

HEPATITIS E

Introduction

Hepatitis E is an acute viral infection of the liver, similar in its clinical course to Hepatitis A, however with *high mortality in the setting of the third trimester of pregnancy*.

It does not result in a carrier state, nor does it have long term sequelae in immunocompetent patients.

Previously hepatitis E was considered to be a purely acquired disease from developing countries; however the first locally acquired outbreak in Australia was reported in 2016.

HEV infection should now be considered in patients presenting with a compatible illness, even *without a history of overseas travel*.

Pathology

Organism:

Hepatitis E virus (HEV)

There are 4 genotypes, thus far identified:

- Hepatitis E virus genotype 1
- Hepatitis E virus genotype 2
- Hepatitis E virus genotype 3
- Hepatitis E virus genotype 4

Genotypes 1 and 2 infect only human beings and are associated with water-borne transmission.

Genotype 3 is associated with zoonotic transmission.

Complications:

The principle ones include:

1. Liver failure in pregnant patients.
 - The major complication of Hepatitis E appears to be a high lethality rate in pregnant women who are infected during the **third trimester**.
2. Chronic infection:

- The genotype 3 HEV has been associated with chronic hepatitis in *immunosuppressed* individuals, including organ transplant recipients, in whom chronic hepatitis E may cause progressive liver disease.

There is no current evidence for carrier states or long term sequelae in hepatitis E in immunocompetent individuals.

Epidemiology

- HEV is endemic in many low and middle income countries in Asia and Africa, with seroprevalence rates of up to 20 - 45% reported in adults.

Outbreaks are typically cyclic, and often associated with seasonal heavy rainfall, because of the disruption of clean water supplies.

- Previously hepatitis E was considered to be a purely acquired disease from developing countries; however the first locally acquired outbreak in Australia was reported in 2016.

Reservoir

Identified reservoirs include:

- Humans
- Some primate species
- Pigs/ wild boar.

Transmission

In developing countries:

- HEV infection mostly occurs in developing countries where transmission occurs via the faecal - oral route and contaminated water, causing large outbreaks.¹ HEV genotypes 1 and 2 predominate in these settings..

In developed countries:

- In developed countries HEV infection tends to occur via contaminated food sources.

Undercooked pork and wild boar products have been implicated as sources of zoonotic transmission.

Period of Communicability

HEV RNA is generally only detectable in the stool for 2 weeks after symptom onset.

Faecal shedding generally corresponds with the period of infectiousness.

Susceptibility and Resistance

- Susceptibility is unknown, however disease tends to occur in adults.
- **Pregnant women** are at particular risk of fulminating disease.
- Immunocompromised patients are at risk for chronic infection.
- As for HAV, resolution of HEV infection generally confers **protective immunity** thereafter.

Incubation Period

- The incubation period varies from 2 weeks - 2 months.³

Clinical Features

Though HEV infection has been documented as being acquired in Australia, travel to endemic countries remains a cardinal clue in the diagnosis.

Hepatitis E is commonly a subclinical disease.

It is most commonly a self-limiting disease of adults aged 15 - 40 years.

HEV causes an acute, self-limiting hepatitis, similar to hepatitis A virus (HAV) infection, and can be difficult to distinguish clinically from other causes of acute liver injury.

Clinical features include:

1. Fever
2. Lethargy/ malaise
3. Anorexia
4. Abdominal pain, i.e. right upper quadrant pain
5. Jaundice

Risk factors for increased severity of illness includes:

1. Illness is more severe with increasing age.
2. Pregnancy:
 - The mortality of Hepatitis E is only 1-3 %, however in pregnant patients a high case fatality rate (up to 20%) has been described in **pregnant women** affected in their third trimester of pregnancy.

Investigations

Exclusion of other causes of acute hepatitis, (including excluding *coinfection*), particularly hepatitis A, is important.

