Recent trends in admissions and mortality due to peptic ulcer in England: increasing frequency of haemorrhage among older subjects

J Higham, J-Y Kang, A Majeed

Background: Although overall admission rates for peptic ulcer in England declined from the 1950s up until the mid 1980s, perforations among older women increased, possibly due to increasing use of non-steroidal anti-inflammatory drugs (NSAID). Since then, proton pump inhibitors, antibiotic treatment for Helicobacter pylori, low dose aspirin, and selective serotonin reuptake inhibitors (SSRI) have been introduced

Aims: To determine time trends for hospital admissions for peptic ulcer from 1989 to 1999 (England), mortality from 1958 to 1998 (England and Wales), and prescriptions for ulcer healing drugs, aspirin, NSAID, oral anticoagulants, and SSRI from 1990 to 1999 (England).

Methods: Hospital episode statistics for admissions and mortality were obtained from the Office of National Statistics; community prescription data from Statistics Division 1E of the Department of Health. Results: Between 1989/90 and 1998/99, there was a marked rise in admissions for haemorrhage in older patients, particularly from duodenal ulcer. Perforations from gastric ulcer declined but perforations from duodenal ulcer increased among men at older ages. Since the mid 1980s mortality has declined in all age groups except for older women with duodenal ulcer. The number of prescriptions for histamine H2 receptor antagonists remained constant but those for proton pump inhibitors increased by 5000%, aspirin 75mg by 460%, oral anticoagulants by 200%, and NSAID by 13% between 1990 and 1999. Since the introduction of SSRI in 1991, prescriptions have increased 15-fold.

Conclusions: Admission rates for gastric and duodenal ulcer haemorrhage and duodenal ulcer, but not gastric ulcer perforation, increased among older subjects, over a time when prescriptions for proton pump inhibitors, low dose aspirin, oral anticoagulants, and SSRI increased.

METHODS

Hospital admission rates (finished consultant episodes)

Although most patients with uncomplicated peptic ulcer would probably self medicate or be treated by their general practitioner, patients with ulcer complications, in particular perforation and severe haemorrhage, are admitted to hospital. Hospital admission rates can therefore be used as an index of peptic ulcer frequency although it is uncertain if the proportion of ulcers which perforate or bleed is constant while the threshold at which hospital admission occurs may vary according to the prevailing medical practice at the time.

The Department of Health provided hospital episode statistics for England for 1989–90–1998–9. For the period 1989–90–1994/5, we identified finished consultant episodes with a primary diagnosis of ICD 9 codes 531, 532, 533, and 534. For the period 1995–6–1998/9 when ICD 10 codes were in use, we identified finished consultant episodes with a primary diagnosis of codes K25, K26, K27, and K28. Average annual age standardised rates for 1989–90–1991/2, 1992/3–1995/6, and 1996/7–1998/9 were calculated. These were standardised against the European standard population using the mid year population estimates for each year and 10 year age bands. Trends for finished consultant episodes in the age groups 25–44 years, 45–64 years, 65–74 years, and 75 years and over

Abbreviations: NSAID, non-steroidal anti-inflammatory drugs; SSRI, serotonin reuptake inhibitors.
were examined. Day cases were excluded. Data for peptic ulcer site unspecified (ICD 9 code 533) was combined with gastric ulcer (ICD 9 code 531) to allow comparison with mortality rates. Peptic ulcer site unspecified made up less than 10% of the gastric ulcer total at the beginning of the period and less than 5% at the end, probably reflecting improvement in the accuracy of coding. Gastrojejunal ulcers (ICD 9 534 and ICD 10 K28) make up approximately 1% of all peptic ulcers and are not considered further in this analysis. We also studied admission rates for perforation and haemorrhage. Ulcers which both perforated and haemorrhaged were grouped with those which just perforated.

Finished consultant episodes relating to operations performed for peptic ulcer disease (OPCS 4 codes A27 (extracranial vagotomy), G28 (partial excision of stomach), G35 (operations on ulcer of stomach) and G52 (operations on ulcer of duodenum)) were examined for the period 1990/91–1998/99.

Mortality rates
Peptic ulcer is a disease of low mortality and most deaths occur as a result of complications in elderly patients with significant comorbidity. Mortality for peptic ulcer is therefore influenced not only by the frequency of ulcer disease but also by its severity, as well as the effectiveness of medical treatment.\(^1\)

Deaths due to ICD 7 codes 540, 541, and 542 (1958–1967) and deaths due to ICD 8 and 9 codes 531, 532, 533, and 534 (1968–1998) were identified for England and Wales. These were standardised against the European standardised population using the mid year population estimates for the year and 10 year age bands. Trends for mortality in the age groups 45–64 years and 65 years and over were examined. Data for peptic ulcer site unspecified (ICD 8 and 9 codes 533) were combined with gastric ulcer (ICD 8 and 9 codes 531) to correspond with gastric ulcer and peptic ulcer site unspecified (ICD 7 code 540).

Prescribing
To explore the possible impact of drug prescribing on mortality and hospital admissions, we analysed information on the number of items dispensed in the community between 1990 and 1999, supplied by Statistics Division 1E of the Department of Health. Values for 1990 are based on fees and on a sample of 1 in 20 prescriptions dispensed by community pharmacists and appliance contractors only. Values from 1991 onwards are from the Prescription Cost Analysis system and are based on a full analysis of all prescriptions dispensed in the community—that is, by community pharmacists and appliance contractors, dispensing doctors, and prescriptions submitted by prescribing doctors for items personally administered in England. The data do not cover drugs dispensed in hospital or private prescriptions but most prescribing for chronic diseases in the UK is carried out by general practitioners and is picked up by the Prescription Cost Analysis system.

