Factsheet Lactic acidosis

Key points

- Lactic acidosis refers to a build-up of lactic acid in the blood.
- It is a rare but dangerous side-effect of some anti-HIV drugs – most of these are no longer in regular use.
- Your HIV clinic will use blood tests to check your levels of lactic acid.

Lactic acidosis is very rare. Nevertheless, it is an important subject to understand because people who develop the condition can become dangerously ill.

Lactic acidosis is a serious side-effect of the nucleoside reverse transcriptase inhibitor (NRTI) class of anti-HIV drugs. This class includes abacavir (*Ziagen*), didanosine (ddI, *Videx*), lamivudine (3TC, *Epivir*), stavudine (d4T, *Zerit*), tenofovir (*Viread*) and zidovudine (AZT, *Retrovir*).

The drugs most linked with lactic acidosis are stavudine and didanosine. However, neither of these drugs is now used if any other treatment options are available, mainly because of the side-effects they can cause. Lactic acidosis is also a potential, but rare, side-effect of other drugs, including the commonly prescribed diabetes drug, metformin.

The term lactic acidosis is used to describe high levels of a substance called lactate in the blood. Lactate is a by-product of the processing of sugar within the body.

Causes

Lactic acidosis is one of several conditions which are believed to be caused by damage to mitochondria.

Mitochondria are found in all human cells and are involved in the production of energy. Other possible side-effects of NRTIs which may also be associated with damage to mitochondria include peripheral neuropathy (numbness or pain in the feet and hands); bone marrow suppression; pancreatitis (inflammation of the pancreas); hepatic steatosis (accumulation of fat in the liver); and myopathy (muscle damage).

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As well as attacking HIV, NRTIs disrupt an enzyme (polymerase gamma) which mitochondria need to reproduce. This reduces the number of functioning mitochondria. Long-term usage of NRTIs therefore increases some people's risk of developing lactic acidosis. Obesity is another risk factor. In addition, women may be at greater risk than men, and there is some evidence of a link with severe infection and malnutrition.

Lactic acidosis may occur at any time during HIV treatment, but it tends to develop after several months of treatment. It is rare – even with stavudine and didanosine, fewer than one person in a hundred develops it. With newer NRTIs, it is even less common, with estimates of one person in a thousand, or one person in ten thousand for some drugs.

Signs and symptoms

Lactate is usually processed by the liver. If it begins to build up in the blood, symptoms include general stomach symptoms such as nausea (feeling sick), vomiting, bloating, abdominal pain and lack of appetite, as well as malaise (feeling generally unwell), and difficulty in breathing. Of course, these symptoms can also occur for many other reasons.

In people who have lactic acidosis, the liver may be swollen and tender (hepatomegaly), and liver enzymes, which are measured by a liver function test, may be abnormally high. Other signs which may be detected on laboratory tests include low bicarbonate, raised lactate, and deteriorating kidney function. Other symptoms include deep, rapid breathing or hyperventilation, drowsiness, worsening muscle weakness, sudden weight loss and irregular heartbeat.

If you think that you may have lactic acidosis, contact your doctor immediately. If you have a risk of lactic acidosis, your HIV clinic can test for it.

Potential treatments

If you have other treatment options available to you, the best treatment for raised lactate levels might be to switch from the drugs causing the problem.

Find out more

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Health checks Basic leaflet with pictures

Neuropathy - nerve pain Simple factsheet

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Author: Greta Hughson
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