known of the possible role of \textit{H} pylori in duodenal ulcer disease and the \textit{H} pylori state of those patients cannot be determined retrospectively. It is possible that most subjects in our series were \textit{H} pylori negative, which might explain the higher healing rates compared with Bianchi Porro’s experience. It is more probable that our patients were either a mixture of \textit{H} pylori positive and negative with ulcers or mostly \textit{H} pylori positive, which does not help to explain the reasons for this discrepancy.

By far the most intriguing question raised by Bianchi Porro’s study is whether resistance to standard anti-ulcer treatment can be related to the presence of \textit{H} pylori. In Wagner’s study with bismuth subsalicylate, 14% of duodenal ulcers did not heal despite \textit{H} pylori clearance and 65% of healed ulcers had persistent \textit{H} pylori infection, suggesting that this might not be the case.

Eradication by means of a more complete treatment regimen rather than mere clearance of the microorganism may have a bearing on the ulcer relapse rate but can hardly account for the superior effects in the short term. A role for \textit{H} pylori in some cases of refractory duodenal ulcers remains, however, an attractive hypothesis to which Professor Bianchi Porro refers.

At the present time omeprazole is the anti-ulcer drug that provides the most striking results in the treatment of resistant duodenal ulcers. Its efficacy has generally been related to suppression of peptic acid inhibition, but the drug is also known to exert a clearing effect on \textit{H} pylori, if not to eradicate the microorganism. Further studies are needed to discern the relative roles of acid suppression and \textit{H} pylori inhibition in the successful use of omeprazole for refractory duodenal ulcers.

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\textbf{Editor,}—Professor Bianchi Porro \textit{et al} are to be congratulated on their interesting paper (\textit{Gut} 1993; 34: 466–9). It is not surprising that only 41% of duodenal ulcers were healed after four weeks’ treatment with sucralfate 4 g/day. Non- refractory ulcers require six weeks’ or up to 12 weeks’ treatment for healing. It is interesting that, in the two patients with unhealed ulcers after four weeks’ treatment with bismuth subcitrate plus amoxicillin and tinidazole, both healed with a further four weeks’ treatment with sucralfate. It is known that sucralfate has no direct action on \textit{Helicobacter pylori}. \textit{H} pylori, however, cannot exist in the duodenal mucosa in the absence of gastric metaplasia.

In the small study we reported in 1989 \textit{duodenal} gastric metaplasia completely disappeared or became minimal in eight of 11 (73%) patients with healed duodenal ulcers after one year’s maintenance of sucralfate 1 g twice daily. This compared with only five of 14 (34%) of patients who had been on one year’s maintenance with cimetidine. In the subsequent two years, two of the six in the sucralfate group relapsed whereas none of the 13 in the cimetidine group. In the absence of gastric metaplasia, \textit{no} \textit{H} pylori organisms were seen by light or electron microscopy in the duodenal mucosa. In \textit{no} case were they only very rarely seen when there was minimal gastric metaplasia.\textsuperscript{11} These findings would suggest that longer maintenance treatment with sucralfate, by enhancing mucosal resistance to \textit{H} pylori, may be an alternative route to eradicating the organism and reducing the relapse rate.\textsuperscript{11}

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\textbf{Reply}

\textbf{EDITOR,}—Thank you for giving us the opportunity of replying to your comments on our article. Dr Guslandi raises two important points in his letter: firstly, the lack of a group of refractory duodenal ulcers treated with CBS alone and secondly, the possibility of reasons other than \textit{anti-H} pylori activity, for the superiority of triple therapy over sucralfate alone. We share his concern regarding the possibility that CBS alone may be superior to sucralfate in these patients and that it would have been interesting to include such a treatment group in the trial. Unfortunately, comparative trials between the two drugs in refractory duodenal ulcer patients are lacking, and only one controlled study comparing CBS with sucralfate in non-resistant patients exists to date.\textsuperscript{1}

As far as the reasons for the high efficacy of the triple therapy in refractory duodenal ulcers are concerned, we feel that this is mainly because of its \textit{anti-H} pylori activity. Indeed, the rate of healing was significantly higher in those patients where \textit{H} pylori was eradicated after treatment than in those who had a persistent infection. This view is also supported by two recent trials in non-resistant duodenal ulcers, which report that adding antibiotics to an anti-ulcer regimen accelerates the healing of \textit{H} pylori.\textsuperscript{11} Therefore, in our opinion, an eradication regimen should be considered as the treatment of choice in the presence of an \textit{H} pylori positive refractory duodenal ulcer, as it is capable not only of healing the anatomical lesion but also of changing its natural history. Tovey \textit{et al} place great emphasis on the shortage of initial acute treatment (four weeks) to explain the low healing activity of sucralfate alone, but we feel that in most of the existing trials on refractory duodenal ulcers the length of short term treatment was pre-determined at four weeks as it is clear that prolonging the treatment (whatever drug is}