

# New findings on hepatitis C in infants can lead to improved treatments

April 27 2020

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Electron micrographs of hepatitis C virus purified from cell culture. Scale bar is 50 nanometers. Credit: Center for the Study of Hepatitis C, The Rockefeller University.

Only about 5% of babies born to mothers with hepatitis C are themselves infected by the disease. A possible reason for this low figure is that the baby's immune system has already destroyed the virus before birth. Researchers at KI now have a possible explanation for the low infection

risk. A new study from researchers at Karolinska Institutet published in the journal *Gut* reveals clear adaptations of the uninfected babies' immune system that could lead to new treatment methods.

"The immune system of the healthy babies shows similar changes to that in babies infected with hepatitis C," says Niklas Björkström, doctor and researcher at the Department of Medicine, Huddinge at Karolinska Institutet. "This could suggest that the immune cells have encountered the virus in the womb and managed to eliminate it before birth."

The study was conducted with Maternity Hospital No. 16 in Saint Petersburg, Russia. Of the 55 [pregnant women](#) participating, 40 had an active hepatitis C infection, while the others had antibodies after a previous infection.

The babies born to women with an active infection were all considered exposed to the virus; despite this, only three of these 40 babies developed hepatitis C.

All the infants were monitored up to the age of 18 months through regular testing, and to increase the volume of comparable data, samples were added from 18 infants who had been infected with hepatitis C at birth.

The study showed that both the babies born with an infection and the babies who had been exposed to the virus by an infected mother had similar changes in their adaptive [immune system](#), with clear adaptations of the B lymphocytes, the role of which is to produce antibodies able to discover and identify alien microbes, such as viruses, bacteria and parasites.

"A possible explanation is that most [babies](#) exposed to the virus in utero manage to deal with it, which we can later see by the B lymphocytes,"

says Dr. Björkström. "One interesting hypothesis is that these cells can contain novel information that we can use to protect ourselves against hepatitis C in the future."

Some 70 million people around the world live with hepatitis C, a disease that if left untreated leads to liver cirrhosis and liver cancer. Thanks to the recent development of efficacious drugs, the WHO hopes to see the disease eliminated globally by 2030. However, drugs cure only an ongoing infection and there is currently no vaccine.

"Which is why we need to continue researching [hepatitis C](#)," Dr. Björkström says. "We need to understand what it'll take to obtain lasting protection against the [virus](#). Only then can we attain the WHO goal."

The researchers will now be investigating whether more [immune cells](#) in the infants have changed in a similar way.

**More information:** "Evidence for B cell maturation but not trained immunity in uninfected infants exposed to hepatitis C virus" Anton Lutckii, Benedikt Strunz, Anton Zhirkov, Olga Filipovich, Elena Rukoiatkina, Denis Gusev, Yuriy Lobzin, Björn Fischler, Soo Aleman, Matti Sällberg and Niklas K. Björkström , *Gut*, online 27 April 2020.

Provided by Karolinska Institutet

Citation: New findings on hepatitis C in infants can lead to improved treatments (2020, April 27) retrieved 26 April 2024 from <https://medicalxpress.com/news/2020-04-hepatitis-infants-treatments.html>

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