Information was provided for the number of items dispensed for ulcer healing drugs (BNF section 1.3), NSAID (BNF section 10.1.1), aspirin (BNF section 2.9 and 4.7.1), oral anticoagulants (BNF section 2.8.2), and SSRI (BNF section 4.3.3).

RESULTS
Hospital admissions
Finished consultant episodes for gastric ulcer and peptic ulcer not otherwise specified (England 1989/90–1998/9)

Overall, there was a slight rise in admission rates over this period (table 1). For age groups less than 65 years there was little change but admission rates increased among older groups. There was a 29% rise among women and a 40% rise among men in those aged more than 74 years. Similarly, admissions for haemorrhage remained stable for younger patients but increased for older age groups. For those aged 75 and over, admission rates rose by 30% among women and by 41% among men.

There was a general decline in admission rates for gastric ulcer perforation. The decline was up to 31% among elderly men (aged 75 and over) over a period when gastric ulcer admissions overall and admissions for gastric ulcer haemorrhage increased.

Finished consultant episodes for duodenal ulceration (England 1989/90–1998/9)

Although there was little overall change in admission rates for duodenal ulcer, there was a decline for younger patients and a substantial rise for older individuals (table 2). Admission rates increased by 33% among women aged more than 74 years and by 49% among elderly men. Much of this rise related to admissions for haemorrhage. For the 65–74 year age group there was a 48% rise among women and 45% rise among men. In the age group more than 74 years, rates rose by 50% and 65%, respectively. Overall, hospitalisation rates for haemorrhage increased by 25% among women and by 13% among men.

Overall perforation rates remained stable among women but declined slightly among men. The latter was due to a

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Average annual age standardised rate for finished consultant episodes for gastric ulcer and peptic ulcer not otherwise specified, in England from 1989/90 to 1998/9. Age standardised within age bands to European standard population. Finished consultant episodes per 100 000</th>
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NOS, Not otherwise specified.
% Change, percentage change from 1989/91 to 1996/8.
decline in admissions for perforation among younger men despite a 21% rise in the 74 years and over age group.

**Operations**

Finished consultant episodes for operations (England 1989/90–1998/9)

The main indication for vagotomy (A27) is duodenal ulcer. Partial gastrectomy (G28) in contrast is performed both for gastric and duodenal ulcer disease as well as for gastric neoplasms. Vagotomy (A27) rates fell by about 83% between 1990/1–1992/3 and 1996/7–1998/9 (table 3). Over the same period, partial gastrectomy rates declined by about 30%. The frequency of simpler operations, including oversewing of bleeding or perforated gastric or duodenal ulcers (G35 and G52), increased, particularly for duodenal ulcer in younger ages. Overall operation rates changed little when the four categories were taken together.

**Mortality rates**

Mortality from gastric ulcer and peptic ulcer site unspecified (England and Wales)

Mortality rates from gastric ulcer were highest in the elderly, being about 20 times greater among patients aged 65 years and over compared with those aged 35–64 years (fig 1). There was a general decrease in mortality from 1958 among most age groups. A 2:1 male predominance in mortality rates among those aged 65 years and over in 1958 declined to near unity by the mid 1980s.

Mortality from duodenal ulcer (England and Wales)

Mortality among women aged 65 years and over doubled between 1970 and 1986 but has since stabilised (fig 2). For men aged 65 years and over, mortality steadily declined, the decrease slowing after the mid 1980s. Mortality from duodenal ulcer declined by 75% in the younger age groups over this period.

### Table 2: Average annual age standardised rate for finished consultant episodes for duodenal ulceration in England from 1989/90 to 1998/9. Age standardised within age bands to European standard population. Finished consultant episodes per 100 000

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### Table 3: Average annual age standardised rate for finished consultant episodes for operations in England from 1989/90 to 1998/9. Age standardised within age bands to European standard population. Finished consultant episodes per 100 000

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We were interested to see if there was any change that might be previously described trends had continued. In particular, we examined hospital admissions and mortality due to peptic ulcer.

Prescribing
Number of items prescribed in England from 1990 to 1999
The number of prescriptions for ulcer healing drugs increased two and a half times between 1990 and 1999 (table 4). Prescriptions for H₂ receptor antagonists rose early in the period but subsequently declined to about the same level as in 1990. Proton pump inhibitors started to be prescribed from 1990 and now make up about 60% of drugs prescribed.

Between 1990 and 1999, prescriptions for NSAID increased by about 13%. Prescribing of oral anticoagulants increased by 200% and aspirin 75 mg increased by 460% between 1990 and 1999. In contrast, there has been little change in prescriptions for aspirin 300 mg. SSRI were introduced in 1991 and prescriptions increased 15-fold by 1998.

Discussion
We examined hospital admissions and mortality due to peptic ulcer in England for the period 1989 to 1998 to see if previously described trends had continued. In particular, we were interested to see if there was any change that might be attributable to the introduction of proton pump inhibitors and antibiotic treatment for H pylori. Although there was a continuing general decline in hospital admissions for peptic ulcer among younger individuals, the pattern has changed for the elderly. The rise in perforation in women aged 65 years and over has not continued. Instead there has been a general rise in haemorrhage in both sexes, particularly for duodenal ulcer. In contrast, mortality rates have declined in all groups since 1986 except for women aged 65 years and over with duodenal ulcer, among whom the rates have remained stable. This may reflect improvement in medical treatment.

