Hepatitis A

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Etiologic Agent: Hepatitis A Virus (HAV) Liver infection caused by the (HAV) virus

Historical Information:

Hepatitis A became widely known around the seventeen and eighteen century. The infection was associated with military campaigns. In the year 1940 with serological testing, Hepatitis A was associated to be different from Hepatitis B. With this, a vaccine was developed and officially licensed in the years 1995-1996. The vaccine provided a long term protection to the disease. (1) Around the year 2004 Hepatitis A was the most reported in the United States.

Transmission:

Hepatitis A is mainly transmitted through the fecal-oral route, which involves eating or drinking food infected with the virus. (1) An example of this is eating undercooked food. Which is the most common. The food most likely to be contaminated is fruits, vegetables, shellfish, or even drinks such as: ice and water.

To add on, it can also be transmitted by person to person contact. This involves sex or sexual contact with the infected person. It can also even be transmitted simply by touching an object or food the infected person touched after not washing their hands properly or whether its changing diapers or cleaning up the stool of an infected person. (1)

Reservoirs:

HAV is able to survive outside the body for months and inside a humans highly acidic digestive tract (1) Thus, making its primary reservoir, humans by directly causing inflammation to the liver. (2) Rarely does it affect non-human primates. Yet, when it does it’s mostly common in chimpanzees. (1)

General characteristics of MO

Hepatitis A originated from a general family term for a family of virus that cause inflammation of the liver known as “Hepatitis.” Which includes Hepatitis A, B, C,D,E, AND Hepatitis: A, B, and C being the most common. Each one with a different transmission, genome, virus classification, and envelope property. (2)
To simplify, Hepatitis A is part of the Picornaviridae family with its genus, *Hepatovirus*. Hepatitis A serves a unique characteristic of being the only one classified as the only species in the genus *Hepatovirus*. Its viral genome consists of positive-sense, non-envelope, single stranded RNA. In the picornavirus family, *Replication* occurs right after ingestion. (5) The virus is able to enter the bloodstream through the epithelial lining of the intestines to reach the liver. From there on the virus replicates in the liver cells (hepatocytes), and then is released into the bile, following the stool for about 2 weeks before the onset of clinical illness and up to 1 week after. (6)

**Key tests for identification (specific)**

A blood test is performed in order to detect the HAV virus. This test looks for antibodies made in the body when the HAV virus is present. The antibodies during stimulation of humoral immune response include: IgM and IgG. Anti-HAV IgM being the first present in the disease (recent infection), and anti-HAV IgG resulting in a past acquired infection from the HAV virus. (4) The antibodies can be detected as early as two weeks after the initial HAV virus infection.

Eventually, 8-12 weeks of the initial infection the antibody IgG will remain in blood and in the body, for a lifelong protection against the virus. (3)

**Virulence factors:**

HAV virus attaches to the host through endocytosis. The capsid releases VP4 and creates a pore opening for the hosts endosomal membrane, allowing the viral RNA to penetrate into the hosts cytoplasm. HAV also displays a high codon usage. It also contains a slow translation rate which allows for a high stabilized capsid, making it easier to escape the hosts defenses. In addition, its nonenvelope properties make the virus more virulent and prompt to cause cell lysis. (8)

**Signs and symptoms of disease:**

Signs and symptoms for Hepatitis A will not always be shown. This occurs mainly in children who are most likely to appear asymptomatic. In addition, when it is shown, symptoms and signs include: fever, fatigue, loss of appetite, Nausea, abdominal pain, dark urine/ pale color stool, joint pain and jaundice. Jaundice refers to an increase of bilirubin in the blood, along with yellowing of the skin and eyes. Bilirubin is the result of the normal breakdown of heme, a
component of hemoglobin which is found in WBC’s. The liver processes bilirubin to allow its elimination of the body. High levels of bilirubin indicate the liver is malfunctioning, which indicate an infection. (1)

Control/ treatment and Prevention/ Vaccine info, new trials?

Vaccination is used as a method of control for Hepatitis A. The Hepatitis vaccine includes an inactive form of the virus with life lasting antibodies that protect against the disease. This helps stimulate the body’s natural immune system causing the body to make antibodies against the Hepatitis A virus (1) Vaccination is advised as early as the age of one. The two vaccines are Havrix, and Vaqta.(1) Practice of good hygiene is also advised to the community as a form of control method.

To add on, Hepatitis A does not contain a special treatment/cure, rarely does the HAV Virus progress and cause death. Usually the host fights off the infection naturally, with the proper precautions followed by their medical advisor. Such as. avoiding drinking alcohol or eating any fatty foods that make it hard for the inflamed liver to process. (1).

Local/Global cases or outbreaks (with incidence figures)

In the city of Austin there has not been major Hepatitis A outbreaks or cases that seemed to infect a vast population. In addition, according to the Central for Disease Control and Prevention the last peak in the united states of the disease was seen in the year 1995, then the rates kept declining until the year 2011. There was a 14% increase of Hepatitis A in the year 2012. This increase was known to be for “A outbreak from imported pomegranate arils consumed by persons in several southwestern states and Hawaii.”

Following 2013 1,781 cases of hepatitis A were reported from 50 states to CDC. Having an overall incidence rate in 2013 that was 0.6 cases per 100,000 populations. With the highest mortality rate being between the population of 55-64 and 65-74 years (0.08 deaths/100,000 population for each age group). (1) The highest risk is for those who live in or visit rural areas, or frequently eat or drink in settings of poor sanitation. The places at high risk include Africa, parts of South America, the Middle East and of southeast Asia, with having the average patient at the age of five. (7)

Works Cited

1. "Viral Hepatitis - Hepatitis A Information." Centers for Disease Control and


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