Hepatitis

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Fellowship of infertility

HEPATITIS A

- Hepatitis A: is caused by an RNA virus
- transition way : by fecal-oral contact
- incubation period :ranges from 15 to 50 days

Infections in children are usually asymptomatic.

Infections in adults are usually symptomatic.

clinical manifestations:

lowgrade fever, malaise, poor appetite, right upper quadrant pain and tenderness, jaundice, and acholic stools.

diagnosis :IgM antibody specific for the hepatitis A virus.

- Hepatitis A virtually never causes a chronic carrier state.
- ***Perinatal transmission rarely occurs, and therefore the infection does not pose a major risk to either the mother or the baby***.
- The exception is the development of fulminant hepatitis and liver failure in the mother, but fortunately such a situation is extremely rare.

- Prevention: by administration of an inactivated vaccine. The vaccine is highly effective for both pre exposure and post exposure prophylaxis.

- Two formulations of the vaccine are available as inactivated hepatitis A vaccine (Vaqta and Havrix).

- Both vaccines require an initial intramuscular injection,
- followed by a second dose 6 to 12 months later.

- ***The inactivated vaccine is safe for use in all trimesters of pregnancy***
- and should be offered to the following individuals:
- • International travelers
- • Children in endemic areas
- • Intravenous drug users
- • Individuals who have occupational exposure (e.g., workers in a primate laboratory)
- • Residents and staff of chronic care institutions
- • Individuals with liver disease
- • Homosexual men
- • Individuals with clotting factor disorders

- Standard immune globulin provides reasonably effective passive immunization for hepatitis A if it is *given within 2 weeks after exposure.* The standard intramuscular dose of immune globulin is 0.02 mg/kg.
- However, because the vaccine provides lifelong immunity, it is preferred for both passive and active immunization.

HEPATITIS E

- Hepatitis E is caused by an RNA virus.
- The incubation period: 21 to 56 days, with an average of 45 days.
- In endemic countries, maternal infection with hepatitis E often has an alarmingly high mortality rate, in the range of 10% to 20%.
- This high mortality is probably less the result of virulence of the microorganism and more related to poor nutrition, poor general health, and lack of access to modern medical care.

- The clinical presentation of acute hepatitis E is similar to that of hepatitis A.
- Diagnosis: identify viral particles in the stool of infected patients. The most useful diagnostic test, however, is serology.
- Hepatitis E does not usually cause a chronic carrier state, except in patients who are immunosuppressed.
- **Perinatal transmission can occur but is extremely rare**
- The vaccine :three-dose series at 0, 1, and 6 months.
- Duration of protection is at least 4 to 5 years.

TABLE 51.10 Hepatitis in Pregnancy: Summary of Key Features

Infection	Mechanism of Transmission	Best Diagnostic Test	Carrier State	Perinatal Transmission	Vaccine	Remarks
Hepatitis A	Fecal-oral	Antibody detection	Rare	No	Yes	Hepatitis A vaccine is preferred for both passive and active immunization.
Hepatitis E	Fecal-oral	Antibody detection	Rare[a]	Rare	Yes	High maternal mortality in developing countries
Hepatitis B	Parenteral, sexual contact	Detection of hepatitis B surface antigen	Yes	Yes	Yes	Hepatitis B immune globulin provides passive immunization following exposure. Hepatitis B vaccine provides long-term immunity.
Hepatitis D	Parenteral, sexual contact	Antigen detection	Yes	Yes	Prevented by hepatitis B vaccine	Virus cannot replicate in absence of hepatitis B infection.
Hepatitis C	Parenteral, sexual contact	Antibody detection	Yes	Yes	No	Cure is now possible in more than 90% of patients with highly specific antiviral therapy.
Hepatitis G	Parenteral, sexual contact	Antibody detection	Yes	Yes	No	No clinical significance of infection

[a]Except in immunosuppressed patients.

HEPATITIS B

- Hepatitis B is caused by a DNA virus.
- Transmitted: parenterally and via sexual contact.
- **The infection also can be transmitted perinatally from an infected mother to her infant.**
- Acute hepatitis B occurs in 1 to 2 of every 100 pregnancies.
- The chronic carrier state is more frequent, occurring in 6 to 10 of 1000 pregnancies.
- Worldwide, about 250 million individuals are chronically infected with hepatitis B virus (HBV), while in the United States alone 0.3% of the population are chronically infected.

