LETTERS

Fatigue in primary biliary cirrhosis

We would like to take the opportunity to clarify some of the points in response to the recent leading article (Gut 2004;53:475–7) which accompanied our report of reduced globus pallidus (GP) magnetisation ratios (MTRs) in patients with fatigue and primary biliary cirrhosis (PBC).

As we stated in the paper, fatigue in PBC is a subjective multidimensional symptom with many potential determinants, including sleep disturbance, depression, and personality, in addition to a potential central neurological cause. We therefore wholeheartedly concur with Drs Milkiewicz and Heathcote when they state that brain manganese (Mn) deposition in the GP was certainly not the cause of fatigue in all patients with PBC. We certainly do not believe that we drew this conclusion. However, we do believe that our findings of reduced GP MTRs in patients with stage I–II disease, which were associated with hypermanganesaemia and measured fatigue, do open up a novel avenue of research into a poorly understood symptom in patients with PBC.

In order to control for inter-examination system variability, it is necessary to normalise the raw MTRs against an internal region of interest (ROI). Although it might initially appear easier to analyse the raw MTR data, normalisation to an internal standard allows external sources of variation, unrelated to the patient, to be removed. We followed previously published protocols to calculate GP indices, normalised to the putamen and to the frontal white matter, and these were used to test associations with fatigue and Mn levels. The raw MTR data were used for the primary comparison between PBC patients and healthy volunteers. We chose two rather than one internal control ROI because, contrary to the assertion in the editorial, there is evidence for Mn accumulation in brain structures, other than the GP, in patients with cirrhosis.1 Rose et al reported significantly elevated Mn concentrations in the frontal and occipital cortex, pallidum, putamen, and caudate1 while Maeda et al showed elevated Mn concentrations in the GP, putamen, and frontal white matter.2 In both series, the highest Mn concentration was in the GP. Our choice of two standard ROIs was made to maximise the interpretation of the raw data although we accept that the a priori assumption that pathology is absent from these regions in this and all relevant magnetic resonance studies to date, which have used internal controls, may be false. This may explain the unexpected trend towards a positive association between blood Mn and the putaminal index normalised to white matter.3 Drs Milkiewicz and Heathcote have expressed concern about an apparent auto-correlation in our data that did not equal 1. Table 2 in our paper shows the correlation coefficients between individual MTR indices and blood Mn level. We did not compare the normalised putamen index against the normalised putamen index.

We are grateful to the two commentators for extending our interpretations and naturally agree that bile duct loss, rather than liver fibrosis, governs the severity of cholestasis and that there may be dissociation between these features in PBC. For the purposes of this study, we chose to examine patients with stage I–II disease to remove the possibility of hepatic encephalopathy or cirrhosis as a cause for the MTR findings. We believe that both this patient selection and the demonstration of normal cerebral magnetic resonance spectroscopy (MRS) in these patients, compared with healthy volunteers, does indeed achieve this. We found reduced GP MTRs in patients with stage I–II disease, which were associated with hypermanganesaemia and measured fatigue, but we also studied four patients with stage III–IV disease and, as a group, there were no significant differences in GP MTR indices compared with stage I–II patients. Although this may be due to the small number of individuals studied, the lack of clear distinction between stage I–II and stage III–IV disease may also reflect a process that adversely affects the brain long before the development of cirrhosis, owing to early bile duct loss.

The commentators point out that the value of liver biopsy staging of PBC is limited owing to sampling error but, in our view, liver biopsy still remains the gold standard for diagnosing cirrhosis. We disagree with the suggestion that cerebral MRS would have been useful in supporting the histological diagnoses as cerebral MRS abnormalities are only seen in a minority of patients with Child-Pugh A cirrhosis.3 We did not assume a true distinction between the stage I–II and III–IV groups. We accept the possibility of sampling error but, in our view, liver biopsy still remains the gold standard for diagnosing cirrhosis. We therefore wholeheartedly concur with Drs Milkiewicz and Heathcote when they state that brain manganese deposition in basal ganglia structures results from both portal-systemic shunting and liver dysfunction. Gastroenterology 1999;117:640–4.


