Hep C Can Enter the Human Brain

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The hepatitis C virus (HCV) not only affects liver cells, it may also establish infection in other cells, notably those associated with the central nervous system (CNS), according to a University of Birmingham, England, study reported by HealthCanal.com.

Though it is unclear if these new findings help explain the increased risk of CNS problems in people living with chronic HCV infection, they do suggest that the CNS is a reservoir for the virus that is not easily reached by HCV treatments; the findings may also explain why therapy does not always cure the infection.

The blood-brain barrier—a network of microvascular endothelial cells—is responsible for keeping microscopic objects, such as hostile microorganisms, out of the brain. “If this barrier is compromised,” said lead author Nicola Fletcher, BSc, PhD, postdoctoral researcher at University of Birmingham, “all kinds of substances can gain access to the brain, which may explain the fatigue and other symptoms reported by HCV-infected patients.”

For the study, researchers examined brain tissue from 10 posthumous donors who had hepatitis C. The researchers found HCV in the brain cells of four of the donors.

Examination of endothelial brain cells verified that they have all the receptors needed for HCV to attach and enter those cells. Indeed, when cultured in the laboratory, these cells released infectious copies of the virus.

“This is the first report that cells of the central nervous system support HCV replication,” said corresponding author Jane McKeating, BSc, PhD, professor of molecular virology at the University of Birmingham. “These observations could have clinical implications providing a reservoir for the virus to persist during anti-viral treatment.”

In addition to barring the passage of microorganisms, the blood-brain barrier keeps out a wide range of larger molecules—including, Fletcher believes, many antiviral drugs currently under development. “HCV-infected brain microvascular endothelial cells may provide a reservoir for the virus to persist during anti-viral treatment,” Fletcher said.

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