



## Correspondence

**Vitamin B12 deficiency in patients with upper gastrointestinal symptoms in the Mekong Delta, Vietnam**

Sir,

Research showed high rates of Vitamin B12 deficiency in several Asian countries and among Asian immigrants in Western countries, but there are no data regarding the prevalence of Vitamin B12 deficiency in Vietnam [1–3]. However, Vitamin B12 deficiency can cause serious health problems. This warrants the need to gather data on the prevalence of Vitamin B12 status in Vietnam. Vitamin B12 absorption may be diminished in case of gastrointestinal dysfunction [2]; therefore, we studied the prevalence of Vitamin B12 deficiency in Vietnamese patients with upper gastrointestinal complaints.

For this purpose, we collected blood samples from 216 patients (80 males (37%), mean age 43 (S.D. = 13) years) visiting the Can Tho General Hospital for upper gastrointestinal endoscopy. Serum Vitamin B12 concentration was measured with the Immulite (DPC, Los Angeles, CA, USA) analyser in Nijmegen, the Netherlands. According to our laboratory standards, Vitamin B12 concentrations were classified as “clinical deficiency”, “subclinical deficiency” or “normal”. *Helicobacter pylori* infection was diagnosed by <sup>14</sup>C urea breath testing before endoscopy.

In our population, 10 patients were diagnosed with gastric cancer, 28 with peptic ulcer disease and 178 with non-ulcer dyspepsia. Only two patients (1%) were classified as “clinical Vitamin B12 deficient” (<160 pmol/l), whereas 15 patients (7%) had “subclinical Vitamin B12 deficiency” (160–250 pmol/l). *H. pylori* positive patients ( $n = 112$ ) were more likely to have lower (clinical or subclinical) Vitamin B12 levels (odds ratio 4.3, 95% CI 1.2–14.4) and that influence remained significant after adjustment for age group and diet (odds ratio 3.7, 95% CI 1.01–13.7).

Our Vitamin B12 deficiency rates are much lower than the results from other Asian populations. The Asian Indian population of 165 haematological normal volunteers studied by Kumar et al. [1] might be best comparable to our population. They showed that 12% had a low serum Vitamin

B12 level which is still higher than in our population, and a study from Turkey including 310 patients with no gastric mucosal atrophy showed that 67% of the patients had Vitamin B12 deficiency [2]. The low prevalence of Vitamin B12 deficiency in our study may be a reflection of a good daily supply of food as some reports show, and a consequence of a normal diet. Almost all our patients, either with or without Vitamin B12 deficiency, had normal dietary habits and none of the patients was malnourished.

However, it remains difficult to compare our results with the results from other studies, because there is much heterogeneity in the populations studied. Another reason for poor comparability is the fact that different Vitamin B12 assays and corresponding cut-off points were used in the various studies.

In the present study, only presence of *H. pylori* infection was related to Vitamin B12 deficiency. We found that *H. pylori* positive patients were four times more likely to have Vitamin B12 deficiency than *H. pylori* negative patients. This finding is supported by other research [4]. Sipponen et al. [5] showed that low Vitamin B12 values were associated with atrophic gastritis, which is often caused by *H. pylori* infection. In our population we did not find an association with diagnosis at endoscopy, but we did not have the results of histological examination of the biopsies taken during endoscopy. Therefore, we cannot correlate Vitamin B12 levels with the presence of gastric atrophy. The exact mechanism for the low levels of Vitamin B12 can be studied in future research with biomarker assays for atrophic gastritis and celiac disease and further investigation of the patients diet. Moreover, comparison with a healthy population from the same region would provide additional evidence.

In conclusion, this study shows that Vitamin B12 deficiency is uncommon in Vietnam. Moreover, our results indicate a causal role for *H. pylori* infection in the development of Vitamin B12 deficiency.

**Conflict of interest statement**

None declared.

**References**

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