During this period, there has been a general decline in definitive surgery for peptic ulceration. Partial gastrectomy rates have decreased by 30% and vagotomy rates by 83%. There was a corresponding rise in simpler procedures for haemorrhage and perforation. Presumably, surgeons are now oversowing ulcers but relying on subsequent medical treatment to actually heal the ulcers and cure the ulcer diathesis.

Earlier studies of hospital admissions for peptic ulcer in England and Wales between 1958 and 1982 showed a general decline except among women aged 65 years and over. In this group there was a rise in perforations, especially for duodenal ulcer. In Scotland between 1975 and 1990, overall admissions for duodenal ulcer declined although again there was an increase in perforated duodenal ulcers among women aged 65 and over. There was a general decline across all ages in admissions for duodenal ulcer haemorrhage.

The advent of effective medical treatment for peptic ulcer since the 1970s may have been expected to reduce the frequency of hospital admissions. However, these advances have occurred at a time when drugs which may cause ulcers are increasingly used—for example, NSAID from the 1970s and low dose aspirin in the 1990s. The effect of H₂ receptor antagonists, the first effective ulcer healing drugs to be introduced, on hospital admission rates for peptic ulcer is uncertain. In the Trent region in England, there was a reduction in waiting list admissions and operations for uncomplicated duodenal ulcer in the five years following their introduction. However, overall emergency admissions for uncomplicated, bleeding, and perforated duodenal ulcer remained unchanged. Indeed, admission rates for bleeding and perforation increased among the elderly.

In Tayside, Scotland, long term continuous therapy with H₂ receptor antagonists for peptic ulcer was used much more widely following their introduction. However, overall emergency admissions for uncomplicated, bleeding, and perforated duodenal ulcer remained unchanged. Indeed, admission rates for bleeding and perforation increased among the elderly. In Tayside, Scotland, long term continuous therapy with H₂ receptor antagonists for peptic ulcer was used much more widely following their introduction.

A composite analysis of various indices of peptic ulcer disease in six Western countries in relation to the introduction of histamine H₂ antagonists showed an effect on work loss and disability rather than hospitalisation and mortality. In Denmark, hospitalisation and mortality rates from peptic ulcer complications increased, especially among the elderly, from 1981 to 1993, even with the introduction of histamine H₂ antagonists and proton pump inhibitors. We have also demonstrated an increase in hospital admissions for ulcer haemorrhage among older patients in England, despite the introduction of proton pump inhibitors and curative treatment for H pylori, as

![Figure 1](attachment:image1.png)  
Age specific mortality rates for males (M) and females (F) for gastric ulcer and peptic ulcer site unspecified in England and Wales (standardised to European standard population).

![Figure 2](attachment:image2.png)  
Age specific mortality rates for males (M) and females (F) for duodenal ulcer in England and Wales (standardised to European standard population).

### Table 4 Number of items prescribed in England from 1990 to 1999

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin 75 mg</td>
<td>1930</td>
<td>2851</td>
<td>3776</td>
<td>4691</td>
<td>5896</td>
<td>6472</td>
<td>7737</td>
<td>8883</td>
<td>9781</td>
<td>10848</td>
</tr>
<tr>
<td>Aspirin 300 mg</td>
<td>1219</td>
<td>822</td>
<td>797</td>
<td>764</td>
<td>1548</td>
<td>1517</td>
<td>1501</td>
<td>1452</td>
<td>1367</td>
<td>1203</td>
</tr>
<tr>
<td>Oral anticoagulants</td>
<td>1153</td>
<td>1347</td>
<td>1477</td>
<td>1665</td>
<td>1958</td>
<td>2246</td>
<td>2589</td>
<td>2938</td>
<td>3312</td>
<td>3698</td>
</tr>
<tr>
<td>Non-steroidal anti-inflammatory drugs</td>
<td>16387</td>
<td>17397</td>
<td>17973</td>
<td>18080</td>
<td>17894</td>
<td>17543</td>
<td>17722</td>
<td>18047</td>
<td>18297</td>
<td>18534</td>
</tr>
<tr>
<td>Selective serotonin reuptake inhibitors</td>
<td>510</td>
<td>1178</td>
<td>1885</td>
<td>2681</td>
<td>3808</td>
<td>5136</td>
<td>6556</td>
<td>7582</td>
<td>8929</td>
<td>1651</td>
</tr>
<tr>
<td>H₂ receptor antagonists</td>
<td>6201</td>
<td>7149</td>
<td>7534</td>
<td>7765</td>
<td>7864</td>
<td>7659</td>
<td>7547</td>
<td>7208</td>
<td>6846</td>
<td>6455</td>
</tr>
<tr>
<td>Proton pump inhibitors</td>
<td>182</td>
<td>465</td>
<td>1163</td>
<td>2095</td>
<td>3230</td>
<td>4484</td>
<td>5691</td>
<td>6812</td>
<td>8143</td>
<td>9527</td>
</tr>
</tbody>
</table>

% Change, percentage change between 1990 and 1999.
well as a 2.5-fold increase in prescriptions for ulcer healing drugs between 1990 and 1999. The relationship of acid suppressant drug prescription to the frequency of peptic ulcer is complex. In addition to having peptic ulcers, they are also coprescribed with NSAID for ulcer prophylaxis and widely used for functional dyspepsia and for gastro-oesophageal reflux.

