral levels in patients as compared to adefovir (Lok & McMahon, 2009). Practitioners need to watch for resistance as well when using the anti-viral drugs. As noted, the drugs are used in combination as well and these have shown to be more effective than when they are used alone. The effects of combined usage are better antiviral effects and delayed resistance (Lok & McMahon, 2009).

Mr. Wilson's ALT, HBeAg lab values and his HBV DNA will be a main determinate to the type of therapy he will receive. A liver biopsy will be indicated later on if his HBsAg is positive for more than six months, his serum HBV DNA is greater than $> 20,000$ IU/mL and he has persistent or intermittent elevations in his ALT/AST levels (Kukka, 2010). Summary Hepatitis B can be chronic or acute. When a person has acute hepatitis B they generally don't even notice and never need treatment. If treatment is <https://assignbuster.com/acute-hepatitis-b/>

needed it is supportive treatment for the symptoms of the acute virus infection.

Chronic hepatitis B patients are at risk for cirrhosis and HCC (hepatic cellular carcinoma) (Kukka, 2010). Patients that have chronic HBV need to be educated on the risk of infecting others and will, in some cases, need to alter their lifestyle to protect others from getting the virus. Treatment is dependent on the blood work up that is obtained. It is very important that a patient that goes on antiviral treatment remain on it to reduce drug resistant strains. Also, patients must be evaluated and treated for the side effects of the anti-virals as well as the symptoms of other affected organs and systems in the body.

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