

Were Low Transferrin Levels Associated with ADHD Symptoms?

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In the December issue of the Journal, Kwon et al.¹ addressed a valuable issue on the association between attention deficit-hyperactivity disorder (ADHD) and iron deficiency in Korean children. The results showed that there were significant differences found in transferrin, MCV and MCH between the children with ADHD and normal controls. In conclusion, the authors proposed low transferrin levels might be related to ADHD symptoms.¹ However, we have several concerns that might affect the interpretation of the results. We would like to share them.

Firstly, iron storage is greatly associated with the nutritional status of the children and the socioeconomic status of the families.² Therefore, the indicators of body weight, height and body mass index should be collected for both study group and controls. In addition, the detailed information of annual income of the families, educational levels of the parents and so on should also be recorded. Consequently, by doing that, it would be able to exclude the possible confounding factors and selection bias, and power the results with more strength.³

Secondly, a statistic difference was found in transferrin levels between the ADHD group and the normal controls, but did it have a clinical significance?¹ The study showed that transferrin levels were 248.42 ± 44.15 and 266.27 ± 25.40 mg/dL for the ADHD subjects and controls, respectively. From Table 2 we can see that the reference value for transferrin is from 200 to 360 mg/dL. The mean levels for both groups were in the interval, which suggested that they were in normal range. There-

fore, it might be difficult to assert the statistic difference have clinical significance. In addition, the indicators of MCV and MCH were higher in ADHD group than the normal. Both of them had significant differences. But the authors did not discuss this result in details. We would like to receive any comments on it from the authors.

Finally, lack of teachers' ADHD symptoms rating scales was a limitation for the study. In the article by Kwon et al., Conners' Parent rating scale and Dupaul Parent ADHD rating scale only collected the information from parents (method section of the abstract), although there was the Computerized Attention Deficit-Hyperactivity Disorder Diagnostic System employed to test the executive function. As is known, ADHD is a disorder based on functional impairment not on symptoms alone.⁴⁻⁸ For children in primary school the most functionally impairing environment is the classroom. Therefore, only the symptoms evaluation from parents is not enough. Furthermore, without introduction of the blind methodology, the raters assessing the ADHD symptoms more subjectively resulted in bias of outcomes. So, we strongly suggest that teachers' ADHD rating scale should be used to assess the ADHD symptoms besides only the parents ADHD rating scale. Using comprehensive evaluation tools will judge the actual correlation between transferrin levels and ADHD symptoms, and reduce the bias by the expectancy from the researchers.

In considering the above mentioned concerns, we think that the authors should take more cautions in interpreting the results of this study.

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