Hepatitis C

Hepatitis C virus (HCV) is an enveloped SS+ linear RNA virus that is part of the Flavivirus family and is a major cause of liver disease wordwide. In the United States, most cases are due to intravenous drug abuse. In the past, HCV was often related to post transfusion hepatitis caused by transmission of HCV in contaminated blood products. However, the incidence of post transfusion hepatitis has dramatically decreased as a result of increased screening procedures. In contrast to HBV infection, progression to chronic disease occurs in the majority of HCV infected individuals. Chronic inflammation of the liver can lead to cirrhosis and hepatocellular carcinoma. Due to the high incidence of chronic progression, HCV is the most common cause of infectious chronic liver disease in the United States and also the most common indication for liver transplantation. HCV infection is also associated with type 1 MPGN and porphyria cutanea tarda disease.

PLAY PICMONIC

Characteristics

Enveloped

Envelope

This virus has an envelope, which is an outer membrane that covers the protein capsid and aids in viral entry of host cells.

RNA Virus

RNA-rhino

This virus is a RNA virus, meaning its genetic code consists of ribonucleic acid as opposed to deoxyribonucleic acid.

Flavivirus

Flavi-Flav-virus

HCV is a member of the flavivirus family. Other flaviviruses include yellow fever, dengue, and the West Nile virus.

Icosahedral

Ice-cathedral

This virus has an icosahedral protein capsid with 20 identical equilateral triangular faces.

SS positive Linear

Plus-sign on Ice-cathedral

Single stranded positive sense linear viruses have their genome directly utilized as mRNA. Host ribosomes translate the RNA genome directly into a single protein that is modified by host and viral proteins to form the various proteins necessary for replication.

Clinical Features

Most Cases are Due to IV Drug Use

IV Drug User

HCV virus is transmitted primarily via blood. In the United States, most cases are due to intravenous drug abuse.

Turns to Chronic Hepatitis in Over 70% of Cases

Old Crone holding 70% envelope

In contrast to HBV infection, progression to chronic disease occurs in the majority of HCV infected individuals despite the generally asymptomatic nature of acute illness. Progression to chronic disease occurs in over 70% (55%-85%) of HCV infections.

Cirrhosis

C-roses-on-liver

Cirrhosis is characterized by the replacement of liver tissue by fibrosis, scar tissue, and regenerative nodules resulting in loss of liver function. Because HCV infection often progresses to chronic disease, cirrhosis is a common sequelae.

Hepatocellular Carcinoma

Liver Car-gnome

HCV often progresses to chronic disease and is an important precursor to hepatocellular carcinoma.

Most Common Indication for Liver Transplantation

Train-plant

Due to the high incidence of chronic progression, HCV is the most common cause of chronic liver disease in the United States and also the most common indication for liver transplantation.

Associated With Type I MPGN

(1) Wand Man-bra-Pro-lifter

Type I membranoproliferative glomerulonephritis (MPGN) is a type of kidney disease characterized by deposition of subendothelial immune complexes, which activates complement and damages glomeruli. Classically, it is associated with tram-track appearance on electron microscopy caused by splitting of the glomerular basement membrane due to ingrowth of mesangium. Type I MPGN is associated with HCV and HBV although associations with HCV are more common.

Porphyria Cutanea Tarda

Poor-fairy

This disorder is caused by decreased levels of the enzyme uroporphyrinogen decarboxylase in the heme production pathway and is characterized by severe blistering of the skin with exposure to sunlight. While most cases are related to inherited deficiencies of the enzyme, there are multiple risk factors that can cause and exacerbate symptoms of disease. One of the most common risk factors observed is infection with HCV.