Acute ulcerative colitis during successful interferon/ribavirin treatment for chronic hepatitis C

A 54 year old man was treated with pegylated interferon alpha 2a 180 µg weekly and ribavirin 1000 mg daily for chronic hepatitis C genotype 3a (>5×1011 IU/ml). There was no history of gastrointestinal disease or morbidity.

At week 12, hepatitis C virus-polymerase chain reaction (HCV-PCR) was negative and alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels remained elevated at 2–3 times above the upper limit of normal. Treatment with prednisone and mesalazine was continued and, at a dose of 3 g daily for eight weeks followed by 2 g daily. Three months later (receiving 5-ASA 2 g daily) there was complete clinical and endoscopic remission. Histology showed a mild residual increase in mononuclear inflammatory cells. PCR revealed a virological relapse of HCV (high viraemia >6×10^7 IU/ml) and a new unchanged twofold elevation in ALT and AST.

We suspect that the ulcerative colitis-like severe pancolitis in this patient with no...
history of IBD was probably an adverse effect of the antiviral treatment with interferon-r18bavirin rather than a concomitant disease. Similar observations have been made by others.5,6 To our knowledge, the present case is the fourth reported in the literature. Interferon has immune stimulating properties7 and may trigger autoimmune diseases and transplant rejections.

Hence, in light of this, the report on interferon treatment in active ulcerative colitis (Gut 2003;52:1728–33) seems interesting and warrants further research.

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Conflict of interest: None declared.

References


Author’s reply
As interferon alpha (IFN alpha) suppresses the production of proinflammatory cytokines and induces various anti-inflammatory cytokines, it may show efficacy in chronic inflammatory disorders of the gut. In Crohn’s disease, lamina propria cells manifest increased production of IL-6 whereas in ulcerative colitis lamina propria cells and natural killer T cells demonstrate increased secretion of IL-5 cytokines interleukin 5 (IL-5) and IL-13.

IFN alpha has been demonstrated to potentially suppress synthesis of both IL-5 and IL-13 in human leucocytes, making it an attractive agent for the treatment of ulcerative colitis. IFN alpha therapy showed no benefit in patients with Crohn’s disease. This may be explained by the fact that Crohn’s disease is thought to be a Th1 linked disease. IFN alpha therapy seems to be more successful in chronic active ulcerative colitis, a more Th2 linked disorder. Sumer and Palabiyikoglu reported that more than 80% of patients with active ulcerative colitis responded to high dose IFN alpha therapy within two weeks of treatment and were in complete clinical and endoscopic remission after six months of therapy.1 Madsen et al recently presented a study comparing systemic IFN alpha therapy and prednisolone enemas in the treatment of left sided ulcerative colitis. Ulcerative colitis is accompanied by high levels of IL-5 in colonic tissue and IFN alpha effectively suppresses IL-5 synthesis in leucocytes. IFN beta has been used in a pilot study investigating its role in patients with steroid refractory active UC. In this study, a high responder rate was observed with a mean time to response of three weeks.

Another IFN alpha study in ulcerative colitis has been presented recently.2 In this small, placebo controlled, randomised, dose escalating study, clinical remission was observed in 50% of IFN beta treated patients compared with 14% in the placebo group. We recently presented data on the first placebo controlled use of IFN alpha in the treatment of active UC in patients with or without corticosteroid and/or immunosuppressive treatment.3 We observed no significant advantage of any IFN group over placebo but did not observe worsening of disease in any IFN treated patient. The mechanisms of action of IFN alpha are probably multiple but the possible interactions of IFN alpha with the cytokine cascade and immune system are usually not considered. Favouring Th1 responses and suppressing Th2 type immune responses could imply that type 1 IFNs may be therapeutic in diseases such as ulcerative colitis or allergic disorders. We agree with the authors that IFN alpha might have the potential to enhance inflammatory reactions and all reactivity in certain situations but are also convinced that it has strong immunomodulatory and anti-inflammatory properties. Larger controlled trials with IFN alpha in ulcerative colitis are eagerly awaited.

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Conflict of interest: None declared.

References
TLR4 G allele carriage in ASCA positive and ASCA negative patients (23% vs 14%; p = 0.33) (data not shown) and there was no difference between TLR4 G allele carriage in ASCA positive and negative CD patients with colonic localisation (40% vs 46%; p = 1.00) while the frequency of G allele carriage was identical to that of CD patients with colonic localisation (43%) without correcting for ASCA status.

