

HEPATITIS C CONDITIONS OUTSIDE OF THE LIVER:

Mixed Cryoglobulinemia, Kidney Disease, and B-Cell Non-Hodgkin's Lymphoma

Hepatitis C: It's About More than Liver Disease

Chronic infection with the hepatitis C virus (HCV) can have health effects beyond the liver. This fact sheet highlights three well-studied conditions that HCV can cause in parts of the body other than the liver.

MIXED CRYOGLOBULINEMIA



What is it?

A blood disorder.

As the immune system fights HCV, it produces proteins that clump together in the blood. This buildup of proteins restricts the flow of blood and damages blood vessels.



How common is it?

40-60% of HCV patients have this buildup of abnormal proteins in their blood.

But only **5-10%** of these individuals show symptoms or develop complications.¹



Symptoms

Patients who have symptoms may experience:

- Purple or red spots on the skin, most commonly seen on the legs
- Joint pain
- Weakness
- Tingling, burning, or numbness in the arms and/or legs
- Numb, cold fingers and/or toes, which may become discolored



Complications

Symptomatic patients are also at risk for more serious health effects:

20-30% develop kidney disease caused by inflammation of the blood vessels that supply blood to the kidneys.¹

5-10% develop cancer of the lymph nodes.²

More information about these related conditions can be found below.

Diagnosis

Healthcare providers often identify this condition based on symptoms, when they are present. A blood test can be performed to confirm the diagnosis.

Note that many individuals with this condition will not initially have any symptoms, but they could develop symptoms later on. It is important for patients to talk to their providers about monitoring for this condition.



Treatment*

HCV treatment is the most effective way to treat this disorder. Complex cases may require treatment with additional medications.

The risk of developing this condition increases the longer an individual has HCV. Therefore, early HCV treatment can prevent complications associated with this disorder from occurring.

** All treatment should be done in consultation with a licensed healthcare provider.*

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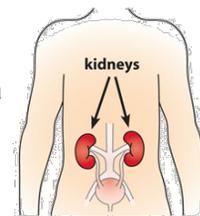
KIDNEY DISEASE



What is it?

The main function of the kidneys is to filter out waste from the body. Kidney disease occurs when this function is disrupted.

Kidney disease in HCV patients is often caused by an abnormal buildup of proteins (a condition called mixed cryoglobulinemia, see page 1) in the membranes of the kidneys. Kidney disease can also occur as a secondary effect of other HCV-related conditions. For example, cirrhosis of the liver often causes the kidneys to fail. HCV patients with diabetes may also suffer from kidney damage.



Source: NIH (NIDDK)

(See our other fact sheets for more information about the relationship between HCV and diabetes.)

How common is it?

~33%

of HCV patients develop kidney disease.³

Symptoms

Patients in the early stages of kidney disease may not have any symptoms. When symptoms of kidney disease do occur, they may include:

- Blood in the urine (urine may be red or brown in color)
- Protein in the blood (urine may appear foamy)
- Increase in blood pressure
- Swelling in the hands, feet, and/or face

Complications

Patients with severe kidney damage may require dialysis or a kidney transplant. If left untreated, kidney failure can occur and may result in death.

Kidney disease can also increase an individual's risk of heart disease.

Diagnosis

A urine test to detect the presence of blood or protein is usually the first step in diagnosing kidney disease.

Other tests may include an ultrasound of the kidney or a biopsy of kidney tissue.

Treatment*

- HCV treatment can be used to treat and/or prevent the development of HCV-related kidney disease.
- Serious cases of kidney disease may require other medications.
- Monitoring kidney function may be required for HCV patients taking certain medications.

* All treatment should be done in consultation with a licensed healthcare provider.

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B-CELL NON-HODGKIN'S LYMPHOMA



What is it?

A type of cancer that affects the immune system. It occurs when there is an abnormal increase in the number of B cells (a type of immune system cell) produced by the body.

How common is it?

~2%

of HCV patients will develop this condition.⁴ It is more likely to occur in individuals who have a blood disorder called mixed cryoglobulinemia (see page 1).

Although this condition is rare, it is very serious and can be fatal.



Symptoms

Some symptoms include:

- Swollen lymph nodes (often in the neck, groin, or armpit)
- Fever, chills, and/or night sweats
- Weight loss
- Fatigue



Complications

This type of cancer can lead to death if it is not treated. Survival rates depend on factors such as how aggressive the cancer is, how advanced it is when identified, and the patient's age.

If detected early, however, treatment can be very successful.



Diagnosis

Diagnosis is made through a procedure where a section of lymph node tissue is removed from the body and examined under a microscope.

Additional tests may be performed to determine how advanced the cancer is.

Treatment*

- HCV medications are a key part of treatment for HCV patients with this condition.⁵
- Patients with advanced stages of cancer may also need chemotherapy to treat their cancer either before or during HCV treatment.
- Early HCV treatment can also help prevent this type of cancer from developing.

* All treatment should be done in consultation with a licensed healthcare provider.

1 Saadoun, David, et al. "Hepatitis C-associated mixed cryoglobulinemia: a crossroad between autoimmunity and lymphoproliferation." *Rheumatology*, vol. 46, no. 8, 2007, pp. 1234-42.

2 Zignego, Anna Linda, et al. "HCV and lymphoproliferation." *Journal of Immunology Research*, 2012, doi:10.1155/2012/980942.

3 Moorman, Anne C, et al. "Prevalence of renal impairment and associated conditions among HCV-infected persons in the Chronic Hepatitis Cohort Study (CHeCS)." *Digestive Diseases and Sciences*, vol. 61, no. 7, 2016, pp. 2087-93.

4 Dal Maso, Luigino and Silvia Franceschi. "Hepatitis C virus and risk of lymphoma and other lymphoid neoplasms: A meta-analysis of epidemiologic studies." *Cancer Epidemiology, Biomarkers & Prevention*, vol. 15, no. 11, 2006, pp. 2078-85.

5 Tasleem, Syed and Gagan K Sood. "Hepatitis C associated B-cell non-Hodgkin Lymphoma: clinical features and the role of antiviral therapy." *Journal of Clinical and Translational Hepatology*, vol. 3, no. 2, 2015, pp. 134-9.