Hepatitis viruses overview

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Hepatitis is major cause of morbidity or mortality worldwide, particularly in the developing world. The major causes of infective hepatitis are hepatitis viruses A, B, C, D or E. In the acute phase, there are no clinical features that can reliably differentiate between these viruses. Infection may be asymptomatic or can present as jaundice, fevers, abdominal pain, fatigue or vomiting. An acute hepatitis infection can last days to months, but can also cause fulminant liver failure.

Some hepatitis virus infections become chronic, leading to cirrhosis and the development of hepatocellular carcinoma. The difficulty in finding and treating these patients is that chronic infection is often asymptomatic until these endpoints develop. Co-infection with different hepatitis viruses or with HIV tends to worsen the prognosis. Treatment decisions and regimes are complex and are beyond the scope of this summary. National hepatitis guidelines are currently in development.

World Hepatitis Day took place on 28th July 2014 to raise awareness of the disease and so in this article a table summarising the key features of hepatitis virus infections is presented in Table 1.

References

1. Rizzetto M. Hepatitis D: thirty years after. J Hepatol. 2009 May; 50(5):1043-50. http://www.ncbi.nlm.nih.gov/pubmed/19285743
2. World Health Organization. Health topics: Hepatitis http://www.who.int/topics/hepatitis/en

Table 1. Key features of hepatitis viruses [1, 2]

Hepatitis virus	A	B	C	D	E
Prevalence/ incidence worldwide	1.4 million per year Epidemics	240 million with chronic hepatitis B (5-10% prevalence in Sub-Saharan Africa)	130-150 million	15 million	20 million per year Epidemics
Transmission	Faecal-oral via food/water	Parenteral via body fluids	Parenteral via blood, vertical transmission	Parenteral via blood and sexual contact	Faecal-oral via water, undercooked meat of an infected animal, blood transfusion
Incubation	14-28 days	30-180 days	2 weeks- 6 months	3-7 weeks when infected simultaneously with hepatitis B. Shorter if superinfection of hepatitis D on chronic hepatitis B	3-8 weeks
Duration of infection	Acute Self-limiting	Acute or chronic Spontaneous clearance is rare in perinatal/childhood infection, but 95% when infected in adulthood	Acute or chronic Spontaneous clearance in 15-45%	Acute or chronic Self-limiting in 95% when simultaneous infection with hepatitis B Chronic in 80% when superinfection on chronic hepatitis B	Acute Self-limiting May become chronic in immu-nosuppressed

Other disease features	Higher morbidity with age 90% infected before 10 years old in developing countries	Assess for fibrosis	Assess for fibrosis	Requires co-infection with hepatitis B	Higher morbidity if pregnant or co-existing liver disease Zoonotic reservoir
When to test	Acute hepatitic illness Epidemic	Acute hepatitic illness Evidence of chronic liver disease High risk groups*/ post exposure Pregnancy	Acute hepatitic illness Evidence of chronic liver disease High risk groups/ post exposure	HBsAg positive patients Chronic hepatitis B with symptomatic/ severe illness	Acute hepatitic illness Epidemic
Diagnostic tests	HAV IgM and IgG or RT-PCR	HBsAg in all Persistence > 6 months indicates chronic infection IgM to HBcAg in acute infection HBeAg denotes high infectivity	Anti-HCV antibodies NAT to confirm current vs. past infection Genotyping if positive	Anti-HDV antibodies RT-PCR	HEV IgM and IgG RT-PCR
Prognosis	Rarely fatal	15-25% mortality from cirrhosis or hepatocellular carcinoma in chronic infection obtained in childhood	15-30% develop cirrhosis within 20 years of infection Cure rates with treatment vary from 50-90%	10 times higher mortality than hepatitis B alone Cirrhosis takes 5-10 years to develop	20% mortality if pregnant
Treatment	Supportive treatment	Acute hepatitis B: Supportive treatment Chronic hepatitis B: IFN or antiviral nucleoside antagonists e.g. tenofovir, entecavir	IFN and RBV and/ or newer antivirals Choice depends on availability and genotype	No effective treatment Some help with IFN-α Liver transplant if fulminant	Supportive treatment RBV if fulminant or chronic
Prevention	Water hygiene Sanitation	Screening high risk groups, barrier contraception, blood donor screening, safe disposal/sterilization of sharps	Screening high risk groups, blood donor screening, safe disposal/ sterilization of sharps	As for hepatitis B	Water hygiene Sanitation Safe food preparation
Vaccine availability	Yes Can be effective when given up to 2 weeks post exposure	Yes Childhood vaccination programme recommended	No	No, but hepatitis B vaccine effective	Yes, but not available globally

* High risk groups include men who have sex with men, sexual partners of known infected individuals, individuals with multiple sexual partners, intravenous drug users, unscreened blood transfusion recipients, children of known infected mothers, high prevalence areas.

Glossary

- HAV Hepatitis A virus
- HBcAg Hepatitis B core antigen
- HBeAg Hepatitis B envelope antigen
- HBsAg Hepatitis B surface antigen
- HBV Hepatitis B virus
- HCV Hepatitis C virus
- HDV Hepatitis D virus
- HEV Hepatitis E virus
- IFN Interferon
- NAT Nucleic acid test
- RBV Ribavarin
- RT-PCR Reverse transcriptase polymerase chain reaction