This was an ecological study based on aggregate data—that is, using groups rather than individuals as the unit of analysis. Observations of groups may not allow causal inferences to be drawn about the individual, a problem known as the “ecological fallacy.” The number of tablets of, for example, an NSAID which are prescribed may not be directly translated into its biological activity because of differences in dosage schedules, patient compliance, patient selection for drug prescription, coprescription of gastroprotective drugs, and so on. On the other hand, a therapeutic modality may have an effect on subjects other than those for whom the drug was prescribed. For example, widespread use of anti-H pylori treatment may reduce the reservoir of disease in the community and secondarily reduce infection rates among those not previously exposed to the pathogen. Although aspirin, anticoagulants, and NSAID drugs are known to promote peptic ulcer disease and its complications, while anti-H pylori treatment is known to have a beneficial effect, our ability to draw inferences regarding cause and effect on temporal trends is necessarily limited in an ecological analysis such as this.

However, our finding of a decrease in hospital admissions for peptic ulcer among younger individuals but an increasing frequency among older individuals would be consistent with the effect of a decline in H pylori infection concurrently with an increase in the use of ulcerogenic drugs. The former may be expected to affect younger subjects while older individuals would be more likely to receive NSAID, aspirin, and antidepres-sant drugs. The increase in peptic ulcer admissions in the elderly is unlikely to be due to a greater prevalence of H pylori infection in older patients as the birth cohort with the highest prevalence of H pylori infection was those born around 1910. H pylori prevalence in cohorts of subjects born after that time would therefore be expected to be progressively lower.

It has been estimated that for every 1000 patients on vascular prophylaxis with aspirin, one or two per year will have a gastrointestinal bleed. There were approximately nine million more prescriptions for 75 mg tablets of aspirin in 1999 compared with 1990. If each prescription was for 30 tablets and one 75 mg tablet was taken each day, there would have been 900 000 more person years of exposure in 1999. The 900–1800 more episodes of gastrointestinal bleeding which would be expected approximates the 1000 excess admissions actually observed.

Hospital episode statistics (started in 1987) are based on finished consultant episodes rather than admissions. Rates derived from them cannot therefore be compared directly with earlier studies that were based on the 10% sample of admissions from the hospital inpatient enquiry, the collection of which ended in 1985. However, these data are robust, including all finished episodes rather than the 10% sample in the hospital inpatient enquiry. Ninety five per cent of admissions generate a single consultant episode while a minority generate multiple consultant episodes during an admission. We feel therefore that the trends demonstrated within the period 1989–1999 can be compared with those observed in previous studies based on data from the hospital inpatient enquiry. Furthermore, the diagnoses recorded on hospital episode statistics have been shown to be accurate, thus reducing the risk of misclassification errors. Any coding inaccuracies should even out in a study of trends. There has been no major change in diagnostic modalities for peptic ulcer disease over the period under study. According to Rockall and colleagues, the incidence of upper gastrointestinal haemorrhage as a reason for admission (not including haemorrhage occurring in hospital) is approximately 103/100 000 adults/year, or 82/100 000 population/year for males. Peptic ulcer accounted for approximately 35% of these, or 29/100 000/year. This is very close to our values of 31.8/100 000/year for 1992–5 (duodenal ulcer 18.8, gastric ulcer 13.0). For women, our values were 15.2/100 000/year compared with 20.0/100 000/year based on Rockall’s data. We were unable to assess the impact of changes in lifestyle factors such as alcohol intake and smoking habits, which have been shown to be risk factors for peptic ulcer complications. However, these would have changed relatively little during the period of this study.

In conclusion, while peptic ulcer admissions and mortality have declined in frequency among young individuals, admission rates for gastric and duodenal ulcer haemorrhage, and duodenal ulcer perforation, have increased among older patients. Further work is needed to establish the reasons for these different time trends for haemorrhage and perforation, for the young and old, for mortality and the relative contribution of various drugs, both ulcer causing and ulcer healing, to the pattern of peptic ulcer disease in our population.

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REFERENCES

www.gutjnl.com
Osteoporosis and liver disease: additional reasons for coeliac disease screening

We read with great interest the recently published guidelines on the management of osteoporosis associated with chronic liver disease (Gut 2002;50(suppl 1):1–9). However, we would like to add a few words of comment. Associations between coeliac disease (CD) and primary biliary cirrhosis in particular and other autoimmune liver diseases in general have been reported. In addition, it has been suggested that these individuals should be considered as an at risk group for whom serological testing for CD is indicated. Patients with CD are at high risk of developing low bone mineral density and bone turnover impairment, and it has been shown that adherence to a gluten free diet has a significant positive impact on these parameters. Thus we suggest that physicians caring for patients with the above mentioned liver diseases should screen them for CD in the presence of signs and symptoms suggestive of malabsorption such as osteoporosis. This seems a reasonable strategy as detection of CD will allow for a more rational therapeutic approach to the risks determined by this association. Complications due to the presence of CD, such as malnutrition, anaemia, and osteoporosis, may have a considerable impact on liver disease management and the need/success of transplantation.

