

Roussel et al, 2011 – Low water intake and risk for new-onset hyperglycemia



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Introduction

Copeptin is a peptide co-secreted with the antidiuretic hormone vasopressin, which has recently been used as an indirect marker for bodily hydration. A recent epidemiological study has shown that copeptin is an independent risk factor for diabetes mellitus. This may be related to the expression of vasopressin receptors in the liver and pancreas, key organs involved in glycemetic regulation. The present study aimed to assess whether low water intake itself could be associated with an increased risk of hyperglycemia, the first step to diabetes. This hypothesis was tested in the cohort "DESIR", an epidemiological study of subjects in central France, with a nine-year follow-up period.

Key findings

The study included a total of 3615 adults (aged 30-65 years) with normal glycemia (defined as a fasting blood glucose level not exceeding 1.10 g/L). At inclusion in the study, the participants were administered a lifestyle questionnaire including quantitative estimates of their daily intake of water and other drinks. During the follow-up period, glycemic levels increased to higher than normal values in 565 subjects. Participants who reported drinking less than half a litre of water a day had a 29% higher risk of developing hyperglycemia than those who drank greater volumes. This trend was still observed following adjustment for confounding factors (i.e., gender, age, family history of diabetes and amount of alcoholic or soft drinks consumed). This result was also independent of the amount of physical exercise, and of professional and leisure activities.

Relevance for healthy hydration

The findings of this epidemiological study suggest that it may not be appropriate to keep a low daily water intake for sustained periods of time (subject to medical advice). The relevance of these results to "healthy hydration" should be further investigated in a well-controlled clinical trial involving subjects who spontaneously drink less than half a litre per day. This future study is intended to evaluate participants' metabolic risk profiles following an intervention consisting in a significant increase in water intake over a period of several weeks. Further experimental research is also required to delineate the mechanisms linking hydration status and glucose metabolism.

Roussel R, Fezeu F, Bouby N, Balkau B, Lantieri O, Alhenc-Gelas F, Marre M, Bankir L; D.E.S.I.R. Study Group. Low water intake and risk for new-onset hyperglycemia. Diabetes Care. 2011;34(12):2551-4. Epub 2011 October 12.

<http://www.ncbi.nlm.nih.gov/pubmed/21994426>