

Blood problems

Last updated May 2012/ Due for review May 2014

Over time, untreated HIV infection usually leads to a fall in the number of blood cells called **CD4 cells**, which are an important part of the immune system (the body's defence system). Looking at the number of CD4 cells in a small sample of blood (a CD4 count) is one of the key monitoring tests in routine HIV care. In people with HIV who have higher CD4 counts (over 350 cells/mm³), blood problems such as those described below are not common. In people taking HIV treatment these problems are rare, with the exception of anaemia, which can be a side-effect of the anti-HIV drug AZT (zidovudine, *Retrovir*).

People with HIV who have a low CD4 count (where some damage to the immune system has occurred) sometimes also experience reductions in the numbers of certain other cells in their blood. Some of these problems may be caused by damage to the bone marrow where blood cells are produced. HIV can damage the bone marrow by infecting its cells directly, or by disrupting levels of natural chemicals (called growth factors) that help bone marrow cells develop. The bone marrow may also be affected by some drugs or the illnesses that can develop if you have a weak immune system (opportunistic infections). A decrease in blood cells can also be caused by the destruction of cells in the circulation or by bleeding disorders such as haemophilia.

Apart from a decline in CD4 cells, the three most common blood problems among people with HIV are anaemia, neutropenia and thrombocytopenia. They are all detected using standard blood tests that you should have as part of your normal HIV care.

Anaemia

Anaemia means a shortage of red blood cells. Red blood cells transport oxygen around the body, so anaemia can cause symptoms of tiredness and breathlessness. It can be a side-effect of AZT, although it is rare among people with CD4 counts above 200. AZT is now rarely used if you are starting HIV treatment. If you are taking AZT and develop anaemia you may be able to change to a different drug. But AZT is an important drug option for some people, particularly during pregnancy.

To treat anaemia, doctors can prescribe an injected drug called erythropoietin. This stimulates the body to produce more red blood cells. People with severe anaemia may need blood transfusions to top up their red blood cells. If the anaemia was caused by taking a drug, after it has been treated it may be possible to resume taking the drug, this time at a lower dose.

Anaemia can also be caused by some opportunistic infections, including MAI. If these are treated the anaemia normally improves.

Neutropenia

Neutropenia means a shortage of neutrophils. These are a type of white blood cell that mainly attack bacteria and fungi, so people who have neutropenia are at increased risk from these infections. The most common cause is the anti-HIV drug AZT, the anti-CMV drug ganciclovir or drugs used to treat cancers and tumours. People with HIV often have slightly lower levels of neutrophils than people who don't have HIV, but serious neutropenia is rare among people with CD4 counts above 200.

Neutropenia can be treated by reducing the dose or stopping the drug which is causing it. Alternatively, if the neutrophil count falls very low (below 500) doctors may prescribe G-CSF, a drug which stimulates the body to produce white blood cells and has been shown to improve neutropenia and reduce the risk of infections. An alternative drug called GM-CSF also encourages the production of neutrophils, but has the unwanted effect of increasing levels of HIV viral load too, unless this is suppressed using HIV treatment. Both of these drugs are given by injection.

Thrombocytopenia

Thrombocytopenia means a shortage of platelets, which are cells that help the blood to clot. People who have thrombocytopenia may bruise very easily or, in serious cases, develop uncontrollable bleeding. HIV can infect the cells in the bone marrow that produce platelets. HIV can also confuse the immune system into attacking platelets in the circulation and removing them using the spleen, an organ in the abdomen. Thrombocytopenia can also be caused by drugs such as ganciclovir.

Thrombocytopenia caused by HIV can be treated with anti-HIV drugs, especially AZT. If it is caused by other treatments, it is treated by reducing their dose or using alternative drugs. Some cases may be treated using mild doses of steroids or intravenous immunoglobulin. In severe cases, doctors may remove the spleen (splenectomy).