



Health Concerns

Lactic Acidosis

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What is lactic acidosis?

Lactic acidosis is a rare but very serious condition caused by too much lactate in the blood. Lactate is a chemical produced during the energy production processes in cells. When lactate level is high, the blood becomes too acidic and can be harmful to the cells in the body.

What causes lactic acidosis?

Lactic acidosis is caused by damage to mitochondria. Mitochondria are structures in our cells and they convert the food we eat to produce the energy we need to function.

Normally, mitochondria use oxygen to turn glucose (sugar) into energy. If there is not enough oxygen or if the mitochondria do not work properly, cells must make energy in a different way. Making energy without oxygen produces lactic acid as a byproduct. Lactic acid is quickly converted into lactate in the blood and makes the blood more acidic. Normally, lactate is broken down by the liver.

In people with lactic acidosis, their lactate level is abnormally high (hyperlactemia), this can occur either because they produce too much lactate, or if their liver cannot break down the lactate properly.

Who is at risk for lactic acidosis?

People with HIV who take the class of anti-HIV medications known as Nukes or nucleoside reverse transcriptase inhibitors (NRTI) are at risk for lactic acidosis.

NRTIs may cause lactic acidosis by two ways: by damaging mitochondria and by damaging the liver.

NRTIs damage the mitochondria because they block at least one of the proteins needed by the mitochondria to work properly. When mitochondria do not work properly, excess lactic acid is produced.

NRTIs can also cause the liver to become fatty. A fatty liver does not work well and cannot break down the lactate efficiently, therefore increasing the level of lactate in the blood.

Although all NRTIs can lead to high lactate levels, people taking Zerit (d4T) and Videx (ddI, didanosine) seem to be at greater risk than people taking other NRTIs.

In addition, women, particularly pregnant women, people who are overweight, and people with Hepatitis C who takes Rebetrol (ribavirin) are also at increased risk for lactic acidosis.

What are the signs and symptoms of lactic acidosis?

Symptoms and signs of lactic acidosis may include:

- Nausea, vomiting and abdominal pain
- Unexplained severe tiredness and weight loss
- Rapid breathing, difficulty breathing



- Loss of appetite
- Enlarged or tender liver
- Muscle cramps or pain
- Numbness or tingling in fingers and toes
- Muscle weakness that rapidly gets worse
- Abnormal heart beat

What is the treatment for lactic acidosis?

If there is evidence of lactic acidosis, it is generally recommended that the NRTI medications should be stopped. In serious cases, hospitalization with intravenous fluid replacement may be necessary. Some people may even require a machine to help them breathe.

A number of medications have been suggested and tried to prevent and treat lactic acidosis, these include:

- riboflavin (Vitamin B2)
- thiamine (Vitamin B1)
- anti-oxidants such as NAC and alpha lipoic acid
- acetyl L-carnitine
- coenzyme Q10
- Vitamins C, E & K

However, the effectiveness of these treatments have not been consistently proven in clinical studies.

What can I do if I think I have lactic acidosis?

At present there is no test that can clearly predict who is at risk for lactic acidosis. Lactate level is not a test that can be done easily and accurately to be useful in routine screening of the condition. If you think you are at risk or have symptoms of lactic acidosis, contact your doctor for detailed assessments of your symptoms. Do not stop your anti-HIV medications until you have talked to your doctor.

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