since been shown to have impaired synthesis of metallothionein in culture fibroblasts. In our case, however, basal and metal induced metallothionein synthesis in skin fibroblasts was normal, indicating that heterogeneity exists among cases of primary, non-environmental, non-Wilsonian copper toxicosis.

S P HORSLEN
MS TANNER
University of Sheffield,
The Sheffield Children’s Hospital,
Sheffield S10 2TH

5 Hahn SH, Danks DM, Gahl WA. Normal metallothionein synthesis in fibroblasts obtained from children with Indian childhood cirrhosis or copper associated childhood cirrho-

Eradication rate of Helicobacter pylori

EDITOR,—The paper by Moshkowitz et al (Gut 1995; 36: 845–7) suggesting that the pretreatment 14C-urea breath test results are related to the outcome of triple therapy comprising of colloidal bismuth, metronidazole, and amoxicillin raises several points. Unfortunately, the authors did not include confounding variables such as compliance, metronidazole resistant smoking, age at presentation, treatment with antibiotics and anti-

2 Labenz J, Stolte M, Aygen S, Hennemann O, Bertrams J, Bösch G. Qualitative and semi-
4 Stolte M, Stadelmann O, Brehme B, Burkhard G. Relationships between the degree of Helicobacter pylori colonisation and the degree and activity of gastritis, surface epithelial degenera-

Correspondence to Dr J Labenz

1 J Labenz
B TILLENBURG
H KOHL
G BORSCH
Department of Internal Medicine and Gastroenterology, Elisabeth Hospital, D-45138 Essen, Germany

2 Labenz J, Stolte M, Aygen S, Hennemann O, Bertrams J, Bösch G. Qualitative and semi-
4 Stolte M, Stadelmann O, Brehme B, Burkhard G. Relationships between the degree of Helicobacter pylori colonisation and the degree and activity of gastritis, surface epithelial degenera-

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metronidazole in triple therapy does not improve the efficacy of treatment, but increases the risk of acquisition of metronida-

zole resistance.

Determination of bacterial density in the stomach may have some implications for the eradication of the organism. The urea breath tests, which can detect H pylori quantitatively, are not routinely available in most units at present. The biopsy dependent rapid urease tests, which are widely used and commercially available, have the potential to determine the bacterial density by measuring the urease activity quantitatively or semi-quantitatively — that is, the greater the number of organisms, the quicker the colour change because of the increased production of ammonia.1 The currently applied rapid urease tests, based on agar or liquid media, may need modifications for quantitative detection of H pylori in the stomach.

H X XIA
C T KEANE
Department of Clinical Microbiology,
CPL, St James’s Hospital,
Dublin 8, Ireland

C A O’MORAIN
Department of Gastroenterology,
Meath/Alkionda Hospitals,
Dublin 8, Ireland


Reply

EDITOR,—We thank Dr Labenz and coworkers for their thoughtful comments on our study. They have raised basically two questions. The first one is whether a high gastric urease activity as measured by the 14C-urea breath test is indeed a factor in predicting the effectiveness of eradication with triple therapy? They sug-

gest that other confounding variables might contribute to the strong correlation found. In addition, they wonder whether high urease activity found in the 14C-urea breath test repre-

sents a high bacterial density in the stomach or more severe gastritis. Concerning the potential confounding variables, we pointed out in the article that metronidazole resistance of H pylori seems to be infrequent in Israel (6% in a preliminary study). We have no data to suggest that com-

pliance with therapy was different in the three patient groups. None of the patients in the study were pretreated with antibiotics or omeprazole in the four weeks before the test. The adverse effect of smoking as reported by Dr Labenz’s group is controversial.1 2 Thus, we have no support for the assumption that these confounding variables might indeed be important factors. We therefore believe that urease activity as measured by 14C-urea breath test is an important independent vari-

able in predicting the effectiveness of H pylori eradication with triple therapy. This is not necessarily true of future therapies, which may be more effective and therefore less dependent on the bacterial load. In addition, we are now studying the effect of some factors mentioned by Dr Labenz et al.

The other point is more theoretical. Dr Labenz et al question whether the correlation between the 14C-urea breath test values and density of H pylori colonisation as well as the degree of gastritis as reported by other investigators is clinically valid? Also, whether eradication might be more effective in more severe gastritis, which might reflect a stronger immune response? Our data do not permit answers to these theoretical considerations. As pointed out in our paper it is at present not known whether the higher urease activity results only from a higher bacterial load or also from different bacterial strains. This requires further investigation.

We thank Drs Xia, Keane and O’Morain for their valuable comments. We are happy that they agree with our conclusion that a higher bacterial load is of negative predictive value for the success of eradication of H pylori with triple therapy. They mentioned two important points: firstly, that resistance, particularly to metronidazole may develop during therapy. We agree, but would point out that the con-

current administration of bismuth salts, as inherent in the triple therapy, attenuates this effect. Secondly, they also suggest that the dose of metronidazole might have been too low, contributing to the overall low eradication rate. Here we have to point out a regrettable error. We gave 750 mg of metronidazole per day which is 250 mg twice daily. This was erroneously printed as 250 mg twice daily. Although 750 mg daily for two weeks is not a high dose, it has been shown to be effective and is less conducive to non-compliance.3 Regarding their additional comment, we do not quite agree with their suggestion to use the rapid urease test (of gastric biopsy specimens) as a rough estimate of the gastric bacterial load. Unlike 14C-urea breath test, which reflects the overall gastric urease activity, the estimation based on a small biopsy sample is much more prone to sampling error.

M MOSHOKWITZ
F M KONIKOFF
T GILAT
Department of Gastroenterology,
Tel-Aviv Medical Centre,
Rabin Medical Centre,
Scherzer Hospital,
6 Weizman Street,
64239 Tel-Aviv, Israel


3 Chiba N, Rao BV, Rademaker JW, Hunt RH. Meta-analysis of Helicobacter pylori eradica-


NOTES

Sir Francis Avery Jones BSG Research Award 1996

Applications are invited by the Education Committee of the British Society of Gastroenterology who will recommend to Council the recipient of the 1996 Award. Applications (eighteen copies) should include:

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3 An outline of the proposed content of the lecture, including title.

4 A written statement confirming that all or a substantial part of the work has been per-

sonally conducted in the UK or Eire.

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Entries are invited by the Endoscopy Commit-

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sides of A4 paper but tables and references
can be on additional pages. The entry can

contain work previously presented/published (please give details).

A cover note should contain the address and post of the entrant.

The winner will give a 20 minute lecture (plus 10 minutes for questions).

The closing date for entries is 6 January 1996 and should be made to: Hopkin’s Prize Entry, Dr D M Hellier, Secretary-Endoscopy Committee BSG, Department of Gastro-

enterology, Princess Margaret Hospital, Okus Road, Swindon SN1 4JU.
Eradication rate of Helicobacter pylori.

H Y Xia, C T Keane and C A O'Morain

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