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References

Caeerulein induced pancreatitis

We have read with interest the article by Frossard et al (Gut 2002;50:78–83) entitled “Both thermal and non-thermal stress protect against caerulein induced pancreatitis. In the present study Frossard et al showed that thermal and non-thermal stress induced by injection of the β agonist isoproterenol upregulated HSP70 in the pancreas which is associated with amelioration of sub-sequently induced caerulein pancreatitis. The authors hypothesise that the protective effects on pancreatitis severity caused by thermal and non-thermal stress may be mediated by HSP70. We believe however that both heat shock and non-thermal stress can stimulate several other anti-inflammatory pathways which were not discussed in this study, all of which could be alternative explanations for the observations that were made. It is widely established that catecholamines, both endogenously released during heat shock stress or by injection of isoproterenol, can influence activation of inflammatory pathways during inflammation and infection (reviewed by van der Poll). Evidence exists that catecholamines exert anti-inflammatory effects on a number of host mediator systems, such as the cytokine network and neutrophils, which are implicated in the pathogenesis of acute pancreatitis and the peptides associated systemic inflammatory response syndrome. Catecholamines, either endogenously produced or exogenously administered, may act to dampen excessive pro-inflammatory pathways by mechanisms not related to enhanced production of heat shock proteins. Firstly, catecholamines exert anti-inflammatory effects on the cytokine network by inhibiting the production of proinflammatory cytokines such as tumour necrosis factor (TNF), interleukin (IL)-1β, IL-12, and interferon γ (IFN-γ), of which TNF and IL-1β have been implicated as mediators that play a proinflammatory role in acute pancreatitis. Secondly, in animal models of endotoxaemia, pretreatment with isoproterenol enhances the clearance of endotoxin-induced IL-12 production in normal and IL-12 deficient mice. Therefore, we believe that the conclusion by Frossard et al that the protective effects of thermal and non-thermal stress might be mediated by HSP70 is only one possible explanation and that their observations might also be explained by the immunomodulatory effects of catecholamines.

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References
Author's reply

We thank van Westerloo et al for their interest in our paper and their comments on the interpretation of our data. They are of the opinion that besides heat shock proteins both thermal and non-thermal stress can stimulate several other anti-inflammatory pathways that in turn could be responsible for the protective effects observed in the study. Secondly, catecholamines can exert anti-inflammatory effects independent of heat shock proteins.

When we embarked on this project, we were also concerned about all the stresses that result in the induction of HSP70 may have other non-HSP related effects and did mention this in our discussion. At that point we did not have the tools to show the crucial protective role played by HSP70.

To prove that a cause-effect relationship exists between thermal stress-induced protection against pancreatitis, we adopted the anti-sense oligonucleotide approach in another recently published experimental study 1 to indicate unequivocally that the thermal stress induced protection of intrapancreatic trypsinogen activation and protection against caerulein induced pancreatitis are mediated by HSP70. Furthermore, our studies have shown that HSP70 induction that occurs during the evolution of pancreatitis in non-thermally stressed rats acts to limit the severity of pancreatitis.

Using antisense oligonucleotides to HSP70, Nisoli and colleagues 2 have also shown that the protective effects of noradrenaline against tumour necrosis factor-alpha-induced apoptosis in cultured rat brown adipocytes: role of nitric oxide induced heat shock protein 70 expression. J. Biol. Chem. 2001;276:1421–30. 3


Pathology and cost effectiveness of endoscopy surveillance for premalignant gastric lesions

We read with great interest the article by Whiting et al. (Gut 2002;50:378–81). The Birmingham experience shows how the prevalence of gastric cancers detected at an early stage is significantly higher in the endoscopically surveyed population than in non-surveyed patients. It is entirely possible that prior thermal or non-thermal stress induce HSP70 which may in turn lead to the enhanced production of anti-inflammatory factors and attenuation of proinflammatory cytokines. Indeed this has been shown to be the case in many experimental systems, including animal models of sepsis (reviewed by Bruemmer-Smith and colleagues 5 ). Moreover, mycobacterial HSP70 has been shown to prevent adjuvant arthritis and induce IL-10 producing T cells. 6

The mechanism(s) by which HSP70 might protect against caerulein induced pancreatitis is not yet known. Experiments examining the relationship between HSP70 and the inflammatory cascade induction during caerulein induced pancreatitis are currently underway.

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References


Table 1 Invasive cancer detected during follow up of non-invasive gastric neoplasia

<table>
<thead>
<tr>
<th>Histology at enrollment</th>
<th>Gastric cancer detected after follow up longer than 12 months</th>
<th>Gastric cancer detected within 12 months from initial diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Follow up (months)</td>
<td>Follow up (months)</td>
</tr>
<tr>
<td></td>
<td>EGC  AGC GC-nos</td>
<td>EGC  AGC GC-nos</td>
</tr>
<tr>
<td>Low grade non-invasive neoplasia (99 cases)</td>
<td>38–80</td>
<td>5</td>
</tr>
<tr>
<td>High grade non-invasive neoplasia (25 cases)</td>
<td>30–72</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>13–60</td>
<td>19</td>
</tr>
</tbody>
</table>

EGC, early gastric cancer (that is, UICC pathological stage I); AGC, advanced gastric cancer (that is, UICC pathological stages II–III); GC-nos, gastric cancer of unknown pathological stage.

*Mean (range)
A series of patients with low and high grade gastric non-invasive neoplasia. The follow-up schedule was differentiated a priori, depending on the cancer risk presumably associated with each grade of lesion. The number of patients enrolled in each diagnostic category, follow-up time, and number of cancers detected are shown in table 1. It is worth emphasizing the high prevalence of early gastric cancers (77%) among the 30 cases of cancer detected in our prospective follow-up study. The 19 cases of cancer detected in the long term follow up support the premalignant significance of non-invasive neoplasia while the 11 cases detected within one year from the original endoscopy fully demonstrated that non-invasive neoplasia frequently coexists with advanced cancer. Both of these observations could represent valid foundations in drawing a surveillance programme aimed at secondary gastric cancer prevention.