Several studies have described both TLR4-896 A>G and CD14-260 C>T in CD. Klein et al have described a German population and found an increased incidence of CD14 -260 heterozygous and homozygous mutants in CD patients compared with healthy controls. This association could not be confirmed in our population. Preliminary data by Braat et al demonstrated an increased risk of suffering from CD in a Dutch population carrying the TLR4 +896 SNP*, confirming our results. Franchimont and colleagues (Gut 2004; 53: 987–92) corroborated the results of Braat et al. In contrast with Franchimont et al, we found a clear association between the G allele of TLR4 +896 and disease phenotype (colonic localisation). In contrast with the aforementioned studies and results, Amott et al were unable to demonstrate an association between susceptibility to CD and the TLR4 and CD14 SNPs in a Scottish and Irish population.

The association between TLR4 and CD underscores the role of impaired innate immunity in CD. TLR4 signalling is based on both exogenous (for example, LPS) and endogenous (for example, human HSPs) agonists, and as heterozygous carriehesse of the TLR4 +896 A>G does not seem to impair LPS signalling,** further agonist identification to elucidate the microorganisms involved in CD and especially in colonic localisation is essential to obtain insight into both the pathophysiological and immunogenetic aspects of CD. This insight may be helpful in developing strategies for the prevention and treatment of CD.

The association demonstrated between TLR4 and CD is most likely not strongly based on the S cerevisiae mannann-LBP-CD14-TLR4 pathway but, as we have demonstrated, on the ASCA data in our group. It would be interesting to know whether Franchimont et al tested for ASCA in their CD patients and whether or not an association between ASCA and TLR4 was observed.

<table>
<thead>
<tr>
<th>Group</th>
<th>Vienna classification</th>
<th>1.1 CC</th>
<th>1.2 CT</th>
<th>2.2 TT</th>
<th>1.1 AA</th>
<th>1.2 AG</th>
<th>2.2 GG</th>
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<td>HC</td>
<td>170 48 (28) 82 (48) 40 (24) 153 (90) 16 (9) 1 (1)</td>
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<td>CD</td>
<td>115 35 (31) 54 (48) 23 (21) 91 (81) 19 (17) 2 (2)</td>
<td></td>
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<tr>
<td>A1</td>
<td>97 29 (30) 50 (51) 19 (20) 77 (79) 19 (20) 1 (0)</td>
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<tr>
<td>A2</td>
<td>15 6 (40) 5 (33) 4 (27) 14 (93) 0 (0) 1 (6)</td>
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<tr>
<td>B1</td>
<td>43 14 (33) 20 (47) 9 (21) 36 (84) 6 (14) 2 (2)</td>
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<tr>
<td>B2</td>
<td>46 15 (35) 21 (47) 9 (20) 37 (80) 5 (11) 2 (2)</td>
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<tr>
<td>B3</td>
<td>24 6 (25) 13 (54) 5 (21) 18 (75) 6 (25) 0 (0)</td>
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<tr>
<td>L1</td>
<td>41 14 (34) 17 (41) 10 (24) 36 (88) 4 (10) 1 (2)</td>
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<tr>
<td>L2</td>
<td>23 6 (26) 13 (57) 4 (17) 13 (57) 9 (39) 1 (4)</td>
<td></td>
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<tr>
<td>L3</td>
<td>47 15 (32) 23 (49) 9 (19) 41 (87) 6 (13) 0 (0)</td>
<td></td>
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<tr>
<td>L4</td>
<td>1 0 (0) 1 (100) 0 (0) 1 (100) 0 (0) 0 (0)</td>
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</table>

*TLR4 G was more frequent in CD patients compared with HC (19% vs 10%; p = 0.04; odds ratio (OR) 2.076 (95% confidence interval (CI) 1.041–4.142)).

**TLR4 +896 was significantly associated with colonic localisation compared with non-colonic localisation (43% vs 12%; p = 0.0017; OR 5.455 (95% CI 1.931–15.410)).

