Helicobacter pylori eradication and serum pepsinogens

EDITOR,—We wish to comment on the article by Parente et al (Gut 1995; 37: 210–5) regarding clinical usefulness of functional parameters in duodenal ulcer patients cured for Helicobacter pylori infection.

We agree with the authors about the finding of a fall in pepsinogen I serum concentration three months after the eradication of the infection and we would like to underline the relevance of such a non-invasive parameter already defined by Samloff as ‘gastric mucosa serological biopsy’.1 In our experience on 25 (197 M; mean age 52.2 years; range 18–70) duodenal ulcer patients tested two months after H pylori eradication treatment pepsinogen I decreased from mean (SD) 147.7(78.3) to 90.7 (49.2) μg/ml (p<0.005). On the contrary, pepsinogen II serum concentrations in patients who were not cured, where we found, in the same group, a slight decrease: 145.6(80.7) v 124.6(63.9) (p=NS). We believe that this decrease in pepsinogen I serum concentrations in patients who were not cured, where we found, in the same group, a slight decrease: 145.6(80.7) v 124.6(63.9) (p=NS). We believe that this decrease in pepsinogen I serum concentrations could be explained by the fact that even in the group who were not cured the antibiotic treatment reduces H pylori concentration and consequently the gastric mucosa inflammation.

We also would like to point out that in our experience on the same patient’s sample, pepsinogen II (RIA Method, Sorin Biomedica, Saluggia, Italy; normal values 2–6 μg/ml) decreased dramatically after H pylori infection treatment. Indeed in duodenal ulcer patients tested two months after the end of the treatment pepsinogen II decreased from 21.6(11.8) to 8.2(4.1) (p<0.001). In agreement with our finding on pepsinogen I even pepsinogen II slightly decreased in patients not cured for H pylori infection (22.7(13.6) v 16.7(7.2)). The possible explanation is that pepsinogen II is produced mainly by the pyloric glands where usually the degree of inflammation is higher, because the infection is supposed to start in this gastric area as suggested by the bacterial name.

Using the ROC curves statistical analysis we showed that a decrease in pepsinogen II serum concentrations higher than 38% was the most sensitive (75.5%) and specific (74.5%) value in predicting H pylori eradication with diagnostic accuracy of 75.2% among four parameters (gastrin, pepsinogen I, pepsinogen II, and IgG anti-Hp).3 Pepsinogen I and II were useful not only to verify the success of an eradication treatment but even in the follow up of cured patients. Indeed in a sample of 70 duodenal ulcer patients tested basally, at two, six, and 12 months after the end of a successful eradication we found: pepsinogen I 151.7(71.3), 89.9(46.2), 85.6(40.7), 77.3(30.6); pepsinogen II 21.4(12.7), 8.7(4.9), 7.7(3.6), 7.3(3.4).

We suggest the use of pepsinogens, especially pepsinogen II, in the clinical monitoring of patients treated for H pylori infection, as indirect and non-invasive parameters of gastric mucosa inflammation.

Reply

EDITOR,—We are grateful to Di Mario et al for their letter concerning our article. We are completely in agreement with these authors concerning the fact that serum pepsinogen I and pepsinogen II may be regarded as markers of mucosal gastric inflammation in patients with H pylori-related gastritis, as their concentrations dramatically decrease after eradication of bacterial infection and the resolution of gastritis, as recently shown by our- selves and others.

However, we wish to emphasise that serum pepsinogen I and pepsinogen II concentrations may also decline (although not dramatically) after antibiotic treatment in patients with H pylori infection persisting, probably as a consequence of reduced H pylori density and gastric mucosal inflammation. We did not see such behaviour in our control group simply because ‘our controls’ consisted of patients with persistent H pylori infection and not of any antibiotic regimen but who had been given a short-term regimen with lansoprazole only. Indeed, the gastritis score of these patients, both at three and six months from the end of eradication (in all the cured patients, did not change significantly compared with the pretreatment value.

In contrast, we are not in agreement with Di Mario et al about the usefulness of serum pepsinogen I and pepsinogen II concentrations in clinical practice as reliable indirect markers of successful H pylori eradication, especially in the short-term, for two major reasons: (a) as mentioned above, pepsinogen I and pepsinogen II concentrations may decrease after antibiotic treatment even in patients with persistent H pylori infection, as a consequence of reduced H pylori density and gastric mucosal inflammation. Therefore, the finding of a decline in concentrations of serum pepsinogens immediately after treatment has a low specificity in terms of predicting H pylori eradication; indeed, the diagnostic accuracy of this test reported by Di Mario et al in their own experience is fairly low (75%), (b) multiple samplings are necessary to record a consistent and persistent decrease in serum pepsinogen I and pepsinogen II concentrations related to H pylori eradication (at least the baseline value and those at two and six months after the end of the treatment should be determined). The test is therefore not competitive in terms of cost/accuracy with other non-invasive tests (for example, C13-UBT or C14-UBT), if we consider that, in Italy, each pepsinogen I determination costs roughly the equivalent of £1 (with a double assay for each sample) and pepsinogen II determination is even more expensive, whereas C13-UBT (which is undoubtedly the most accurate non-invasive test for diagnosing H pylori infection) costs £18–25 depending on the number of tests performed.

To summarise, we believe that serum pepsinogen I and pepsinogen II concentrations are indices of gastric mucosal inflammation in patients with H pylori related gastritis, but, like serum IgG anti-Hp, they cannot be used in clinical practice as reliable markers of successful H pylori eradication.