

Don't drink the water - at least, not too much

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Sharon Kirkey , Canwest News Service

Canadian doctors are warning that drinking too much water may cause loss of kidney function - something they discovered purely accidentally.

Researchers who have been studying the health of residents of Walkerton, Ont., since the water supply was contaminated with E. coli in 2000, identified 100 otherwise healthy adults who had a condition called proteinuria, or abnormal amounts of protein in their urine.

None had any medical conditions or were on medications that would explain why.

Proteinuria can cause kidney failure and is a sign of microvascular disease, where the heart's tiny arteries are damaged, causing cardiac disease and cardiac death.

Of the 100 people, 56 agreed to follow-up testing and to reduce their fluid intake to fewer than eight large glasses per day for one week.

The result? The cases of proteinuria were "largely reversed."

"When we were in Walkerton we were surprised that almost five per cent of the population were drinking very large volumes of fluid," said Dr. William Clark, a scientist at Lawson Health Research Institute in London, Ont., and professor of medicine at the University of Western Ontario.

"We went on the supposition that this must be because of the water contamination," meaning that when people moved to bottled water, they drank more. But Clark, project leader of the Walkerton Health Study, said most admitted to drinking vast amounts of water before the contamination crisis, for health reasons.

They were drinking, on average, at least four litres of fluid per day. "That would be about 18 large glasses of fluid per day," Clark said. Some people were drinking six litres. One woman, a health care worker, was drinking eight.

"They didn't like it when we asked them to reduce their fluid intake, although they did do it," Clark said.

"Most corrected their kidney abnormality. Some did not correct completely, meaning they may have a permanent bit of damage."

The study is published in this week's issue of the Canadian Medical Association Journal.

"If you go on the Internet you'll get at least 500 hits on how healthy it is to drink as much water as humanly possible," Clark says. "Some health magazines recommend people drink a minimum of 12 to 15 glasses of fluid per day."

His team has been screening the population of Walkerton to track for health syndromes associated with E. coli damage. The big, silent problem is kidney damage.

The researchers measured urine protein levels from 2,253 adults who later attended a follow-up clinic annually between 2003 and 2005.

One day Clark saw 20 patients for kidney abnormalities who had increased protein excretion in the urine, "which we know is not only a marker of damage but causes damage." The condition causes progressive loss of kidney function and accelerates aging of the kidney.

After excluding diabetes or any other explanation that could cause the problem, "we still ended up with 100 people who had no explanation whatsoever," Clark says. On average, they were excreting almost three times the normal rate.

Treatment was simple, Clark says. "When they drank less water, the problem went away."

What's not known is "whether the proteinuria associated with excessive fluid intake in these otherwise healthy people will affect their kidney function in the long term," the researchers write in this week's journal article.

Until the final data is in, "it may be advisable to discourage otherwise healthy people from consuming large volumes of water."

"This was something we've never conceived of. It's not reported anywhere," Clark said in an interview.

"We're surprised at the high number of the general population who drink excessive quantities of fluid for no known health benefit." And he doesn't think the data is unique to Walkerton. "We're drinking lots of water, and people think it's healthy."

"We would recommend until we know better that maybe eight glasses of fluid a day is fine but probably less than six is better, unless you're in a very arid climate or carrying out marathon running or massive exertion or have a particular kind of kidney damage and you lose salt."

Fluid means "all fluids," including coffee, tea and juice.

Clark says flushing the kidneys doesn't help kidney function. What's more, a study in 2003 found that drinking lots of fluid speeds up kidney damage in people with impaired kidney function.

"We also know from New York marathon that those who died and who had cardiac arrhythmias and

got into difficulty were the younger, inexperienced marathon runners who drank too much fluid." Even doctors believe the medical myth that people should drink at least eight glasses of water a day, according to an article published last month in the British Medical Journal, in which researchers traced the notion back to a 1945 recommendation from the U.S. Nutrition Council that said people should drink the equivalent of about eight glasses of fluid per day.

