

# Hepatitis C

## **What is hepatitis?**

Hepatitis means inflammation of the liver. Hepatitis can be caused by medications, herbal remedies, chemicals, toxins, alcohol, autoimmune diseases, and viruses.

## **Hepatitis C**

Hepatitis C is a liver disease caused by a specific type of virus called hepatitis C virus (HCV). Hepatitis C virus has 6 different genotypes and more than 50 subtypes (1a, 1b, 2a, 2b, 2c, 3a, 3b, 4a, 5a, 6a). Genotype and subtype refers to the genetic make-up and strain of the virus. In the US, 70 percent of people are infected with genotypes 1a and 1b and 10 to 20 percent with genotypes 2 and 3. The type of genotype that someone has is a very useful piece of information regarding the duration and the likelihood to achieve a sustained viral response to interferon therapy. Genotype 1 is the most difficult one to treat.

## **Diagnosis**

The diagnosis of hepatitis C infection is based on the individual medical history, the risk of exposure to hepatitis C virus (HCV), and confirmed by blood tests. Often, more than one blood test is necessary to diagnose hepatitis C infection. Antibody tests are used to detect the presence or absence of hepatitis C antibodies (anti-HCV) in the blood. Initially, two antibody tests are used; the EIA (enzyme immunoassay), which is usually done first. If this test is positive, which means the test detects hepatitis C antibodies (anti-HCV), then a second test called RIBA (recombinant immunoblot assay) will be used to confirm the EIA test results. These antibody tests do not tell whether the hepatitis C is new (acute), chronic (long-term) or the infection is no longer present. Finally, another test called polymerase chain reaction (PCR) is used to detect the presence of hepatitis C virus genetic material (HCV RNA) in the blood. The PCR test is the final test to confirm the diagnosis of hepatitis C infection.

## **Symptoms**

### **Acute hepatitis C**

Hepatitis C infection has two phases. The first one, the acute phase, which lasts for 6 months from the time of exposure to the hepatitis C virus (HCV) till the onset of the symptoms. It is during the acute phase that the virus (HCV) finds its way to live and reproduce inside of liver cells. Quite often the acute phase is not recognized because most people have no early signs and symptoms. Some people, up to 20 percent, may experience flu-like symptoms; fever, chills, headache, fatigue, and muscle aches with nausea, vomiting, fatigue, poor appetite along with elevated liver enzymes (ALT) that may be associated with some degree of liver injury. Rarely, the acute hepatitis C results in severe or fatal liver condition called fulminant hepatitis. During the acute phase, first 6 months, only 15 percent of people are able to clear the hepatitis C virus (HCV).

## **Chronic hepatitis C**

Approximately, 85 percent of people, whose immune system failed to clear the virus within 6 months, will have the virus for the rest of their lives, and will move to the second phase called chronic phase. During the chronic phase few people have symptoms. Some may complain of bouts of fatigue, pain or discomfort on the right upper side of the abdomen, nausea, and joint pain. The presence of symptoms does not always indicate the degree and severity of the infection to the liver.

### **Progression**

Hepatitis C is a very slow progressive disease that affects people in many different ways. Its progression, manifestation, and outcome can greatly vary among people over a period of 20- 30 years. Here are possible outcomes associated with the progression of chronic hepatitis C:

25% of people have no symptoms or serious liver damage with normal levels of liver enzymes (ALT). Usually liver biopsy shows some degree of chronic inflammation, but the degree of injury is usually mild, and the overall prognosis in these people is fairly good.

40-50% of people may have few or mild symptoms with mid to moderate elevated liver enzymes, but not enough to be severely detrimental to their health. In these people, progression of liver disease is difficult to predict.

Up to 20 % of people will have severe hepatitis C symptoms, elevated liver enzymes, and who are at risk to develop cirrhosis (scar tissue between liver cells), which can lead to end-stage liver disease. 1-5% of people with cirrhosis are at risk to develop liver cancer each year. Liver cancer (hepatocellular carcinoma) may develop on an average 20- 30 years later after being diagnosed with chronic hepatitis C. In the U.S., hepatitis C is the leading cause of liver transplant.

Although it is difficult to predict how someone will progress with chronic hepatitis C, researchers have identified factors that may influence and accelerate the progression of the disease. These factors include; male gender, age at time of exposure to the HCV (greater than 40 years old), consumption of alcohol, and co- infection with hepatitis B or HIV.

## **Hepatitis C and HIV**

People living with chronic hepatitis C and HIV are at greater risk of liver damage than people infected with hepatitis C alone. Studies have shown that HIV accelerates the progression of hepatitis C infection. The decision to treat individuals with both infections; HIV and HCV infection is complex. For more information, refer to "Hepatitis C virus (HCV) and HCV/HIV Co-infection handbook (version IV)" prepared by Jules Levin, Executive Director at NATAP.

