

Novel economical blood test for hepatitis C

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A novel blood test could bring a breakthrough in the battle against the dangerous hepatitis-C virus. This procedure offers a considerably cheaper alternative to the normal commercial tests, whilst maintaining equal sensitivity. So now, for the first time, poorer countries will also have the opportunity to monitor their entire blood banks for the hepatitis C virus using optimum methods.

This procedure has been developed by researchers at Bonn University and the Bernhard-Nocht Institute for Tropical Medicine in Hamburg. Scientists from Brazil, Singapore, South Africa and England were also engaged in this research. The study will appear in the journal "*PLoS Medicine*" on 10th February.

170 million people worldwide have already become infected with the hepatitis C virus. The early stages of the disease often go unnoticed. However, later symptoms include liver cancer and mortally dangerous liver cirrhosis. One of the chief sources of infection lies in contaminated blood banks, which is why all the bloodbanks in Europe or the USA are routinely tested for the hepatitis C virus. However, the poorer countries cannot afford this, or they have to rely on out-dated tests of inadequate sensitivity. The new procedure could change all this. "In Brazil, a standard hepatitis C test costs over 100 dollars a sample - for us, in contrast, the cost lies at just under 19 dollars", declares Dr. Jan Felix Drexler. 10 dollars of this are licence fees - several major pharmaceutical companies hold patents for the genome of the hepatitis C virus.

Dr. Drexler, who has been engaged in the development of this new test procedure, has just removed from the Bernhard-Nocht Institute in Hamburg to Bonn University. The procedure functions, in principle, in exactly the same way as most of the commercial tests hitherto available on the market: all these procedures recognise genotype sequences in the blood, which originate from the hepatitis C virus. However, the problem is that various types of pathogen exist, whose genotypes are sometimes very different. A good blood test ought to raise the alarm equally well for each of these types. "In Asia, for example, we often find different hepatitis C viruses from ours", says Dr. Drexler. "But when a tourist becomes infected in Thailand and subsequently donates blood in Germany, we must be able to diagnose these blood samples without fail, too".

600 Blood Samples examined

At many points, however, the genotypes of diverse pathogens are to a great extent identical. Geneticists speak here of conserved regions, and all commercial tests have been "specialised" with respect to one of these points. The new procedure, in contrast, reacts when it detects sequences from a different conserved region which has not so far been used for HCV diagnosis. Working on the basis of just under 600 blood samples from five different countries, researchers were able to demonstrate just how well this functions. "We are, at least, just as sensitive as the two best standard procedures", emphasises Professor Dr. Christian Drosten, a virologist from Bonn University. "This is true for all types of virus".

Passes Practical Test in Brazil

So now, for the first time, poorer countries also have the chance to test their blood banks, and at comparatively small cost. "This would be a significant breakthrough for containing the disease", Dr. Drexler

stresses. "After all, transfusions are a major source of propagation". In one Brazilian laboratory the new blood test has already been given trials on 127 patients - with outstanding success. In this latest publication, the researchers reveal every detail of their methods. "For anyone wishing to use this test we can also supply the control reagents", Dr. Drexler declares. Commercial suppliers, in contrast, maintain the strictest secrecy regarding the precise data of their tests.

But this procedure will not only detect the presence of an infection with hepatitis C viruses. Doctors can also determine the total concentration of the viruses in the blood. Hence this blood test can also be used, for example, for monitoring therapeutic success. According to Dr. Drexler, "In this way we could spare many patients months of expensive treatment, and the unpleasant side-effects, too".

Source: University of Bonn

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