People with leukaemia are more prone to infection – but not from one particular herpes virus

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People with chronic lymphocytic leukaemia (CLL) are essentially more prone to infections such as varicella, influenza or pneumococci due to the reduction in the number of antibodies that their condition causes. Researchers at the MedUni Vienna's University Department of Internal Medicine I have now discovered that this doesn't apply to the cytomegalovirus (CMV).

As part of their research into the presently incurable condition of chronic lymphocytic leukaemia (CLL), the scientists led by Katrina Vanura and study leader Christoph Steininger have discovered that CLL patients have increased numbers of antibodies against the cytomegalovirus.

Around 80 Austrians develop chronic lymphocytic leukaemia each year, and around 500 people currently attend the Clinical Department of Haematology and Haemostasiology with the condition. These patients are on average 65 years old, as the condition progresses slowly and is often diagnosed secondary to an incidental finding. The cytomegalovirus (CMV) is a DNA virus that belongs to same class as the herpes virus and is carried in its "dormant" form by around 60 per cent of the population. People with an intact immune system have nothing to fear from CMV.

In patients who are immunosuppressed following transplants, people with HIV and people who, for any other reason, have a weakened immune system, however, CMV can have serious consequences: fevers lasting weeks, raised liver enzymes and even severe organ damage. Says Steininger: "CMV is also the most common viral cause of deformities during pregnancy since the introduction of the rubella vaccine." As a result, a preventative CMV vaccination for mothers-to-be could be used alongside their immunisations against rubella in order to prevent deformities of or developmental problems with the embryo.

Previous research into the development of a CMV vaccine confirmed

Two vaccinations against the cytomegalovirus are currently already in phase II / III studies. In the current CLL study, the Vienna researchers were able to demonstrate that the development of a CMV vaccine is focusing on the correct protein, namely glycoprotein B. During an initial

infection, the immune system forms defence factors against a variety of virus proteins, but if a further infection occurs it only remembers a small group of viral proteins, to which glycoprotein B belongs.

Dormant CMV virus is constantly being fought in CLL patients

Unlike other infections, cases of CMV among CLL patients are of lesser consequence. This is most likely due to the fact that the immune system successfully fights the dormant CMV virus whenever it is reawaken, thereby training the system up. Even in the later stages of leukaemia, there are still adequate defence factors available to prevent the virus from causing illness.

More information: Vanura K, Rieder F, Kastner M-T, Biebl J, Sandhofer M, et al. (2013)" Chronic Lymphocytic Leukemia Patients Have a Preserved Cytomegalovirus-Specific Antibody Response despite Progressive Hypogammaglobulinemia." *PLoS ONE* 8(10): e78925. DOI: 10.1371/journal.pone.0078925

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