Impact of fluid intake in the prevention of urinary system diseases: a brief review (Lotan et al. 2013)

Introduction

We are often told that we should drink more water, but the rationale for this remains unclear and no recommendations based on scientific evidence are available today. Meanwhile, the prevalence of urinary tract pathologies continues to increase. It becomes necessary to identify new risk factors for these pathologies. Danone Research decided to organize a multidisciplinary experts meeting to review the scientific research assessing the role of water to prevent four diseases of the urinary system: urolithiasis, urinary tract infection, chronic kidney disease and bladder cancer. The panel of experts discussed a narrative review of the epidemiology, pathophysiology and clinical evidence for each pathology.

Key Findings

Urolithiasis is a high prevalent condition worldwide ranging from 7-13% in the US. Increased fluid intake may reduce the risk of recurrence of kidney stones by avoiding supersaturation of the urine. Borghi et al showed a 50% reduction of recurrence by achieving a diuresis of 2L /day (level Ib of evidence). However, data on primary prevention is still limited.

More than half of woman population will present at least one UTI during their lives. Increasing diuresis may have a diluting effect on bacteria, washing the epithelium and decreasing the adhesion area. Increased urine volume also decreases urine osmolality and acidity, which may difficult adhesion. However, experimental and clinical data supporting this hypothesis is still inconsistent.

CKD affects 14% of the adult population in the US. Main causes of the pathology are diabetes (44%) and hypertension (28%). Low drinkers have high vasopressin plasma concentration. This hormone chronically increased may causes glomerular hyperfiltration and kidney hypertrophia. However, clinical evidence for a beneficial role of water in CKD is scarce. Two recent observational studies (Strippoli et al and Clark et al 2011) support this hypothesis.

Bladder cancer: Bladder cancer is the fifth most common cancer. Main risk factors are exposure to cigarette smoking and occupational exposure to chemicals. Increasing fluid intake may result in rapid dilution and flushing of carcinogens from the bladder through increasing voiding. However, available literature on the topic is contradictory. It could be related to the presence of pollutants in water.

Relevance for Healthy Hydration

A significant part of the population worldwide has a fluid intake below the official recommendations. If the data about the protective effect of water for the urinary tract are confirmed, a simply increase in water intake at population level would have an great impact in public health by decreasing the prevalence of these pathologies and the associated health care cost.