## **Transmission**

Hepatitis C virus (HCV) is primarily transmitted by blood and blood products. In the US, 60 - 90 percent of people infected with hepatitis C have either received blood transfusions prior to 1990 (when screening of the blood supply for HCV was implemented) or have

used intravenous drugs with contaminated needles, syringes, and drug paraphernalia. Sexual transmission between monogamous couples is rare, but the risk may increase to 10% in individuals who have multiple sexual partners. Transmission from mother to fetus is also a relatively low risk, less than 6 percent, but the risk increase to 17 percent if the mother is HIV positive. Individuals who have received long-term treatment for kidney problems (hemodialysis) in the past may also have been exposed. Sharing non-sterile needles for body piercing, acupuncture, tattooing is considered also a high risk. Up to 30 percent of infected people with HCV have no obvious risk factors. Finally, you don't get hepatitis C by hugging, kissing, shaking hands or other casual contact with someone living with hepatitis C.

### **Treatment**

Over the last decade, considerable advancement has been accomplished in the treatment of hepatitis C. Make sure that you see a liver specialist called hepatologist or gastroenterologist who is knowledgeable in all aspects of hepatitis C care and treatment.

### **Goal of treatment**

The goal of treatment of chronic hepatitis C is to eliminate HCV outside of the body (eradication), slow disease progression from fibrosis to cirrhosis, prevent the development of liver cancer, and improve quality of life.

### **Combination therapy**

Currently, the best treatment option to treat chronic hepatitis C is the combination of two medications: pegylated interferon and ribavirin. Two types of pegylated interferon are available: peginterferon alpha-2a (Pegasys) and peginterferon alpha-2b (Pegintron). Both pegylated interferons are taken by injection under the skin once a week. Ribavirin, an antiviral oral medication is given twice a day according to body weight. Ribavirin is also available in two types as Rebetol or Copegus.

### **Interferon alpha monotherapy**

People in whom ribavirin is contraindicated are treated with pegintron by itself (monotherapy) for a period of 48 week regardless the genotype.

The duration of treatment is base on HCV genotype and the treatment option chosen to treat hepatitis C. Individuals with HCV genotype 1, the duration of treatment is 48 weeks and combination therapy is effective in 40 to 45 percent of people. In individuals with genotype 2 and 3, the duration of treatment is 24 weeks and combination therapy is effective in 70 - 80 percent. The efficacy of treatment is define as a sustained viral response meaning HCV viral load remaining undetectable six months after treatment is completed.

The following factors are predictors associated with better response to hepatitis C treatment: individuals with genotype 2 and 3 respond better to treatment than individuals who have genotype 1, hepatitis C viral load less than 2 million, mild to moderate levels of liver enzymes (ALT), adherence to therapy, and abstinence from alcohol and drug use while on treatment.

**Who should be treated?**

Combination therapy of pegylated alpha interferon and ribavirin are recommended to people who have documented chronic hepatitis C on liver biopsy, elevated liver enzymes (ALT), and no contraindication to alpha interferon and ribavirin. In addition, co infected people with both HCV and HIV are also eligible to receive combination therapy as long as they have any contraindications to treatment.

**Side effects**

Most people taken interferon therapy experience early side effects such as flu-like symptoms; fatigue, fever, chills, headache, muscle and joint aches. Usually these symptoms tend to be more severe shortly (6-8 hours) after the injections. Other side effects may include tiredness, skin irritation at the injection site hair loss, low blood count, trouble with thinking, moodiness, and depression. In cases of interferon side effects, often dosage is reduced. Interferon can not be offered to people who have history of severe depression, active drug or alcohol abuse, autoimmune disease, low white or red blood cell count, and are not able to practice and use birth control method. Pregnant women should not be treated with interferon.

Ribavirin most common side effects are anemia (low red blood cell count), fatigue, irritability, rash and nose stuffiness and cough. Ribavirin is also known to cause birth defects. Pregnancy should be avoided during treatment. Anyone taking ribavirin, whether male or female, should use effective contraception 6 months after the treatment is completed. When taken in combination, pegylated interferon and ribavirin may cause shortness of breath, throat irritation, itching, rash, nausea, difficulty sleeping, and loss of appetite.

Informed your doctor if you experience any of the above side effects. Sometime, your doctor may be able to lower the dosage of the drugs to reduce the side effects. Flu-like symptoms can be managed by taking low dose of acetaminophen before treatment.

**Prevention**

At this point, there is no vaccine for hepatitis C. You should get vaccinated against hepatitis A and B. People living with hepatitis C and others should practice safe sex, cover open wounds, and not share needles, razors, toothbrushes, manicure tools or other items that could be contaminated with infected blood with anyone. Individuals should consider the risk about getting a tattoo or body piercing. You might get infected if the tools have someone else's blood on them or if the tattoo artist does not follow good health practices.

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