Excessive cola consumption can lead to super-sized muscle problems warn doctors

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Doctors have issued a warning about excessive cola consumption after noticing an increase in the number of patients suffering from muscle problems, according to the June issue of IJCP, the *International Journal of Clinical Practice*.

"We are consuming more soft drinks than ever before and a number of health issues have already been identified including tooth problems, bone demineralisation and the development of metabolic syndrome and diabetes" says Dr Moses Elisaf from the Department of Internal Medicine at the University of Ioannina, Greece.

"Evidence is increasing to suggest that excessive cola consumption can also lead to hypokalaemia, in which the blood potassium levels fall, causing an adverse effect
on vital muscle functions."

A research review carried out by Dr Elisaf and his colleagues has shown that symptoms can range from mild weakness to profound paralysis. Luckily all the patients studied made a rapid and full recovery after they stopped drinking cola and took oral or intravenous potassium.

The case studies looked at patients whose consumption ranged from two to nine litres of cola a day.

They included two pregnant women who were admitted with low potassium levels.

The first, a 21 year-old woman, was consuming up to three litres of cola a day and complained of fatigue, appetite loss and persistent vomiting. An electrocardiagram also revealed she had a heart blockage, while blood tests showed she had low potassium levels.

The second also had low potassium levels and was suffering from increasing muscular weakness. It turned out she had been drinking up to seven litres of cola a day for the last 10 months.

In a commentary on the paper, Dr Clifford Packer from the Louis Stokes Cleveland VA Medical Centre in Ohio relates the strange case of the ostrich farmer who returned from the Australian outback with muscle weakness. He had been drinking four litres of cola a day for the last three years and drank up to 10 litres a day when he was in the outback, causing a rapid reduction in his potassium levels.

He also relates a puzzling case he saw in his own clinical practice, which was solved when the patient turned up at his office with a two-litre bottle of cola in the basket of his electric scooter. It turned out he routinely drank up to four litres a day. He refused to stop drinking cola, but halved his consumption and the muscle weakness he had been complaining of improved.

In 2007 the worldwide annual consumption of soft drinks reached 552 billion litres, the equivalent of just under 83 litres per person per year, and this is projected to increase to 95 litres per person per year by 2012. However the figure has already reached an average of 212 litres per person per year in the United States.

It appears that hypokalaemia can be caused by excessive consumption of three of the most common ingredients in cola drinks - glucose, fructose and caffeine.

"The individual role of each of these ingredients in the pathophysiology of cola-induced hypokalaemia has not been determined and may vary in different patients" says Dr Elisaf.

"However in most of the cases we looked at for our review, caffeine intoxication was thought to play the most important role. This has been borne out by case studies that focus on other products that contain high levels of caffeine but no glucose or fructose.

"Despite this, caffeine free cola products can also cause hypokalaemia because the fructose they contain can cause diarrhoea."

The authors argue that in an era when portion sizes are becoming bigger and bigger, the excessive consumption of cola products has real public health implications.

"Although most patients recover when they stop drinking cola and take potassium supplements, cola-induced chronic hypokalaemia can make them more susceptible to potentially fatal complications, such as an irregular heartbeat" says Dr Elisaf.

"In addition, excessive consumption of any kind of cola can lead to a range of health problems including fatigue, loss of productivity and muscular symptoms that vary from mild weakness to profound paralysis.

"We believe that further studies are needed to establish how much is too much when it comes to the daily consumption of cola drinks."

Dr Packer agrees that the problem needs to be addressed.

"Cola drinks need to be added to the physician's checklist of drugs and substances that can cause hypokalaemia" he says.

"And the soft drink industry needs to promote safe and moderate use of its products for all age groups, reduce serving sizes and pay heed to the rising call for healthier drinks."

More information: Cola-induced hypokalaemia: pathophysiological mechanisms and clinical implications. Tsimihodimos. IJCP, International Journal of Clinical Practice. 63.6, 900-902. (June 2009). Commentary: Cola-induced hypokalaemia: a super-sized problem. Packer C. IJCP, International Journal of Clinical Practice. 63.6, 900-902. (June 2009).

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