

Hepatitis D virus infection

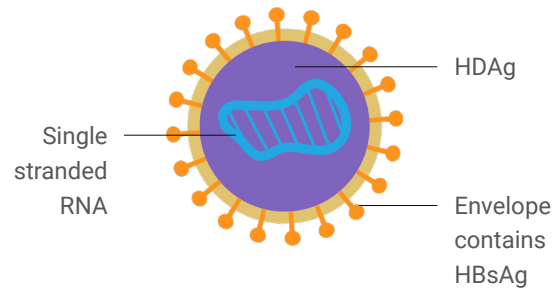
UNDERSTANDING THE PATHOGENESIS AND COURSE OF HDV INFECTION

Profile

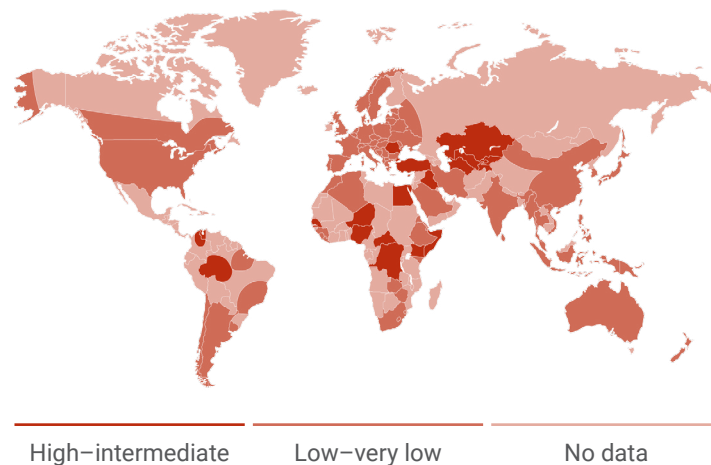
Hepatitis D virus (HDV) is an enveloped, single stranded RNA-virus.

HDV is a defective virus. In order to assemble a virion and to be secreted, HDV needs to use the surface antigen of the hepatitis B virus. As a consequence, hepatitis D can only occur in patients who are also carriers of hepatitis B virus!

Genus: Deltavirus
Family: Unassigned
Genotypes: 1–8



Prevalence



Transmission

Intravenous drug use: sharing of contaminated needles, syringes, or other injection drug equipment

Occupational exposure: needlesticks or other sharp instrument injuries

Vertical: transmission from mother to child

Sexual contact: unprotected sexual intercourse

Pathogenesis

Hepatitis D virus replicates in hepatocytes. The pathogenesis of liver damage is not totally understood. Damage results from the patient's own

activated immune response, and is mainly mediated by T-cells. However, there have been reports about cytopathic effects of hepatitis D virus.

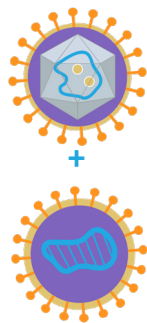
Clinical course

When discussing the clinical course of HDV infection, it is important to distinguish two types of infections, both of which can present as acute infections. We distinguish coinfections from superinfections.

Coinfection

Coinfection describes a simultaneous infection of hepatitis B virus AND hepatitis D virus.

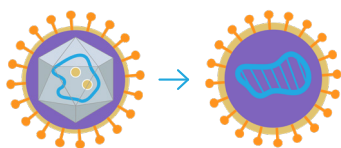
- Mostly self-limiting
- High incidence of liver decompensation
- **Incubation period:** 3–7 weeks



Superinfection

Superinfection describes a new HDV infection in a patient who is already a chronic hepatitis B virus carrier.

- Generally becomes chronic
- Fast progression to cirrhosis/liver failure/hepatocellular carcinoma
- **Incubation period:** 7 weeks–6 months



In general, hepatitis D is the most severe form of viral hepatitis. In fact, one study showed that the risk of developing cirrhosis was twice as high in patients coinfecting with HBV and HDV compared to those infected with HBV alone.

Predictors of disease progression

In 2014, Calle Serrano and others published a score predicting the development of liver-related complications in hepatitis D infections. It is called BEA score—Baseline-event-anticipation score.

Unfavorable predictors are:

- age over 40
- male gender
- Eastern Mediterranean origin
- thrombopenia
- elevated INR
- elevated bilirubin

Further Reading

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Romeo, R, Del Ninno, R, Rumi, M, et al. 2009. A 28-year study of the course of hepatitis Delta infection: a risk factor for cirrhosis and hepatocellular carcinoma. *Gastroenterology*. **136**: 1629–1638.

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