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Uric acid and Parkinson's disease

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Body

Dear Editor,

We read the article entitled 'Association between serum uric acid (UA) concentration and clinical features of psoriasis' on the esteemed *Menoufia Medical Journal* with great interest. El Farargy *et al*. [1] aimed to link UA serum and clinical features of psoriasis. UA serum levels were positively correlated with the patient's age, duration, and area severity index score of chronic generalized psoriasis.

UA is the final oxidation product of purine catabolism in humans. Recently, it is being studied as a risk factor for the development of several diseases such as cardiovascular diseases, chronic kidney disease, hypertension, and metabolic syndrome. In this context, reduced UA concentration has been linked to Parkinson's disease (PD). PD is a neurodegenerative disorder characterized by bradykinesia and at least one other symptom of resting tremor or rigidity [2]. Herein, we would like to discuss recent articles about UA levels and PD (Fig. 1).

Kim and colleagues retrospectively investigated the association between gout and Parkinson in Korea. In total, 327 160 patients with gout and 327 160 matched controls were selected from the National Health Insurance Service database. During follow-up, 912 patients with gout and 929 control participants developed PD. The incidence rate of overall PD was not significantly different between both groups. No association between gout and PD was identified in the univariate analysis. Interestingly, dyslipidemia was a protective factor for the development of PD. These results are opposite when compared with other American studies. Therefore, this discrepancy may occur due to genetic differences between Asians and other ethnic groups. It is worthy of mentioning that PD is a relatively rare disease, with a lower prevalence in Asian populations [3].

UA is an important natural antioxidant that can powerfully scavenge peroxyl radicals. So, it can reduce oxidative stress potentially decreasing neuroinflammation and the risk for the development of neurodegenerative diseases. In a Romanian study, it was observed that lower UA levels were significantly associated with parkinsonism severity (r_s = 0.488, P = 0.002), with long-term dopaminergic adverse events (r = 0.333, P = 0.027), and with neurocognitive decline (r = 0.346, P = 0.021) [4]. Thus, further research about UA diets should be done to provide possible therapeutical benefits of modifiable risk factors.

Shi and colleagues studied the relationship between serum UA levels and nonmotor symptoms and brain gray-matter volume in PD individuals. Receiver-operating characteristic curve analysis showed that serum UA levels had good predictive accuracy for dysphagia, anxiety, depression, apathy, and cognitive impairment in patients with PD. Moreover, the total brain volume in the PD subjects with lower UA levels was significantly lower than that in the PD individuals with higher UA levels [5]. These findings can support the hypothesis that UA plays a critical neuroprotective effect in dopaminergic neurons by regulating neuroinflammation and oxidative stress.

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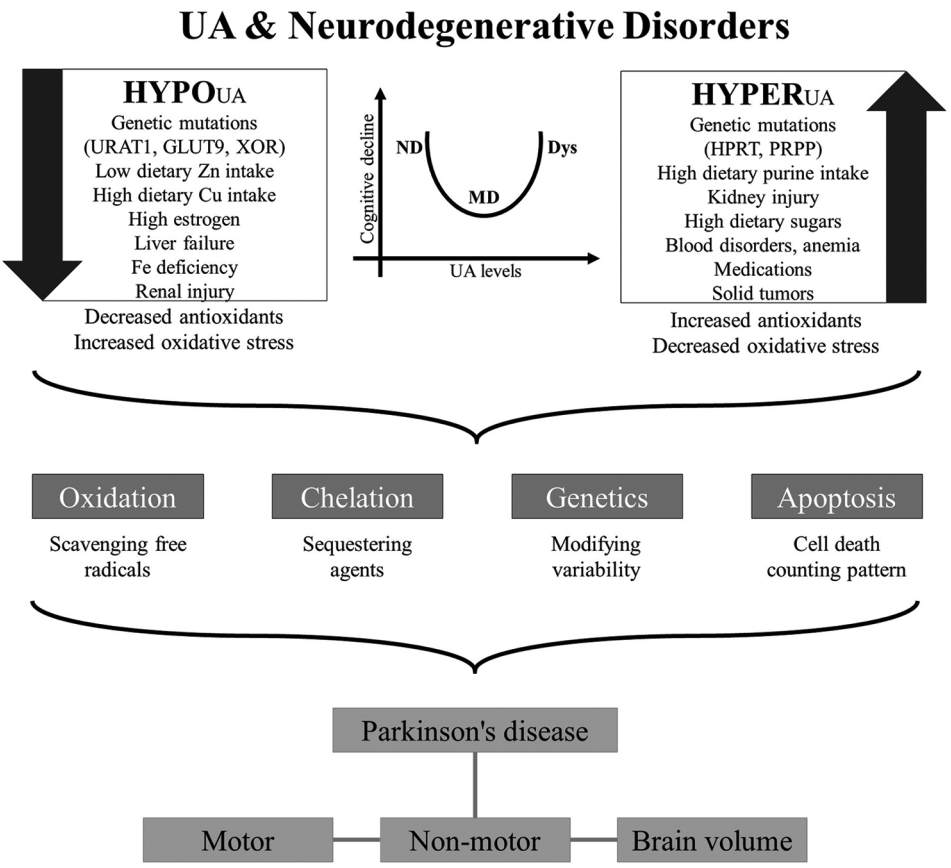
Figure 1



Uric acid and Parkinson's disease. Parabolic association between uric acid, neurodegenerative disorders, and cardiometabolic diseases. Probable mechanisms of uric acid in the development of neuroinflammation: oxidation, chelation, genetics, and apoptosis. UA was already linked to motor/nonmotor symptoms and brain gray-matter volume of patients with PD. Dys, dysmetabolic syndrome; MD, mixed dementia; ND, neurodegenerative disorders (Parkinson's disease, Alzheimer's disease); UA, uric acid.

Conflicts of interest

There are no conflicts of interest.

References

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