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LETTER TO THE EDITORS

Association between *Helicobacter pylori* infection and Alzheimer's disease in Japan

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Dear Sirs,

We read with interest the paper by Shiota et al. [1], who reported that older age and male sex were significantly associated with Alzheimer's disease. Moreover, the authors reported a lack of association between *Helicobacter pylori* infection (*Hp*-I) status and Alzheimer's disease in their Japanese cohort, suggesting that their findings might be explained by the much higher prevalence of *Hp*-I in the general Japanese than in the European population.

We herein wish to emphasize two essential concerns regarding the methodological limitations which may render the results of this study highly debatable. The first is that both age and sex, found to be associated with Alzheimer's disease, were not matched in the two study groups ($p < 0.001$ and $p = 0.01$, respectively), and thus comparisons between the two study groups (i.e., Alzheimer's disease patients and controls) cannot be expected to establish any firm conclusions.

The second concern is that the very high *Hp*-I prevalence in the general Japanese population around 70 years old, reported by the authors, and, deductively, in the control group of the study, renders the study underpowered, meaning it requires probably thousands of participants in order to prove whether an association between Alzheimer's disease and *Hp*-I can be established or excluded; it requires a very large population to be screened to prove or not a statistical difference in *Hp*-I among patients with Alzheimer's disease and the general Japanese population.

In view of the aforementioned methodological limitations, we deduce that this study can neither confirm the lack of association between the *Hp*-I status and Alzheimer's disease in the Japanese population, nor is it comparable with the European studies indicating such an association [2–4].

Conflict of interest None.

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