Hepatitis C and the Brain

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Hepatitis C may be a liver disease, but it affects other parts of the body. The hepatitis C virus (HCV) can cause skin problems, kidney disease and immune disorders. Injuries beyond the liver are called extrahepatic manifestations, and although I've listed some, my short list by no means covers all of them.

We often overlook the fact that HCV also affects the brain, although we've known this for many years. Patients call this brain fog. Unfortunately, brain function is difficult to measure. There aren't blood tests or easy diagnostic scans that can easily tell us when the brain is not working at its best. Doctors have tools to measure cognitive function and memory, but these are easily influenced by other conditions. I'll discuss more about that in a moment.

There are two common ways in which the brains of people living with hepatitis C might be affected: directly by HCV or when hepatic encephalopathy occurs.

Directly by the virus - Various studies over the years have compared the brains of people with HCV to those without HCV. These studies are small, but point to clear differences. At this point, it is probably safe to say there is an association between HCV and brain disturbances, but it is too soon to establish causality.

A recent study published in the Journal of NeuroVirology by Tino Prell and colleagues (Prell, T., Dirks, M., Arvanitis, D. et al. J. Neurovirol. (2019). https://doi.org/10.1007/s13365-018-0709-2) found more evidence of this. Researchers followed 9 HCV-positive women with mild liver disease and 5 healthy controls up after 6–7 years. The women with HCV had significantly worse fatigue and depression scores and significantly poorer performance on attention and memory tests than controls. They found clear structural alterations in the brains of patients with chronic HCV, alterations which worsened over time.

Note: Although this study did not investigate what happens after HCV treatment, other studies have found that there seems to be a complete return of cognitive ability after successful HCV treatment.

Hepatic encephalopathy –This condition isn't directly caused by HCV; it can be a result of cirrhosis. Hepatic encephalopathy (HE) is a brain disorder that develops when the liver is unable to remove ammonia and other toxins from the body. HE may cause impaired concentration, sleep disturbances, confusion, or coma.

When I was working in the liver clinic, nearly every hep C patient that I talked to lived in fear of HE, despite the fact that you won't have it unless you have cirrhosis. Although I wasn't at risk for it because I didn't develop cirrhosis, memory lapses made me a little nervous.

About seven out of ten people with cirrhosis develop HE, although many cases are mild. Early HE diagnosis is critical, and may help reduce HE progression. People with chronic liver disease are at greater risk of developing a more chronic form of the disorder where symptoms get worse or continue to come back, known as "HE recurrence."

HE may begin with subtle changes in behavior, mental state, and thinking ability. HE is graded on a scale of zero to four.

- Grade 0 is hard to detect. In this stage, there are memory changes, impaired concentration, slight decrease in intellectual function, or loss of coordination.
- Grade 1 includes a short attention span, sleep problems and mood changes such as depression or irritability.
- Grade 2 is when forgetfulness is noticeable. Energy levels are low; speech may be slurred; doing simple mental tasks such as math or spelling may be difficult. Patients may have tremors, deterioration of handwriting and decreased small motor coordination. They may have shaking of the hands or "flapping" when the arms are held up front of the body with hands lifted like someone making a motion telling someone to "stop."
- Grade 3 is severe HE. Patients in this stage don't know where they are, what the day is, or who the president is. They are confused and sleepy. Patients feel anxious and their behavior may be strange.
- Grade 4 is the last stage of HE, occurring when the patient is comatose.

Don't try to diagnose yourself. Most of us have days when we feel like we have grade 2 HE. Low energy and forgetfulness happen to everyone, even those without liver disease. If you have cirrhosis and those around you suspect that you have HE, see your doctor.

In the meantime, the important things to remember are:

Memory loss and feeling dazed and out of it are common occurrences with many causes. You will notice memory and thinking difficulties if you are tired, stressed or anxious. Sleep, stress reduction and meditation are the pillars for improved cognitive function.

Forgetting where you put your keys is normal; forgetting what your keys do is not. Driving and forgetting where you are or what you drove past in the last 10 minutes is normal. Wondering what

the round thing between your hands is, is not.

Dehydration and electrolyte abnormalities may trigger HE. Other conditions that may lead to HE are metabolic abnormalities, infection, constipation, surgery, eating too much protein, kidney problems and insufficient levels of oxygen in the body.

Treating HE

A variety of medications are used to treat HE, the most common being lactulose. Lactulose is a laxative that absorbs ammonia from the blood and carries it out via the colon. Lactulose is effective in reducing HE symptoms, but it comes with a price: diarrhea, flatulence, bloating, and other gastric problems. Neomycin, rifaximin, metronidazole, zinc, and probiotics are also used to treat HE. An article published June 2014 in Clinical Gastroenterology and Hepatology found that three months of probiotic administration significantly reduced measurable signs of HE, and was effective in preventing HE in patients with cirrhosis. (Probiotics Prevent Hepatic Encephalopathy in Patients with Cirrhosis by Manish Kumar Lunia, et al.)

Patients with HE should consult with their medical providers before taking all medications. Drugs that suppress the central nervous system, such as sedatives and tranquilizers may worsen the symptoms. Alcohol and recreational drugs may also intensify HE. Drugs containing ammonium, including certain antacids, should be avoided.

Treating the underlying liver condition or liver transplantation may reverse HE or improve the symptoms. Since hepatitis C is a leading cause of end-stage liver disease, it makes sense that if hepatitis C is cured BEFORE they develop cirrhosis, patients will be spared the misery of HE.

For those who want a more in depth look at HE, read the practice guidelines issued by the American Association for the Study Liver Diseases.

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