References


Reoperative chemoradiotherapy for oesophageal cancer: a systematic review and meta-analysis

Just as the weakest link in a chain determines how much weight the chain will hold, the weakest link in the data used by Fiorica et al will determine how much weight we as readers should give to their findings and conclusions regarding neoadjuvant chemoradiotherapy for oesophageal adenocarcinoma (Gut 2004; 53: 925–30). Clearly, the weakest link in their data is the material by Walsh et al, and prior to placing any confidence in the conclusions by Fiorica et al, a careful assessment of the reliability of the Walsh data is imperative. Well known criticisms of the Walsh trial include the lack of routine staging with computed tomography scanning that led to five patients undergoing surgery alone for stage 4 disease, the exclusion of a number of patients in the neoadjuvant arm for “protocol violations” when in fact several had evidence of progressive disease and should have been considered treatment failures, and the lack of a uniform surgical technique that led to five different types of operations being performed and what are arguably the worst surgical results for oesophageal adenocarcinoma reported in the literature. However, these criticisms are overshadowed by a greater problem in the Walsh trial related to internal inconsistencies in the survival data. Careful review of the Walsh manuscript reveals that the survival data in the text of the report does not match the data in the Kaplan-Meier survival curves, but surprisingly the discrepancy is only for the neoadjuvant arm. In all cases the survival data for the surgery alone arm matches up precisely. For example, in the text of the manuscript, survival data by intention to treat are given but the Kaplan-Meier graph reported for the neoadjuvant arm is reported as 32%, yet on the Kaplan-Meier graph survival by intention to treat in the neoadjuvant arm is approximately 48%. Similar discrepancies occur at essentially every data point for both the intention to treat and the treatment actually received graphs, but only for the neoadjuvant arm, with survival on the Kaplan-Meier graph improved in some cases over the data in the text. Importantly, the statistics for survival are calculated from the Kaplan-Meier curves, raising concern that the difference in survival between groups is not influenced by the difference in survival. The Kaplan-Meier data actually received graphs, but only for the neoadjuvant arm. In all cases the survival data for the surgery alone arm matches up precisely. For example, in the text of the manuscript, survival data by intention to treat are given but the Kaplan-Meier graph reported for the neoadjuvant arm is reported as 32%, yet on the Kaplan-Meier graph survival by intention to treat in the neoadjuvant arm is approximately 48%. Similar discrepancies occur at essentially every data point for both the intention to treat and the treatment actually received graphs, but only for the neoadjuvant arm, with survival on the Kaplan-Meier graph improved in some cases over the data in the text. Importantly, the statistics for survival are calculated from the Kaplan-Meier curves, raising concern that the difference in survival between groups is not influenced by the difference in survival.
Systemic lidocaine and mexiletine for the treatment of a patient with total ulcerative colitis

In basic research, neural modulation in ulcerative colitis with a response rate of 83% after long
rectum, for the treatment of distal ulcerative colitis refractory to conventional medical treat-
ments, local anaesthetics such as lidocaine and ropivacaine were used, administered per
settings, local anaesthetics such as lidocaine administration of mexiletine (a congener of
lidocaine). Therefore, it is possible that in ulcerative colitis, lidocaine administered
rectum could exert its pharmacological effects after being absorbed into blood and has an
effect on central and/or peripheral nervous system. Another possibility is direct anti-
inflammatory effects of these drugs on immune cells. However, it is not known whether systemic administration of lidocaine can achieve adequate concentrations in colo-
nic tissue to have a direct anti-inflammatory effect on immune cells. A prominent feature of this case was the close association between pain and other symptoms such as bloody diarrhoea. Systemic lidocaine caused prompt sympto-
matic relief followed by amelioration of ulcerative colitis which was assessed by sig-
moidscopy and blood inflammatory param-
eters (data not shown), suggesting that pain or pain inducing substances could be a cause of exacerbation of ulcerative colitis as well as a result of the disease. Lidocaine and mexiletine therapy could be useful for the treatment of the subgroup of patients with ulcerative colitis that are refractory to conventional medical treat-
ments. While we do not know how to select responders to this treatment, pain could be one of the indicators.