- Approximately 90% of patients who acquire hepatitis B mount an effective immunologic response to the virus and completely clear their infection.
- Fewer than 1% of infected develop fulminant hepatitis and die.
- Approximately 10% of patients develop a chronic carrier state. Some individual with chronic hepatitis B infection ultimately develop severe chronic liver disease such as chronic active hepatitis, chronic persistent hepatitis, cirrhosis, or hepatocellular carcinoma.
- This sequela is particularly likely in patients who are coinfected with hepatitis D or C.

- The diagnosis: serologic tests.
- acute hepatitis B: positive for the hepatitis B surface antigen and positive for **IgM** antibody to the core antigen. PCR for viral DNA is also positive.
- chronic hepatitis B: positive for the surface antigen and positive for **IgG** antibody to the core antigen.

- ***If E antigen is present, it denotes active viral replication and a high level of infectivity.***
- Infected patients should also be tested:
- hepatitis C
- hepatitis D
- HIV infection
- liver function tests
- coagulation profile,
- hepatitis B genotype
- viral load.

- In the absence of intervention, **approximately 20% to 30% of mothers who are seropositive for hepatitis B surface antigen will transmit infection to their neonates.**
- **Approximately 90% of mothers who are positive for both the surface antigen and the AgE will transmit the infection.**
- Fortunately, excellent immunoprophylaxis for prevention of perinatal transmission of hepatitis B infection is now available.
- Infants delivered to seropositive mothers should receive hepatitis B immune **globulin within 12 hours after birth.**
- Before their discharge from the hospital, these infants also should begin the hepatitis B vaccination series.

- The CDC now recommends universal vaccination of all infants for hepatitis B.
- The second dose should be administered 1 month later; the third dose should be administered 6 months after birth.
- In addition, **the vaccine should be offered to all women of reproductive age.**
- ***Immunoprophylaxis for the neonate is highly effective but does not offer perfect protection against infection, particularly in women with a high HBV DNA load.***
- Presumably, most of the treatment failures result from antenatal transmission of the virus across the placenta.

- Previously, reports indicated that antenatal lamivudine (100 mg PO daily from 28 weeks' gestation until 1 month postpartum) + hepatitis B immune globulin (100 to 200 IU given IM at 28, 32, and 36 weeks' gestation) administered to mothers with a **viral load greater than 10^3 colonies/mL** reduced the rate of perinatal transmission below that achieved by immunoprophylaxis alone.

- More recently, however, Pan and colleague demonstrated that **antenatal tenofovir (200 mg PO from 32 weeks until delivery)** was of even greater effectiveness in reducing the rate of perinatal transmission in patients with a high viral load (defined as > 1 million copies/mL).

- **The Society for Maternal-Fetal Medicine recently endorsed use of tenofovir in patients with a high viral load.**
- After delivery, patients with hepatitis B should be referred to a gastroenterology consultant for consideration of direct antiviral therapy.
- Multiple drugs are now available for treatment of hepatitis B infection, including interferon alfa, pegylated interferon alfa-2a, lamivudine, adefovir, entecavir, telbivudine, and tenofovir.

HEPATITIS D (HEPATITIS DELTA VIRUS)

- Hepatitis D is caused by a defective RNA virus that is dependent on coinfection with HBV for replication. Therefore the epidemiology of hepatitis D is essentially identical to that of hepatitis B.
- Patients with hepatitis D may have two types of infection:
- Some have acute hepatitis D and hepatitis B (coinfection). These individuals typically clear their infection and have a good long-term prognosis.
- Others have chronic hepatitis D superimposed on chronic hepatitis B (superinfection). These patients are particularly likely to develop chronic liver disease.