Acknowledgements

The prospective study on gastric non-invasive neoplasia has been supported by the Veneto Region (project number 909/06-99) and granted by the Italian Office for Instruction and University Research (MTUR: Chiron project -July 2000).

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References


**Adult height in patients with early onset of Crohn’s disease**

Alemzadeh et al (Gut 2002;51:26-9) reported that adult height, compared with the general Dutch population, was reduced by a mean of −0.9 SDs (95% confidence interval −1.55 to −0.28) in 15 Crohn’s patients with prepubertal onset of symptoms. However, the calculated deviation from “target height” (based on parental height) did not reach statistical significance and the authors have speculated that familial short stature, and not Crohn’s disease, may be a factor in this group. Furthermore, no height deficit was found in those with postpubertal onset of symptoms. We are currently undertaking a review of those with childhood onset diseases attending our paediatric and adult IBD clinics. In the majority of cases parental height was measured by trained auxologists, although in some, details were not available in the case notes to discern the method of measurement and may therefore have included self-reported parental heights. We calculated SDS scores from the revised British Longitudinal standards using the method described by Alemzadeh et al (mean British male adult height of 176.0 cm (SD 6.5) and female adult height of 163.6 cm (SD 5.7)). “Target height” was calculated for male patients by (paternal height+ (maternal height+13))/2 and for female patients by (maternal height+ paternal height+13))/2 (cm). “Prepubertal” children were defined as males and females with onset of symptoms at <13 and <11 years, respectively. We defined the upper limit of “postpuberty” as 16 years, in contrast with Alemzadeh et al who used 22 years. The population we serve is ethnically diverse and therefore we have confined this analysis to Caucasians, as per the Dutch study.

There was no deficit in height of the parents (48 mothers and 46 fathers) of children with childhood onset Crohn disease compared with the general population. Furthermore, there was no deficit in height when examined by onset of their child’s Crohn’s disease: mean “prepubertal” parental SDS 0.00 (SD 1.11) and mean “postpubertal” parental SDS 0.08 (SD 1.12) (n=70 and n=24, respectively; p=0.34). In addition, we found no significant sex difference: mean paternal SDS −0.20 (SD 0.98) and mean maternal SDS 0.03 (SD 1.22) (n=46 and n=48, respectively; p=0.94).

In 27 cases, 18 (6 male and 12 female) children of these parents are now aged more than 16 years (mean age 19.3 (SD 2.6) years). An analysis of final height is presented in table 1. A separate analysis was also carried out using the nomogram of the Child Growth Foundation which corrects height until the age of 22, but this did not alter our findings and the data are therefore not presented.

In the majority of patients (85% (23/27); p=0.008, χ2 test) final height was less than “target height”, and in 22% (6/27) the final height deficit was more than 10 cm. For those aged over 18 years the values were 88% ((14/16); p=0.022, χ2 test) and 25% (4/16), respectively.

In this sample of patients with childhood onset Crohn’s disease we found no evidence of a familial basis for short stature. Our data confirm the findings of others that mean adult height of patients with onset of symptoms before the age of 16 is reduced. Using age of onset of symptoms as a proxy for puberty, we found no significant difference in final height between those with pre- and postpubertal onset of symptoms. This is in contrast with the findings of Alemzadeh et al and may be because of differences in the upper age limit of “postpuberty” (16 versus 22 years).

Growth failure remains a concern to our British Crohn’s patients and although the mean deficit of 5–6 cm from target height may be considered by some to be inconsequential this includes a subset with much more significant growth impairment. A better understanding of the mechanisms underlying growth failure is required to determine whether there is an identifiable group of children that may benefit from early and more intensive immunosuppression and/or nutritional therapy.

We agree with Alemzadeh et al that only larger (population based) studies will have the power to determine the effect of factors such as site of disease activity and therapeutic intervention.

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Table 1 Final height of Caucasian Crohn’s patients with pre and postpubertal onset of symptoms

<table>
<thead>
<tr>
<th>All</th>
<th>Prepubertal</th>
<th>Postpubertal</th>
<th>Pre vs post (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 16 years at last height</td>
<td>0.68 (−1.17 to −0.19)</td>
<td>0.57 (−1.61 to 0.02)</td>
<td>−1.01 (−1.86 to −0.16)</td>
</tr>
<tr>
<td>Deficit (cm)</td>
<td>0.59 (−2.8 to −1.3)</td>
<td>0.55 (−8.6 to −2.4)</td>
<td>−7.0 (−8.8 to −5.3)</td>
</tr>
<tr>
<td>n</td>
<td>20</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>&gt; 18 years at last height</td>
<td>0.73 (−1.42 to −0.04)</td>
<td>0.65 (−1.48 to 0.18)</td>
<td>−1.07 (−2.12 to −0.02)</td>
</tr>
<tr>
<td>Deficit (cm)</td>
<td>0.53 (−8.6 to −2.0)</td>
<td>0.51 (−8.9 to −1.38)</td>
<td>−6.2 (−11.08 to −0.38)</td>
</tr>
<tr>
<td>n</td>
<td>13</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Data are mean (95% confidence interval).
in patients with iron overload. Diagnosis of hereditary haemochromatosis may be by family screening had evidence of biochemical were identified to be C282Y homozygotes by Ryan et al. reported that 78% of men (mean age 42 years) in their paper, Ryan discussed penetrance of clinical not biochemical. In a recent large population study from the USA, Beutler et al. reported the prevalence of biochemical iron overload in C282Y homozygotes to be similar to that observed by the Dublin group and ourselves. However, they found no evidence of more frequent symptoms in C282Y homozygotes compared with controls, even if biochemical iron overload was present. It appears that these individuals have iron overload and a number of unrelated non-specific symptoms, similar to those seen in the general population. Prospective longitudinal studies are required to establish the proportion of C282Y homozygotes who will eventually exhibit the clinical phenotype of hereditary haemochromatosis.