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References

New treatment for bile salt malabsorption
Currently available binding resins used for symptomatic bile salt malabsorption are generally poorly tolerated because of unpal-
ability and associated gastrointestinal side effects. We suggest that there is now a viable alternative, colesevelam hydrochloride (WelChol, Sankyo Pharmaceuticals Inc., Japan). A 30 year old man presented with steator-
hoea, progressive weight loss, marked abdominal bloating and lethargy after a right hemicolectomy following a road traffic accident in 1966.
Physical examination, relevant blood tests, barium follow through, colonoscopy, and microscopic examination of colonic biopsies were normal. A trial of cholestyramine in preference to a SeCHAT scan caused cessation of diarrhoea on one sachet per day. However, his abdominal bloating continued unabated and he found the treatment unpalatable. Cholestyramine was therefore changed to colesevelam 2.5 g/3.75 g on alternate days. This was well tolerated, with complete cessa-
tion of his steatorrhea and lethargy, and no side effects. In addition, he rapidly gained weight.
A further four patients with markedly symptomatic bile salt malabsorption resistant to anti diarrhoeal agents and intolerant of cholestyramine were subsequently com-
menced on colesevelam (table 1). In all of these cases colesevelam was well tolerated with no side effects.
Colesevelam is a non-absorbed water insol-
uble polymer which sequesters bile. It has
been approved for usage by the US FDA, and has been received as a valuable alternative for lowering cholesterol. Colesevelam has high affinity for dihydroxy and trihydroxy bile acids in the intestine which causes increased faecal bile acid secretion, reducing the enter-
ophagic circulation of bile acids. This allows 7-hydroxylase, the rate limiting enzyme in bile acid synthesis, to increase the conversion of hepatic cholesterol to bile acids. It has not yet been approved for use in the UK. One abstract suggests that colesevelam may be beneficial for patients with diarrhoea who have undergone small bowel resection for Crohn’s disease. It has not been published data to support its role in bile salt induced diarrhoea. Colesevelam is reported to be 4–6 times as potent as traditional bile salt sequestrants, possibly due to its greater binding affinity for glycodeoxycholic acid which is administered in tablet form, and in one study the rate of compliance with colesevelam was 93%.

References
structure enables greater tolerability with less potential drug interactions than with resins.\(^1\)

Reported adverse events from the largest clinical trial to date include flatulence, dyspepsia, and diarrhoea although the incidence of adverse events does differ significantly from that observed with placebo, and is lower than with cholestyramine.\(^2\) It is rarely associated with constipation, unlike cholestyramine.\(^3\) Colesevelam is non-absorbed and is excreted entirely via the gastrointestinal tract, preventing systemic side effects.\(^4\) Furthermore, there is little evidence for clinically significant interactions involving colesevelam.\(^5\) Pharmacokinetic studies with colesevelam have not shown clinically significant effects of absorption of six other coadministered drugs.\(^6\)

There is a theoretical risk of fat soluble vitamin deficiency following such efficient bile acid sequestration. None of our patients developed any significant change in fasting triglycerides or fat soluble vitamin levels to date.

Each film coated tablet contains colesevelam 625 mg (active ingredient).\(^7\) The recommended starting dose for monotherapy for hypercholesterolaemia is 3.75 g in adults.\(^8\) The optimal dose for bile salt malabsorption is not clear but an effective dose has varied between two and six tablets/day in our series. Colesevelam was obtained from IDIS Ltd.

This colesevelam is a novel bile acid binding resin in tablet form that maintains the benefits of cholestyramine, yet is palatable, associated with decreased adverse effects, and has greater potency. It provides a very attractive alternative therapy for patients with bile salt malabsorption and further study is warranted.

