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GREEN TEA CONSUMPTION IS ASSOCIATED WITH NOCTURIA IN A JAPANESE ELDERLY POPULATION

Hypothesis / aims of study

Nocturia is common in the elderly, and is one of the most troublesome urological symptoms. Multiple factors contribute to the occurrence of nocturia, including pathological conditions, such as cardiovascular disease, diabetes mellitus, renal dysfunction, lower urinary tract obstruction, anxiety disorders or primary sleep disorders, and various other behavioural factors.[1] Green tea has been reported to have various beneficial effects (e.g., anti-oxidant, anti-stress response and antiinflammatory effects) on human health.[2] Although these functions might be associated with the development and progression of nocturia, no studies have investigated the relationship between green tea consumption and nocturia in a community-dwelling population. The aim of this study was to investigate the relationship between green tea consumption and nocturia in elderly Japanese subjects who often consumed green tea.

Study design, materials and methods

We conducted a cross-sectional study in 633 community-dwelling elderly individuals in an urban district of northern Japan aged 70 y or more in 2003. Green tea consumption was assessed using a self-administered questionnaire, and nocturia was evaluated using a Comprehensive Geriatric Assessment. Frequency of consumption of green tea was categorized as ≤3 cups/wk, 4-6 cups/wk or 1 cup/d, and ≥4 cups/d. History of physical illness was evaluated on the basis of the response (yes or no) to questions concerning the individual's history of hypertension, ischemic heart disease, diabetes mellitus, hyperuremia, hyperlipidemia, and renal dysfunction.

Results

Of the 633 Japanese people included (28.6% participation rate), 347 were female and 286 were male. The median age was 75 (range 70 to 97). After adjustment for confounding factors, the odds ratios (95% CI) for mild and severe nocturia with higher green tea consumption were compared with green tea consumption of ≤3 cups/wk were as follows: 4 cups/wk (0.63; 95% CI: 0.43, 0.91) (P-value: 0.001). However, we did not observe any relationships between green tea consumption and the occurrence of hypertension, ischemic heart disease, diabetes mellitus, hyperuremia, hyperlipidemia, and renal dysfunction. (Table)

Interpretation of results

In this study, we found that high consumption of green tea was significantly related to a lower prevalence of nocturia. Green tea contains polyphenols, which include catechins and their derivatives. Catechins exhibit antioxidant, antiviral, and antiplaque-forming effects, as well as decreasing blood pressure and blood sugar. In this study, our primary hypothesis was that green tea may have a potentially beneficial effect on the prevention of nocturia symptoms for these effects. However, we did not observe any relationships between green tea consumption and the occurrence of hypertension, ischemic heart disease, diabetes mellitus, hyperuremia, hyperlipidemia, and renal dysfunction. Theanine might be another candidate to explain the observed inverse association between green tea consumption and nocturia. Theanine is one of the major amino acid components in green tea and can pass through the blood-brain barrier, which increases the brain serotonin and dopamine concentrations and inhibits bladder afferents. Another reason could be that green tea consumption is a unique form of social activity among Japanese and, this, in itself, may influence the symptoms of nocturia.

Concluding message

More frequent consumption of green tea was associated with a lower prevalence of nocturia in this community-dwelling older population. Because this study was a cross-sectional study, we could not conclude whether lower green tea consumption increased the occurrence of nocturia or whether nocturia led to a decline in green tea consumption. A prospective study or randomized trial will be necessary to clarify the causality.

Table. Odds ratio of noctutira (≥2 voids/night)

	Odds ratio	p
Green tea consumption (≥4 cups/wk)	0.63	0.015
Hypertension	0.95	0.696
Ischemic heart disease	2.13	0.001
Diabetes mellitus	1.24	0.255
Renal dysfunction	0.68	0.165

References

1. Neurourol Urodyn. 1998 17(5):467-72
2. Am J Clin Nutr. 2007 86(5):1539-47

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Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**The Ethics Committee Tohoku University School of Medicine**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**