You Know of Hepatitis A, B and C. Here's HUC: Hepatitis of Unknown Cause

Hepatitis of unknown cause (HUC) was the source of an outbreak linked to bottled alkaline water; 21 people got sick and one died.

December 23, 2021 By Trent Straube

Most everyone has heard of hepatitis A, B and C viruses (HAV, HBV and HCV). But sometimes the cause of the hepatitis remains mysterious. Health experts refer to such cases as hepatitis of unknown cause (HUC).

After conducting an investigation, health experts recently concluded that HUC was behind a hepatitis outbreak last year in Nevada and California traced to the alkaline drinking water, reports Infectious Disease Special Edition. At least 21 people became sick from the HUC, and one person died.

According to reports from earlier this year, about a dozen cases of acute nonviral hepatitis had been reported in the Nevada outbreak. In one instance, a father and son experienced severe liver damage and became candidates for liver transplants. Some of the hepatitis cases in the outbreak dated back to August and November of 2020, and the only link between the cases is the alkaline drinking water brand Real Water.

The outbreak prompted the Food and Drug Administration (FD) to issue a voluntary recall of Real Water. Here's an FDA tweet, dated March 26, 2021, about the outbreak:

> The FDA, along with our federal, state and local partners are continuing to investigate reports of acute non-viral hepatitis in the state of Nevada associated with "Real Water" brand alkaline water. The firm has issued a

recall: https://t.co/W6O2QbXD75

pic.twitter.com/XCPvieaAUY

— Frank Yiannas (@FrankYiannasFDA) March 26, 2021

The brand ceased to exist as of June 1, 2021, according to Infectious Disease Special Edition.

“It’s pretty common in toxicological outbreak investigations that the substance or toxin that caused the illnesses is not identified,” Jeanne C. Ruff, MSN, MPH, an epidemic intelligence service officer with the Centers for Disease Control and Prevention, told the publication. “This investigation shows how we can still find the common link between cases and remove the source of the outbreak, even when many questions remain unanswered.”

Much remains unknown about HUC, but it seems to be rare. It’s challenging to attain a better understanding of HUC, Ruff said, “because trends in HUC are not monitored and because it’s only diagnosed after other conditions have been ruled out, which makes it hard to look for in public health data.

Hepatitis refers to inflammation of the liver, a vital organ that acts as the body’s filter. As the Hepatitis Basics Introduction points out, hepatitis has several possible causes:

- Toxins and chemicals such as excessive amounts of alcohol
- Autoimmune diseases that cause the immune system to attack healthy tissues in the body
- Fat, which may cause fatty liver disease
- Microorganisms, including viruses.

Hepatitis A virus (HAV), hepatitis B virus (HBV) and hepatitis C virus (HCV) infect liver cells called hepatocytes, which provide the best conditions for these viruses to reproduce. In response to the infection, the body’s immune system targets the liver, causing inflammation (hepatitis). If the hepatitis is severe (which can happen with HAV and HBV) or goes on for a long period of time (which can happen with HBV and HCV), hardened fibers can develop in the liver, a condition called fibrosis.

Over time, more and more normal liver tissue can be replaced by hardened scar tissue, which

can obstruct the normal flow of blood through the liver and seriously affect its structure and ability to function properly. This is called cirrhosis. If the liver is severely damaged, blood can back up into the spleen and the intestines, which can result in high pressure in these organs. Consequences of this condition—called portal hypertension—include bleeding (variceal bleeding) and fluid in the abdomen (ascites). Significant liver damage can also reduce the production of bile needed for proper digestion, and it can decrease the liver's ability to store and process nutrients needed for survival. Other effects of a damaged liver include the inability to remove toxins from the bloodstream, which can eventually lead to mental confusion and even coma (hepatic encephalopathy).

There are five viruses known to affect the liver and cause hepatitis: HAV, HBV, HCV, the delta hepatitis virus (HDV, which only causes problems for people infected with HBV) and hepatitis E virus (HEV).

The Hepatitis Basics Introduction adds:

As with so many diseases, we've come a long way in understanding viral hepatitis, notably two chronic and serious forms: hepatitis B and hepatitis C. Several drugs are now on the market to manage hepatitis B, and a growing number of agents are available to cure hepatitis C in more than 90 percent of people who are treated. At the same time, we're continually learning how to use approved medications much more easily and effectively.

Medicine is also making progress in managing and treating other forms of hepatitis and liver disease such as non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), alcohol-related liver disease, autoimmune hepatitis, and primary biliary cholangitis (PBC).