### Table 1

Characteristics of four patients with markedly symptomatic bile salt malabsorption resistant to antidiarrhoeal agents and intolerant of cholestyramine given colesevelam

<table>
<thead>
<tr>
<th>Age (y)</th>
<th>Sex</th>
<th>Reason for bile salt malabsorption</th>
<th>Outcome with cholestyramine</th>
<th>Outcome with colesevelam</th>
<th>Duration of colesevelam treatment (months)</th>
<th>Current dose of colesevelam</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>M</td>
<td>Idiopathic</td>
<td>Diarrhoea improved but not tolerated because it induced severe dyspepsia</td>
<td>Diarrhoea resolved, no side effects</td>
<td>7</td>
<td>3.75 g/day</td>
</tr>
<tr>
<td>59</td>
<td>F</td>
<td>Right hemicolectomy</td>
<td>Diarrhoea improved but not tolerated due to unpalatability</td>
<td>Diarrhoea resolved, no side effects</td>
<td>3</td>
<td>3.75 g/day</td>
</tr>
<tr>
<td>68</td>
<td>F</td>
<td>Radiation enteritis and right hemicolectomy</td>
<td>Diarrhoea improved although suffered intractable vomiting</td>
<td>Diarrhoea resolved, no side effects</td>
<td>2</td>
<td>2.5 g/day</td>
</tr>
<tr>
<td>40</td>
<td>F</td>
<td>Radiation enteritis</td>
<td>Diarrhoea improved although suffered intractable nausea</td>
<td>Diarrhoea resolved, no side effects</td>
<td>2</td>
<td>1.25 g/day</td>
</tr>
</tbody>
</table>


4 Steinmetz RL. Colesevelam hydrochloride. Am J Health Syst Pharm 2002;59:932–9


Any researchers interested in applying for access to information held within the national register should contact Dr Helen Harris (Register Co-ordinator) or Ms Shirley Cole (Research Assistant), Immunisation Department, CDSC, Centre for Infections, Health Protection Agency, 61 Colindale Avenue, London. NW9 6EQ, UK (tel: +44 (0)20 8200 6868 ext. 7676 (Wednesday to Friday) or ext. 7906 (Monday to Friday); fax: +44 (0)20 8200 7868; email: helen.harris@hpa.org.uk or shirley.cole@hpa.org.uk).

No data will be released that could identify individual patients directly or via linkage to other data. Any study proposals should then be submitted to the register co-ordinator for consideration by the steering group by Thursday 31 March 2005 (deadline).

### 6th International Symposium on Functional Gastrointestinal Disorders

This symposium is co-sponsored by the Office of Continuing Medical Education, University of Wisconsin Medical School, and the International Foundation for Functional Gastrointestinal Disorders (IFFGD). It will take place on 7–10 April 2005 in Milwaukee, Wisconsin, USA, at The Pfister Hotel, 424 E. Wisconsin Avenue, Milwaukee, Wisconsin 53202 (tel: +1 414 273 8222; toll free tel: +1 800 558 8222; fax: +1 414 273 5025; email: info@thepfisterhotel.com; web: http://www.iffgd.org/symposium2005.html).

### NOTICES

**The national register of hepatitis C infections with a known date of acquisition**

A new call for study proposals. In 1998, a national register of hepatitis C virus (HCV) infections with a known date of acquisition was established. The register was set up to help inform the natural history of HCV related disease in the UK and now contains anonymous data for one of the largest cohorts of individuals with known date HCV infections, with over 1120 registered patients. The majority of infections in the register are those that were acquired following transfusion of HCV infected blood that was issued before the introduction of routine screening of the blood supply for HCV, but other routes of acquisition are represented.

In order to get maximum benefit from this national resource, the register steering group would like to invite clinical and epidemiological researchers to submit proposals to access data held in the register. It is envisaged that a variety of studies might benefit from linkage with or access to the register, and proposals from all specialties and institutions are welcomed. Such studies are urgently needed to help determine the current and future burden of HCV related disease on healthcare services, and to assess the impact of currently available treatments as well as those that may become available in the future.

**doi:** 10.1136/gut.2003.035600corr1

In reference 38 of the paper by C Gasche and P Grundtner, published in the January issue (Genotypes and phenotypes in Crohn’s disease: do they help in clinical management? Gut 2005;54:162–7), the page span is incorrect, it should read 1658–64.

In the paper by Sheu et al in the July 2003 issue of Gut (B-S Sheu, S-M Sheu, H-B Yang, A-H Huang, and J-J Wu. Host gastric Lewis expression determines the bacterial density of Helicobacter pylori in babA2 genepositive infection. Gut 2003;52:922–932), the B and C slides of figure 1 have been transposed and the arrow on D should be labelled Le\(^{-}\) not Le\(^{+}\).