Blood tests:

1. FBE
2. U&Es/ glucose
3. LFTs
4. Coagulation profile

Serology:

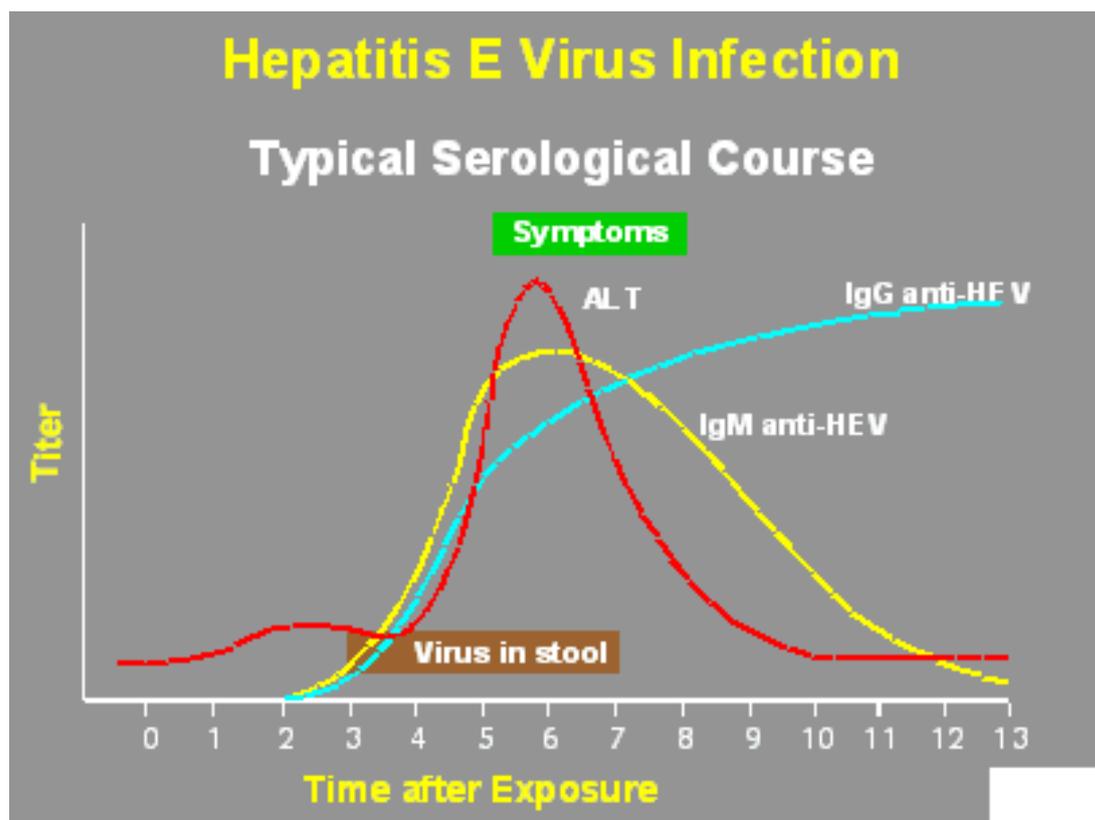
IgG and IgM can be tested for HEV infection.

PCR:

HEV nucleic acid testing is available for the HEV.

HEV RNA is generally only detectable in blood during the **first week** of infection.

HEV RNA is generally detectable in stool samples for 2 weeks after symptom onset.



(From CDC Website)

Management

Prevention:

Pork products should be thoroughly cooked before consumption.

HEV is inactivated by heating to 71 degrees Celsius.

Pork products, particularly pork livers, should be cooked until they reach 75 degrees Celsius at the thickest part for at least 2 minutes.

There is currently **no** vaccine available against HEV.

Treatment:

1. Supportive:

- Supportive treatment is usually all that is required for immunocompetent/non pregnant patients.

2. Specific: ⁴

- For very unwell, immunocompromised patients treatment with **ribavirin** or **pegylated interferon- α** can achieve viral clearance.
- Recently, **sofosbuvir** has been shown to have antiviral activity against HEV.

3. Precautions:

- Food handlers must not work for at least seven days after the onset of jaundice and until well.
- It is recommended that health care workers and child care workers remain away from work for at least seven days after the onset of illness and until well.

Notification

Hepatitis E infection (Group B disease) must be notified in writing within five days of diagnosis.

School exclusion

Children should not attend school or child care for at least seven days after the onset of symptoms.

References

1. The Blue Book Website.
2. CDC Website, Accessed April 2016.
3. C.M Yappa et al. First reported outbreak of locally acquired hepatitis E virus infection in Australia. MJA 204 (7), 18 April 2016. doi: 10.5694/mja15.00955.
4. J.S Doyle, A. J.V Thompson. Editorial: Local transmission of hepatitis E virus in Australia: implications for clinicians and public health. MJA 204 (7), 18 April 2016. doi: 10.5694/mja16.00167
5. C.M. Yappa et al. First reported outbreak of locally acquired hepatitis E virus infection in Australia.

Dr J. Hayes

Reviewed May 2016