Etiology And Mechanisms Of Hepatitis A

The disease hepatitis A is a communicable disease that is caused by the infection of the hepatitis A virus (HAV) in the liver of a host. The disease is transmitted between hosts via the fecal to oral route, the consumption of contaminated food or water, or intravenously (Robert H. Purcell, 2002). Humans are the only natural reservoir for the HAV although several nonhuman primates have been infected in the laboratory (Gerety, 1984). The HAV, which is a nonenveloped RNA virus, is categorized as a picornavirus (Cuthbert, 2001).

The likelihood of symptomatic illness from HAV infection is highly correlated to the age of the infected individual. According to the CDC, children younger than six are asymptomatic seventy percent of the time. Lastly, in older children and adults, infection is usually symptomatic, with jaundice occurring in more than 70% of patients (Hamborsky J, 2015).

The Signs and Symptoms of Hepatitis A

The typical incubation period for HAV in the body is 28 days however it can range between 15 – 50 days. The course of illness of Hepatitis A is similar to the other forms of hepatitis (B, C, D, and E) however unlike the other variants of the disease, which are ongoing and chronic, Hepatitis A is acute and short-term. After infection of the HAV, the diseased individual will experience flu-like symptoms, loss of appetite, headache, paler feces, diarrhea, fever, malaise, anorexia, nausea, adnominal discomfort, dark urine, and jaundice (Feinstone, 1988). Additionally, during a physical examination, the infected individual's liver may be enlarged and tender, which could make palpitation difficult (Feinstone, 1988). The signs and symptoms of the disease typically do not last longer than two weeks although some individuals (10-15 percent) will experience prolonged or relapsing signs and symptoms for up to 6 months (Hamborsky J, 2015).

Although severe cases of hepatitis A infection are infrequent, unusual complications can occur, to include the following immunologic, neurologic, hematologic, pancreatic, and renal extrahepatic manifestations. Additionally cases of relapsing hepatitis, cholestatic hepatitis A, hepatitis A triggering autoimmune hepatitis, subfulminant hepatitis. The most severe complication from a hepatitis A infection is fulminant hepatitis, mortality estimates have been as high as eighty percent (Hamborsky J, 2015).

Methods of Detecting Hepatitis A

According to Hamborsky (2015), "the detection of Hepatitis A within an individual cannot be distinguished from "the other types of viral hepatitis on the basis of clinical or epidemiological features alone (p. 136)". The method for determining the presence and to confirm the diagnosis of hepatitis A is to conduct serologic testing, which tests for the presence of HAV antibodies. Patients who have an acute hepatitis A infection will have detectable levels of IgM anti-HAV in their blood (Hamborsky J, 2015). The presence of the IgM is detectable normally 5 -10 days before the start of symptoms associated with the infection. Additionally, detectable levels of IgM can persist for up to six months (Hamborsky J, 2015).

The IgG anti-HAV remains present in the body for the lifetime of the infected individual and provides protection against future infection because once someone is exposed to the virus they have lifetime immunity to the disease (Hamborsky J, 2015).

Pathology and the Systems Affected

According to the CDC, after the host is infected by the HAV, the virus will begin to replicate within the liver. Within 10-12 days the virus can be detected within the blood and will be excreted via the biliary system (liver and gallbladder), the system within the body that produces and stores bile, and into the feces. According to the CDC, peak titers or the presence and amount of antibodies in the blood, occur during the two weeks before the effects of the disease will be seen. (Hamborsky J, 2015)

The systems that are affected will be the biliary system as well as the gastrointestinal tract. In addition, there could be a yellowing of the skin and eyes because of jaundice that accompanies the disease (Feinstone, 1988).

Prognosis and Treatments for Hepatitis A

As stated previously, the illness that accompanies the infection of the HAV typically lasts a few weeks. The signs and symptoms of the disease were discussed in the previous section. According to the research is not a specific treatment for Hepatitis A as the body will health itself of the virus with no long term impact on the liver as it heals within six months.

However, avoiding alcohol is advised because of the weakened state of the liver. Additionally, because of the symptoms that are associated with the disease bed rest is recommended as those who are infected can have flu-like symptoms and have less energy. Lastly, because of nausea and diarrhea associated with the virus, drinking plenty of fluids, especially water, is critical to avoid dehydration (Hamborsky J, 2015).

Public Health Impact of Hepatitis A

Hepatitis A can be found throughout the world however it is highly endemic in the following regions: Central and South America, Africa, the Middle East, Asia, and the Western Pacific (Hamborsky J, 2015). In the United States, Hepatitis A became nationally reportable as a distinct entity in 1966. Before the introduction of the hepatitis A vaccine, the disease occurred in large nationwide epidemics. The largest number of cases reported in the United States in a single year was in 1971 (59,606) and the last increase in cases reported occurred from 1994 to 1995 (Hamborsky J, 2015). The Hepatitis A rates have been declining since vaccination initiation in 1996, and since 1998 have been at historically low levels.

Unlike other communicable diseases, infection by the HAV typically does not lead to death however those with an increased risk of infection should be vaccinated. The vaccine should be administered to anyone over the age of 1 who is planning on traveling or working in countries with high-rates of the HAV (Hamborsky J, 2015).

Technological and Research Advancements

As previously mentioned there is a vaccine for hepatitis A which was introduced in 1996. Its use was recommended for children and adolescents in communities with a high risk of HAV (Hamborsky J, 2015). While this policy prevented infection in high-risk areas of the United States, it had little impact on the incidence of the HAV in the United States. The policy was updated to have all children by the age of one to be vaccinated. This is to be followed up with the adult formulation of the vaccine by all adults over the age of 19 (Hamborsky J, 2015).

In 2001, the Food and Drug Administration (FDA) approved a vaccine that combined both the hepatitis A vaccine with a vaccine for hepatitis B. It is called Twinrix. The FDA recommended that the vaccine be administered at 0, 1, and six months. This schedule was developed to maintain the appropriate spacing to maintain long term protection from both the hepatitis A and B viruses (Hamborsky J, 2015). In 2007, the vaccine schedule was updated to be given at 0, 7, and 21 through 30 days and a booster dose 12 months after the first dose.

References

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