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Letter to the Editor

Neopterin and mini-mental state examination scores in delirium: New insights?

Sir,

We have read with great interest the article by Miao *et al.*, in which neopterin levels and mini-mental state examination (MMSE) scores were investigated in older patients with and without delirium after elective gastrointestinal tumor resection.^[1] The findings of the study suggest that patients with delirium have higher preoperative neopterin levels and lower MMSE scores than patients without delirium.^[1]

Delirium in older hospitalized patients is a major problem associated with poor clinical outcomes whereas the pathophysiology is still poorly understood. Therefore, identifying accurate (bio)markers for delirium is very important for a better understanding of the pathophysiology and to improve delirium prediction and care.

The association between peripheral neopterin levels and delirium has been previously investigated in acutely ill hospitalized older patients,^[2] older patients undergoing elective cardiac surgery,^[3] and older patients undergoing acute hip fracture surgery.^[4] In all studies, mean neopterin levels were increased in patients with delirium, suggesting a potential role for neopterin in the pathophysiology of delirium.

When looking in more detail to the previous studies, we see that mean neopterin levels in blood were considerably lower in patients who underwent surgery (delirium vs. no delirium: ± 37 vs. 28 nmol/L)^[3,4] than in patients who were acutely admitted to a geriatric ward (delirium vs. no delirium: 70.5 vs. 45.9 nmol/L).^[2] The preoperative neopterin levels found by Miao *et al.*^[1] (delirium vs. no delirium: 71.1 vs. 45.6 nmol/L) are remarkably higher than the mean levels previously reported in surgical patients.^[3,4] Considering that neopterin levels reflect the amount of cell-mediated immune activation and oxidative stress,^[5] it is surprising that the *preoperative* neopterin levels, obtained in patients who underwent *elective* surgery, are comparable with the mean levels found in acutely ill patients.^[2] Moreover, neopterin levels increase with age;^[5] however, the mean neopterin levels found by Miao *et al.*,^[1] obtained in a relatively young population, are as high as the mean levels measured in older patients.^[2] Miao *et al.*^[1] describe that neopterin was determined using the same method as in the previous studies, and therefore, the relatively high neopterin levels are particularly noteworthy.

In addition, Miao *et al.*^[1] found that patients with delirium have lower MMSE scores than patients without delirium, whereas the results of the multivariate logistic regression analysis are not in line with this finding. They found that the MMSE is associated with delirium with an odds ratio of 1.33 (1.04 – 1.71). This means that for each additional point increase on the MMSE, the odds of developing delirium after surgery increase with 33% . In other words, this finding suggests that patients with a better cognitive performance have a higher chance of developing delirium after surgery. Unfortunately, Miao *et al.*^[1] do not discuss these contradictory findings in their study and we are very interested in whether they have a possible explanation for this surprising finding.

In conclusion, this study raises several questions that, in our opinion, need to be discussed for a good interpretation of the results.

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

1. Miao S, Shen P, Zhang Q, Wang H, Shen J, Lv D. Neopterin and mini-mental state examination scores, two independent risk factors for postoperative delirium in elderly patients with open abdominal surgery. *J Cancer Res Ther* 2017. [Ahead of print].
2. Egberts A, Wijnbeld EH, Fekkes D, van der Ploeg MA, Ziere G, Hooijkaas H, *et al.* Neopterin: A potential biomarker for delirium in elderly patients. *Dement Geriatr Cogn Disord* 2015;39:116-24.


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3. Osse RJ, Fekkes D, Tulen JH, Wierdsma AI, Bogers AJ, van der Mast RC, *et al.* High preoperative plasma neopterin predicts delirium after cardiac surgery in older adults. *J Am Geriatr Soc* 2012;60:661-8.

4. Hall RJ, Watne LO, Idland AV, Raeder J, Frihagen F, MacLulich AM, *et al.* Cerebrospinal fluid levels of neopterin are elevated in delirium after hip fracture. *J Neuroinflammation* 2016;13:170.

5. Murr C, Widner B, Wirleitner B, Fuchs D. Neopterin as a marker for immune system activation. *Curr Drug Metab* 2002;3:175-87.

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