- The diagnosis of hepatitis D can be established by identifying the delta antigen in liver tissue or serum. However, the most useful diagnostic tests are ***detection of IgM and/or IgG antibody in serum.***

- Hepatitis D can cause a chronic carrier state in conjunction with HBV infection.
- *Perinatal transmission of hepatitis D occurs but is uncommon.*
- Moreover, **the immunoprophylaxis outlined for hepatitis B is highly effective in preventing transmission of hepatitis D.**

HEPATITIS C

- Hepatitis C is caused by an RNA virus.
- HCV may be **transmitted parenterally, via sexual contact, and perinatally.**
- In many patient populations, hepatitis C is as common as or more common than hepatitis B. The risk of infection is highest among Hispanics, prisoners, migrants from Southeast Asia, and patients of lower socioeconomic status.
- Approximately 15% to 30% of patients with untreated hepatitis C will develop cirrhosis.
- Of patients with cirrhosis, 1% to 3% will develop hepatocellular carcinoma each year. Chronic hepatitis C now is the number one indication for liver transplantation in the United States.

- Hepatitis C is usually asymptomatic, at least in its initial stages.

- diagnosis: is best confirmed by detection of viral RNA in the serum by PCR and by conventional serologic testing.
- **Seroconversion may not occur for up to 16 weeks after infection**.
- In addition, although these immunologic tests have been
- available for many years, they still do not consistently and precisely distinguish between IgM and IgG antibody.
- Patients who test positive should have viral genotyping and should also have liver function tests to assess for chronic liver disease.

- In patients who have undetectable viral RNA in the serum and who do not have coexisting HIV infection, the risk of perinatal transmission of hepatitis C is less than 5%.

- If the patient is an intravenous drug user, the frequency of perinatal transmission is 8% to 9%.
- If she is coinfected with HIV, the risk of transmission approaches 20%.
- If the patient has an undetectable viral load, vaginal delivery is certainly appropriate.
- If the patient is coinfected with HIV, cesarean delivery should be performed at 38 weeks' gestation.
- If her viral load exceeds 2.5 million, the optimal method of delivery is uncertain. Several small, nonrandomized, uncontrolled cohort studies (level 2 evidence) have supported a role for elective cesarean delivery before the onset of labor and rupture of membranes in such women.

- There are no data that inform the most appropriate management for these patients if they have prolonged PROM.
- **There is no contraindication to breastfeeding in women who have hepatitis C unless they also have HIV infection**, in which case they should not breastfeed.
- In the past, routine screening in pregnancy for hepatitis C was not recommended. This recommendation was based largely on issues related to expense and lack of effective immunoprophylaxis or treatment for HCV infection. Now, however, as the infection has increased in prevalence and as curative therapies have become available, the issue of universal screening merits reexamination.

- **Following conditions should be screened:**
- • HIV infection
- • Hepatitis B infection
- • Intravenous drug abuse
- • Chronic liver disease
- • Recipient of multiple blood transfusions

- • *Treatment with highly specific combination antiviral agents (e.g., ledipasvir plus sofosbuvir; ombitasvir plus paritaprevir plus ritonavir and dasabuvir) can effect complete cure in more than 90% of patients, even in patients with extensive fibrosis who may have failed other therapies.*
- Therefore, following delivery, infected patients should be referred to a gastroenterologist for consideration of antiviral treatment.

- Prevention of hepatitis C is of paramount importance. Preventive measures include avoidance of occupational injury (e.g., needle sticks, splashes to mucous membranes or abraded areas of skin), avoidance of sharing of contaminated drug-injecting paraphernalia, and adoption of safe sexual practices.

HEPATITIS G

- Hepatitis G is caused by an RNA virus that is related to HCV.
- Hepatitis G is more prevalent, but less virulent, than hepatitis C. Many patients who have hepatitis G are coinfected with hepatitis A, hepatitis B, hepatitis C, and/or HIV.
- Coinfection with hepatitis G does not adversely affect the prognosis of these other infections.
- Most patients with hepatitis G are asymptomatic.
- The diagnosis is best established by detection of the virus on PCR and identification of antibody on ELISA testing.

- Hepatitis G can cause a chronic carrier state, and perinatal
- transmission has been documented. However, the clinical effects of infection in both mother and baby appear to be minimal.
- Accordingly, patients should not routinely be screened for this infection, and no special treatment is indicated even if infection is confirmed.


Thank
you