Ignored in the original statement was that most of the fluid people need is found in food, especially fruits and vegetables, the researchers said.

Clark recommends people drink when they're thirsty.

[skirkey@canwest.com](mailto:skirkey@canwest.com)

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Excessive fluid intake as a novel cause of proteinuria

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Research letter

William F. Clark, MD, Claude Kortas, MD MEd, Rita S. Suri, MD MSc, Louise M. Moist, MD MSc, Marina Salvadori, MD, Matt A. Weir, MD, Amit X. Garg, MD PhD for the WEL Investigators

From the Department of Medicine (Nephrology), London Health Sciences Centre (Clark, Kortas, Suri, Moist, Weir, Garg), and the Division Infectious Diseases, Children's Hospital of Western Ontario (Salvadori), University of Western Ontario, London, Ont.

WEL (Walkerton E. coli Long-term) Investigators: William F. Clark, Rita S. Suri, Louise M. Moist, Amit X. Garg and John Howard, Department of Medicine (Nephrology), London Health Sciences Centre, London, Ont.; Marina Salvadori, Division of Infectious Diseases, Children's Hospital of Western Ontario, London, Ont.; and Douglas Matsell, Department of Pediatrics, University of British Columbia, Vancouver, BC

Abstract

As part of a community screening study to assess the long-term health outcomes among residents of Walkerton, Ontario, after contamination of its municipal water supply by *Escherichia coli* O157:H7 and *Campylobacter* in 2000, we identified 100 adults who had proteinuria and polyuria but no medical history or medication use to explain their condition. Fifty-six of the 100 participants underwent both initial and confirmatory urine concentration tests, which showed that their urine osmolality could reach normal levels. We then instructed them to reduce their fluid intake to less than 2 L/d for 1 week. The proteinuria and polyuria were largely reversed by this manoeuvre. We do not know at this time whether the proteinuria associated with excessive fluid intake in these otherwise healthy people will affect their kidney function in the long term.

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Written by: JOHN MINER

Nov. 26, 2004

LONDON, Ont. -- Drinking water when you're not thirsty could be harmful to your health, according to a surprise finding of medical researchers studying the health fallout from Walkerton's tainted water tragedy.

"We think we have the rare opportunity to identify a problem that will have a huge impact on the general population," Bill Clark, a kidney specialist and chair of the Walkerton Health Study, said yesterday.

The research might have particular implications for people following popular low-carbohydrate diets that stipulate they should consume eight 236-millilitre glasses of water a day.

"We suspect people on the Atkins diet and all these other groups that are encouraged to drink large volumes of fluid every day, that it may actually be deleterious," Clark said.

"We think you should actually drink water when you are thirsty," Clark said.

The Walkerton research group, which draws scientists from the Lawson Health Research Institute, London Health Sciences Centre, University of Western Ontario and McMaster University, discovered 107 of the town's 5,000 residents produced an abnormally high volume of urine that contained protein.

Researchers expect to find that condition in one in a million people.

It was originally suspected that the condition was due to kidney damage from the E. coli contamination of the town's water system in May 2000 which killed seven people and sickened more than 2,600.

But Clark said it now appears that the high urine volumes are brought on by the residents drinking excessively large volumes of water.

"It looks like people who are taking large volumes of fluid develop protein in the urine. We know that that, over an extended period of time, will cause kidney damage."

Clark said the researchers suspect the problem probably exists in the general population but has not been identified. Among other findings reported to residents last night:

- Eighty-four per cent of participants in the study reported being in good to excellent health.
- Among those in fair to poor health, 82 per cent reported their health had remained stable or improved since last year.
- The majority of children who had kidney problems do not have persisting abnormalities.

Clark said some Walkerton residents are suffering serious health problems because of the E. coli contamination and it has had a significant effect on the quality of life of the community. But he is optimistic researchers will be able to identify any long-term progressive diseases and largely prevent "major negative outcomes."

Walkerton residents have a higher than expected incidence of diabetes, Clark said.

Work is still continuing to see if that is a result of the tainted water or due to other factors.