Author's reply
I think that this study is clear. We agree with the authors that the differences are possibly caused by the other “end point” of puberty and sex and the population and studied sex in both studies. Another difference could be that the authors did not calculate the corrected height SDS (height SDS target height SDS); this may be for the postpubertal group. Furthermore, they used another formula for target height. This formula does not include a correction for insulin-like growth factor 1 which is independent of malnutrition.

Underdiagnosis of hereditary haemochromatosis: reflects lack of clinical not biochemical penetrance
In their paper, Ryan et al. (Gut 2002; 51:108–12) reported that 78% of men (mean age 42 years) and 56% of women (mean age 39 years) who were identified as C282Y homozygotes by family screening had evidence of biochemical iron overload. They concluded that underdiagnosis of hereditary haemochromatosis may be the result of failure to diagnose the phenotype in patients with iron overload.

In Glasgow, the prevalence of the C282Y homozygous state is high at approximately 1 in 180 of the population, of whom only 5.1% had been diagnosed by August 2001. Of these known cases we identified 42 (20 males) C282Y homozygotes who had been diagnosed by predictive genetic testing of family members of affected probands. At diagnosis, all 20 males (mean age 46) had evidence of biochemical iron overload, defined as a transferrin saturation of 45% (transferrin detected immunohistochemically) or a serum ferritin of >300 μg. Both parameters were elevated in 15 (75%) individuals, with three having an isolated elevated transferrin saturation and two an isolated elevated ferritin. Of the 22 females (mean age 44) identified, 18 (81%) had evidence of biochemical iron overload, of which 10 (43%) had raised transferrin saturation and ferritin, as defined above. A further seven patients had an isolated elevation in transferrin saturation and one had an elevated ferritin alone. Only four (9.5%) C282Y homozygotes identified by family testing had no evidence of biochemical iron overload. All of these individuals were female (age range 17–48 years). Unfortunately, due to the retrospective nature of the analysis, it was not possible to assess symptoms at diagnosis.

The prevalence of biochemical iron overload in our predominantly Celtic population is high and comparable with that reported from Dublin by Ryan et al. However, the proportion that will develop clinical “disease” related to hereditary haemochromatosis remains uncertain. Ryan et al. proposed that underdiagnosis of hereditary haemochromatosis might be due to the non-specific nature of the symptoms early in the disease. They noted that fatigue, arthropy, and male impotence were common complaints in these C282Y homozygotes identified by family screening. However, they provided no evidence that these symptoms were due to iron excess as they appeared to be as common in their biochemically non-expressing control group. It would be interesting to know whether any of these non-specific symptoms improved with phlebotomy.

A paper by Ryan et al. (Gut 2002; 51:108–12) reported the prevalence of biochemical iron overload in C282Y homozygotes to be similar to that observed by the Dublin group and ourselves. However, they found no evidence of more frequent symptoms in C282Y homozygotes compared with controls, even if biochemical iron overload was present. It appears that these individuals have iron overload and a number of unrelated non-specific symptoms, similar to those seen in the general population. Prospective longitudinal studies are required to establish the proportion of C282Y homozygotes who will eventually exhibit the clinical phenotype of hereditary haemochromatosis.
Dynamic Radiology of the Abdomen: Normal and Pathologic Anatomy, 5th edn


This is the fifth edition of Dynamic Radiology of the Abdomen: Normal and Pathologic Anatomy, a book that has become essential reading for all workers engaged in the microscopic diagnosis of gastrointestinal epithelial neoplasia.

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References

BOOK REVIEWS

Dynamic Radiology of the Abdomen: Normal and Pathologic Anatomy, 5th edn


This is the fifth edition of Dynamic Radiology of the Abdomen: Normal and Pathologic Anatomy, a book that has become essential reading for all workers engaged in the microscopic diagnosis of gastrointestinal epithelial neoplasia.

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References
and thoughtfulness of a pharmaceutical company and I trust that someone will come forward to do this. I do not plan to part with my copy, despite continuing references to prokinetic drugs which are no longer, or were never, available in the UK.

P Hungin

Reconstructive Surgery of the Esophagus


Oesophageal disease brings together many disciplines within the field of gastroenterology and the book is aimed primarily at the specialist oesophageal surgeon. Reconstruction of the oesophagus follows resection for benign or malignant disease is one of the most challenging surgical procedures currently performed, and the oesophagus being such an unforgiving organ increases that challenge. Rather surprisingly, this is the first truly authoritative and evidence based volume to be devoted completely to this topic.

