What Is Hepatitis C Virus (HCV)?

INTRODUCTION

The global burden of viral hepatitis is high, with mortality from viral hepatitis similar to HIV, malaria, and tuberculosis (TB), which together make up the top four global infectious diseases.[1] [2] More than 90% of this burden is due to infections with the hepatitis B virus (HBV) and hepatitis C virus (HCV).[3] HCV infection is one of the main causes of chronic liver disease, including liver fibrosis and cancer, worldwide.

Acute HCV infection has no symptoms in 50–90% of cases. Failure to clear the infection occurs in 50–90% of cases. Diagnosis of chronic HCV infection is based on the presence of both anti-HCV antibodies and HCV viral RNA. Assessment of the severity of liver fibrosis (damage) is important in decision making in chronic HCV treatment and outcomes. This can be done by liver biopsy and other non-invasive tests and scans. Liver biopsy is less commonly recommended than in the past.

New oral medicines, called direct acting antivirals (DAAs), make it possible to cure HCV in most people with 8-12 weeks of treatment.

DIAGNOSIS OF RECENTLY ACQUIRED HCV, CHRONIC HCV, AND HCV RE-INFECTION

A major barrier to HCV elimination is that a substantial proportion of people with chronic HCV infection are unaware of their infection. Screening for HCV infection is based on the detection of anti-HCV antibodies. These are detectable in blood by enzyme immunoassay (EIA) in the vast majority of people with HCV infection, but may be undetectable in the early phase of acute infection and in patients with chronic HCV who are immunosuppressed.

Following spontaneous or treatment-induced viral clearance, anti-HCV antibodies persist in the absence of HCV RNA, but levels may decline and finally disappear in some individuals. Anti-HCV antibody testing is not helpful to determine re-infection after treatment, as the antibodies are already present before reinfection in the vast majority of cases. The diagnosis of recently acquired and chronic HCV infection is based on the detection of HCV viral RNA in blood.

GOAL OF HCV TREATMENT

The primary goal of HCV therapy is to cure the infection, defined as a sustained virological response (SVR) of undetectable HCV RNA after treatment completion. SVR is generally associated with normalization of liver

enzymes, improvement or regression of liver inflammation and fibrosis, and improvement in liver function.

HCV re-infection can occur after spontaneous- or treatment-induced HCV clearance when re-exposure to HCV has occurred in those with risk factors for infection. Re-infection is diagnosed based on the re-appearance of HCV RNA or HCV core antigen after an SVR. Re-infection should be suspected in cases of a recurrence of HCV infection occurring more than 12 or 24 weeks post-SVR, if risk behaviors have continued.

HCV TREATMENT

All people with recently acquired or chronic HCV infection should be treated without delay. Urgent treatment should be considered in people with significant liver damage (fibrosis or cirrhosis). Everyone should be tested for past or current HBV infection and HIV infection.

Read more about HCV treatment guidelines.

HCV AND HIV CO-INFECTION

Because HIV and HCV are both spread by contact with infected blood, many people are co-infected with both viruses. HIV increases liver damage from HCV. Co-infection is linked to faster HCV disease progression and a greater risk of severe liver damage. On the other hand, HCV does not seem to speed up HIV disease progression. Co-infected people are more likely to have liver problems from antiretroviral medications (ARVs) used to treat HIV, but your healthcare provider can choose drugs that are easier on the liver. People with HIV with a CD4 cell count less than 200 cells/mm^3 are at highest risk for serious liver damage from HCV.

TREATMENT OF HCV/HIV CO-INFECTION

In the ASTRAL-5 trial in people with or without cirrhosis co-infected with HCV and HIV, the SVR rates with the fixed-dose combination of sofosbuvir and velpatasvir were 95% (63/66; 2 relapses). 153 people co-infected with HIV were enrolled in the EXPEDITION-2 study. The 137 people without cirrhosis received 8 weeks of glecaprevir/pibrentasvir, while the 16 people with cirrhosis were treated for 12 weeks. The SVR rate was 98% in the 137 patients treated for 8 weeks. One person with cirrhosis had on-treatment virological failure.

DRUG INTERACTIONS BETWEEN HCV AND HIV MEDICATIONS

Drug-drug interactions are a key consideration in treating HIV/HCV co-infected people, and close attention must be paid to ARVs that are not recommended or require dose adjustment.

The DAA regimen sofosbuvir/velpatasvir/voxilaprevir is not recommended to be taken with the following ARVs:

Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

- efavirenz (Sustiva)
- etravirine (Intelence)

Protease inhibitors (PIs)

- atazanavir (Evotaz)
- ritonavir (Norvir)

- lopinavir/ritonavir (Kaletra)

Efavirenz causes a 50% decrease in velpatasvir exposure and atazanavir causes a 4-fold increase in voxilaprevir exposure. Sofosbuvir/velpatasvir/voxilaprevir also increases tenofovir DF (Viread) exposure and kidney function should be monitored in people on an antiretroviral therapy (ART) regimen containing tenofovir DF.

MORE INFORMATION

MedlinePlus: Hepatitis C

NIH National Institute of Diabetes and Digestive and Kidney Diseases: Hepatitis C

American Association for the Study of Liver Diseases (AASLD) and the Infectious Diseases Society of America (IDSA): Guidelines for testing, managing, and treating HCV

REFERENCES

1. Cox, AL, El-Sayed, MH, Kao, JH, et al. 2020. Progress towards elimination goals for viral hepatitis. *Nat Rev Gastroenterol Hepatol* **17,** 533–542. https://doi.org/10.1038/s41575-020-0332-6.
2. Thomas DL. 2019. Global Elimination of Chronic Hepatitis. *N Engl J Med.* May 23;380(21):2041-2050. doi: 10.1056/NEJMra1810477.
3. Stanaway JD, Flaxman AD, Naghavi M, Fitzmaurice C, Vos T, Abubakar, et al. 2016. The global burden of viral hepatitis from 1990 to 2013: findings from the Global Burden of Disease Study 2013. *Lancet.* Sep 10;388(10049):1081-1088. doi: 10.1016/S0140-6736(16)30579-7.

Reviewed July 2024