

The Relationship between Homocysteine and Uric Acid Levels in Gouty Patients

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To the Editor:

We read with great interest the article by Choi et al. entitled with "Elevated serum homocysteine levels were not correlated with serum uric acid levels, but with decreased renal function in gouty patients" published in a recent issue of *Journal of Korean Medical Science* (1). Choi and colleagues have shown that serum uric acid levels were not significantly different between gout and healthy control groups, while serum homocysteine levels were significantly higher in patients with gout compared to controls. They concluded that hyperhomocysteinemia was not correlated with serum uric acid, but it was inversely associated with impaired renal function. This study is important because it provides scientific information on this clinically relevant condition. However, we think that some points should be discussed.

Homocysteine is an essential sulphur-containing amino acid (2, 3). An elevated homocysteine level is a risk factor for cardiovascular, cerebrovascular and peripheral vascular diseases (2, 4). High homocysteine levels may be affected by several factors including poor absorption of vitamin B6, B12 and folic acid, and impaired renal function, male sex, smoking, high blood pressure, heavy coffee consumption, and exercise status, and serum cholesterol levels (4, 5). These factors could have affected the results of the study. Authors did not explain this status.

In addition, the methylenetetrahydrofolate reductase (MTHFR) is a significant enzyme for homocysteine metabolism (4, 6). Higher homocysteine levels observed in patients in this study groups may be due to MTHFR mutations. Authors did not examine the mutations in the MTHFR gene.

In conclusion, these data could provide the readers of the journal clearer information to evaluate the levels of serum homocysteine and uric acid in gouty patients.

REFERENCES

1. Choi ST, Kim JS, Song JS. *Elevated serum homocysteine levels were not*

correlated with serum uric acid levels, but with decreased renal function in gouty patients. J Korean Med Sci 2014; 29: 788-92.

2. Akgül EÖ, Çakır E, Özcan Ö, Yaman H, Býlgý C, Erbyl MK. *A comparison of three high performance liquid chromatographic (HPLC) methods for measurement of plasma total homocysteine. Turk J Med Sci* 2005; 35: 289-95.
3. Türkeli H, Cayci T, Akgül EÖ, Macit E, Yaman H, Aydın I, Demirin H, Alacam H, Ozkan E, Cakir E, et al. *Paraoxonase-1 activity determination via paraoxon substrate yields no significant difference in mild hyperhomocysteinemia. Int J Cardiol* 2010; 145: 42-3.
4. Yaman H, Akgül EO, Kurt YG, Cakir E, Gocgeldi E, Kunak ZI, Macit E, Cayci T, Erbil MK. *Plasma total homocysteine concentrations in a Turkish population sample. Acta Cardiol* 2009; 64: 247-51.
5. Refsum H, Nurk E, Smith AD, Ueland PM, Gjesdal CG, Bjelland I, Tverdal A, Tell GS, Nygård O, Vollset SE. *The Hordaland Homocysteine Study: a community-based study of homocysteine, its determinants, and associations with disease. J Nutr* 2006; 136: 1731S-40S.
6. Zhou BS, Bu GY, Li M, Chang BG, Zhou YP. *Tagging SNPs in the MTHFR gene and risk of ischemic stroke in a Chinese population. Int J Mol Sci* 2014; 15: 8931-40.

The Author Response:

We would like to thank for the helpful comments regarding our paper in *J Korean Med Sci* (1). In this study, we have evaluated the associations between serum homocysteine levels and high blood pressure or serum cholesterol levels. Serum homocysteine showed a negative correlation with systolic blood pressure ($\gamma = -0.265$, $P = 0.017$), but no correlations with cholesterol profile (Fig. 2D of our paper) (1). In the multivariate linear regression analysis, however, there was no correlation between serum homocysteine and systolic blood pressure (Table 3 of our paper) (1).

Since the intakes of vitamin B6, cobalamin and folic acid and the male sex may influence the levels of serum homocysteine (2), we think the absence of these data is one of the limitations in our study, which was mentioned in the discussion section of the paper. We believe that the evaluation of other factors in gouty patients, such as smoking status, heavy coffee consumption, exercise status and methylene tetrahydrofolate reductase mutation can be a good study subject as well.

REFERENCES

1. Choi ST, Kim JS, Song JS. *Elevated serum homocysteine levels were not correlated with serum uric acid levels, but with decreased renal function in gouty patients. J Korean Med Sci* 2014; 29: 788-92.
2. Refsum H, Nurk E, Smith AD, Ueland PM, Gjesdal CG, Bjelland I, Tver-

dal A, Tell GS, Nygård O, Vollset SE. *The Hordaland Homocysteine Study: a community-based study of homocysteine, its determinants, and associations with disease. J Nutr 2006; 136: 1731S-40S.*

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