Preventing kidney damage among lithium patients: a NetWellness column

By Plain Dealer guest columnist
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Question: I have been taking lithium for bipolar treatment for a number of years. Recently I was told I could have kidney damage from lithium use. Have I been taking too much, and how would I know? I was also told that, in order to help retain my kidney function, I needed to maintain my daily sodium intake at around 4-5 grams. Can you explain why?

Answer: Lithium is a prescription medication indicated for the treatment of depression and bipolar disorders. It stabilizes the mood by acting on nerve cells of the central nervous system, resulting in changes in levels of neurotransmitters such as serotonin and dopamine.

Kidney damage

The most common effect that lithium has on the kidneys is to impair the ability to make a concentrated urine. A person taking lithium tends to produce larger than normal amounts of dilute urine, and as a result also has to drink more water in order to keep up with the water lost through the kidneys. This effect of lithium does not damage the kidneys, but does result in more urination, more thirst, and more fluid intake than normal.

Carefully-monitored use of lithium usually causes no damage to the kidneys. However, there is a risk of kidney damage, especially:

1) when lithium has been used for a number of years,
2) when blood lithium levels are high, or
3) when lithium use is combined with other conditions that may result in decreased kidney function, including:
   - Diabetes
   - Smoking
   - High cholesterol
   - Medications

These include ACE inhibitors such as lisinopril, enalapril, and quinapril; angiotensin-receptor blockers such as losartan, valsartan and candesartan; and non-steroidal pain relievers such as ibuprofen, naproxen

Family history of kidney disease

Are you taking too much lithium?

This week's NetWellness column is authored by Dr. Mildred Lam, a nephrologist at MetroHealth Medical Center and an associate professor at the Case Western Reserve University School of Medicine.

Get more information, visit the Kidney Diseases health center.

See previous NetWellness columns.
Common side effects of taking too much lithium ("lithium toxicity") include:

- Nausea
- Vomiting
- Diarrhea
- Confusion
- Muscle weakness
- Lack of coordination
- Tremor
- Blurred vision
- Ringing in the ears

If any of these symptoms are present, they could be a warning that blood lithium levels are too high. It is important to discuss these symptoms with a doctor.

Why sodium intake in lithium users should be carefully monitored and kept constant

Lithium has some functions similar to sodium in the body, so the total intake of sodium also needs to be regulated. Large variations in sodium intake may result in a change in the way the kidney handles lithium, and may increase the chance of lithium toxicity and of kidney damage.

The actual amount of sodium in the diet is probably not as important as keeping the amount as constant as possible from day to day. If sodium intake is constant, the dose of lithium can be adjusted to give the desired blood levels. Typical sodium intake in an American diet is about 5-6 grams per day. A so-called "no-added-salt" diet contains about 4 grams per day and is not too hard to follow: it involves avoiding very salty foods and not adding salt at the table.

However, trying to achieve a daily intake of sodium of less than 4 grams per day may be difficult to do reliably from day to day, and could therefore result in dangerous fluctuations in blood lithium levels.

What you should know

- **Take your lithium all at once** - Taking lithium in several daily doses will not make a difference in your chances of developing toxicity. In fact there is some evidence (not conclusive) that it's better to take the lithium all in one daily dose.

- **Damage is slow** - The main factor in lithium-induced kidney damage is the length of time that a person has been taking lithium, especially if it is more than 10 years. The damage that occurs tends to be very slowly progressive and generally mild.

- **The damage is permanent** - Stopping the lithium will not reverse the damage, but it will probably keep it from getting worse.

Talk to your doctor

Be sure to let your doctor know if you experience any symptoms of taking too much lithium. A nutritionist may be helpful in regulating your sodium intake. You may also want to explore with your doctor the possibility of another medication. In this day and age, many physicians are avoiding the use of lithium and are switching patients from lithium to other drugs that have the same mood-stabilizing effects but are much safer to take over a long period of time.

References

- Dr. Robert M. Goetz, "What are the Effects of Taking Hydrocodone with Lithium?", NetWellness, 2009
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