Reviewer's report

Title: A putative role for homocysteine in the pathophysiology of acute bacterial meningitis in children

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Reviewer: Ken Sakushima

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This study reported the cerebrospinal fluid concentrations of homocysteine and cysteine in patients with bacterial meningitis and viral meningitis compared to control subjects. Although the authors describe a role of homocysteine in central nervous system damage in bacterial meningitis, the results of this study only show concentration differences among the groups. To support their suggestion of a role of homocysteine in bacterial meningitis, the authors should include any additional cerebrospinal fluid examination information or sufficient background information of subjects. The following issues should also be addressed:

1. Pivotal role in the pathophysiology of acute bacterial meningitis

Gerber et al. (Ref 14) described pathophysiological events in bacterial meningitis. There are various pathways leading to neuronal injuries in bacterial meningitis, including via Toll-like receptors, microglia, and leukocyte invasion. If the purpose of this study was to explain the pivotal role of homocysteine in brain damage, it is insufficient to report only differences in cerebrospinal fluid concentrations of homocysteine.

2. Concentration dependency of homocysteine

Kruman et al. (Ref 16) showed that the amount of neuronal apoptosis depended on the concentration of homocysteine. This study did not explain the association between the concentration of homocysteine and brain damage. The concentration of homocysteine should be discussed in terms of its influence on neuronal apoptosis.

3. Concentration of homocysteine in viral meningitis and controls

Qureshi et al (Ref 19) reported the concentration of homocysteine in patients with aseptic meningitis and tuberculosis meningitis as well as in healthy subjects. The concentrations in patients with aseptic meningitis and in healthy subjects reported in the study by Qureshi et al. differ from those reported in this study. The authors should explain this difference and support the validity of their homocysteine measurements.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests: I have no competing interests’