



Letter to the Editor

Comment on “Serum uric acid is associated with better executive function in men but not in women: Baseline assessment of the ELSA-Brasil study”



Keywords:
Cognition
Uric acid
Hyperuricemia
Executive function

Dear Editor,

I read with interest the study by Baena et al., in which they aimed to investigate whether serum uric acid (SUA) is associated with cognitive performance in healthy middle-aged participants. In the study, they evaluated men and women separately, and found that SUA is associated with better performance on an executive function test in men, but not in women (Baena et al., 2017). I think that some methodological issues should be considered while determining SUA effects on cognitive functions.

SUA level, associated with the development of cognitive impairment, poor physical performance, renal and cardiovascular diseases, is regulated by gender, dietary habit, genetic predisposition, and renal function (Seki et al., 2010). Up to now, many studies have demonstrated that the optimal cut-off values for SUA to predict metabolic syndrome, insulin resistance, cardiovascular profile, development of gout etc., are different in women from men (Seki et al., 2010; Zhang et al., 2013). This is because the sex-specific effects can change both uric acid metabolism and cellular effects, due to sex–diet, sex–gene and gene–diet interactions (Beydoun et al., 2017). Thus, the definition of cut off hyperuricemia varies for women and men. For example, SUA ≥ 7.7 mg/dL for men or ≥ 6.6 mg/dL for women was associated with incidence of gout in Taiwan's National Health study (Chen et al., 2012). In another study, hyperuricemia was defined using SUA concentrations >4.4 mg/dL for women and 6.3 mg/dL for men, to determine risk for chronic kidney disease and metabolic syndrome (Seki et al., 2010). Furthermore, whether hyperuricemia is present or not may be more important to find out the relationship between uric acid and its potential effects in humans than assessment of the SUA levels in particular cross

sectional studies like in Tuven et al. study (Tuven et al., 2017). Therefore, if Baena et al. analyzed their data according to not only SUA, but to hyperuricemia as well, the results could also be significant in women due to the fact that the cut-off values for hyperuricemia are lower in women than in men.

In conclusion, the study contributes valuable data to medical literature, but the studies investigating uric acid and cognition should evaluate participants' data according to both SUA levels and the presence of hyperuricemia, using different cut-off signs of gender. Thus, they will provide a clearer picture to the readers.

Conflict of interest

No.

References

- Baena, C.P., Suemoto, C.K., Barreto, S.M., Lotufo, P.A., Benseñor, I., 2017. Serum uric acid is associated with better executive function in men but not in women: baseline assessment of the ELSA-Brasil study. *Exp. Gerontol.* 92:82–86. <http://dx.doi.org/10.1016/j.exger.2017.03.010> (Epub ahead of print. Mar 11).
- Beydoun, M.A., Canas, J.A., Fanelli-Kuczmariski, M.T., Tajuddin, S.M., Evans, M.K., Zonderman, A.B., 2017. Genetic risk scores, sex and dietary factors interact to alter serum uric acid trajectory among African-American urban adults. *Br. J. Nutr.* 27: 1–12. <http://dx.doi.org/10.1017/S0007114517000411> (Epub ahead of print. Mar).
- Chen, J.H., Yeh, W.T., Chuang, S.Y., Wu, Y.Y., Pan, W.H., 2012. Gender-specific risk factors for incident gout: a prospective cohort study. *Clin. Rheumatol.* 31 (2):239–245. <http://dx.doi.org/10.1007/s10067-011-1802-6> (Epub 2011 Jul 15. Feb).
- Seki, S., Tsutsui, K., Fujii, T., Yamazaki, K., Anzawa, R., Yoshimura, M., 2010. Association of uric acid with risk factors for chronic kidney disease and metabolic syndrome in patients with essential hypertension. *Clin. Exp. Hypertens.* 32 (5):270–277. <http://dx.doi.org/10.3109/10641960903265220>.
- Tuven, B., Soysal, P., Unutmaz, G., Kaya, D., Isik, A.T., 2017. Uric acid may be protective against cognitive impairment in older adults, but only in those without cardiovascular risk factors. *Exp. Gerontol.* 89:15–19. <http://dx.doi.org/10.1016/j.exger.2017.01.002> (Epub 2017 Jan 4. Mar).
- Zhang, M.L., Gao, Y.X., Wang, X., Chang, H., Huang, G.W., 2013. Serum uric acid and appropriate cutoff value for prediction of metabolic syndrome among Chinese adults. *J. Clin. Biochem. Nutr.* 52 (1):38–42. <http://dx.doi.org/10.3164/jcbn.12-65> (Epub 2012 Oct 24. Jan).

Pinar Soysal
Kayseri Education and Research Hospital, Geriatric Center, Kayseri, Turkey
E-mail address: dr.pinarsoyal@hotmail.com.

9 April 2017