The book was trained at the University of Chicago under doyens of oesophageal surgery including Skinner, Belsey, and DeMeester, and has continued the tradition of that fine school. He is therefore well qualified to write this specialist tome. The historical chapter regales the courage of the pioneers of oesophageal surgery in the first half of the twentieth century, in which great British oesophageal surgeons including Grey Turner, Ivor Lewis, Allison, and Belsey are afforded due prominence. Following general sections on the philosophy of and indications for oesophageal replacement and the characteristics available of the oesophageal substitute and route to bridge the gap, a chapter is then devoted to each of the principal reconstructive techniques using stomach, colon, and jejunum, as well as the use of prosthetic tubes. Each of the chapters goes into considerable detail about relevant surgical anatomy, physiology, operative technique, and complications and their management.

Reconstructive Surgery of the Esophagus is clearly and succinctly written. While it draws heavily on the author's considerable experience, one of the attractions of this book is that it is clearly evidence based, and as well as being liberally referenced, the key references and conclusions are highlighted in tabular form in each chapter. Another strong point for its predominantly surgical audience is the wealth of line drawings which clearly depict surgical anatomy and technique. Overall, this is an excellent book, which takes its place well among its contemporaries.

Clinical Governance in Gastroenterology


Can external control drive clinical standards? In the meantime we have clinical governance. What this actually means, how it is meant to operate, and whether governance guidelines will become yardsticks for judging performance also remain open. But at least it sounds like a good thing, and one that hopefully sensible answer is that clinical governance might ensure “uniform standards” across heterogeneous NHS practices, reassure the public and, in any case, it seems here to stay—at least for the moment.

It still baffles me as to what differences there are between excellent clinical practice and practice by clinical governance—presumably the latter is not meant to be quite as good, but will do. There seems to be a clamour for “acceptability” standards and this is anticipating being in charge of ensuring we do our jobs properly and services are commissioned efficiently. There are one or two omissions—for example, the lack of mention of varices as a cause of acute bleeding—but each chapter does have a section on health economics for those hopefully traversing the quagmire of costs, effectiveness, care, and quality. Word has it that Commission for Health Improvement will do poorly; but in this book the authors have got that aspect of health economics correct and timely.

P Hungin

Gastroenterology Highlights

2001–2

Edited by E Ogilvie. Health press, 2002, £15.00, colour, pp 84. ISBN 1-903734-12-6

Gastroenterology Highlights 2001–2 is attractively presented in good quality four colour format. This slim volume of 84 pages comprises 10 chapters written by a panel of international experts. Topics covered range from diseases of the oesophagus, liver and biliary tract, small bowel, to complications of liver disease, endoscopy, and colorectal cancer prevention and screening. The aim is to discuss key issues and developments to prokonetic drugs which are no longer, or were never, available in the UK.

A Watson

The Pelvic Floor: Its Function and Disorders


In my clinical practice, I have felt for a long time that the knowledge acquired in coloproctology should be more frequently shared with specialists in obstetrics, gynaecology, urology, neurology, etc. Therefore, I enjoyed receiving this book where the contributors range between at least 10 specialities which concern pelvic floor disorders. Each chapter is written by a leading figure or a group expert in this field. The book is a valuable starting point for gastroenterologists who wish to come up to date with data and to learn about the clinical problems of the pelvic floor, associating the anterior and posterior components, including physiology, anatomy, diagnostic imaging, surgery, nursing, and psychology.

The previously published book by these authors was entitled Coloproctology and the Pelvic Floor—coloproctology has disappeared from the title of their new book, indicating that it is no longer possible to approach the posterior pelvic floor disorders without studying the pelvic floor as a whole. In this way, this new title by itself is a very strong message. However, the reader might be a little disappointed if he looks for how to treat, for example, a patient suffering from both anal and urinary incontinence, or a patient complaining of urinary stress incontinence and posterior pelvic floor dysfunction inducing straining at stools. The book contains a number of excellent chapters concerning patogenesis, investigations, and treatment of the pelvic floor disorders. However, these algorithms have been constructed to treat either the anterior pelvic floor or the posterior pelvic floor, but not to treat a patient who complains simultaneously of the two parts of the pelvic floor. It was perhaps because the book was initially so promising and the subsequent chapters so interesting that I was hoping for a little more specific detail from the authors!

Nevertheless, the psychological characteristics of the pelvic floor disorders are very well described, suggesting that the impact of social factors, such as sexual abuse for example and psychological distress, on the expression of pelvic floor symptoms should be taken into account. To date it has not been very easy to construct algorithms to treat the pelvic floor, and in my opinion the algorithms given at the beginning of the book will be very useful for the reader. However, they would have been even more useful if the experts had suggested at which step(s) of their algorithms they felt the need to investigate the psychological profile of their patients.

As C Norton wrote in the book, “there is a small but growing movement to create multidisciplinary pelvic floor clinics, where urogynecologists, colorectal surgeons, specialist nurses, physiotherapists, neurologists, psychiatrists . . . work together to improve the management of pelvic floor disorders”. While we are waiting for these future multidisciplinary clinics of “perineurology”, it was probably not the time to furnish algorithms in this particular edition of The Pelvic Floor concerning investigations and management of associated symptoms of the anterior and posterior pelvic floor, integrating the psychological profiles of the patients. JH Pemberton, M Swash, and MM Henry must be acknowledged and congratulated for bringing together the knowledge of all the specialities involved in the pelvic floor.

P Denis

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vast majority of papers covered were published in 2001 or 2000.

The Fast Fact Highlights series aims to “keep its readers abreast of the latest innovations” in each specialty. The flyer states that the information is presented “in an accessible style, comprehensively illustrated and fully indexed”. Have these aims been met? Certainly the style is easy to read. However, there are only three figures in the whole book. Two of these are world maps showing geographical variations in colorectal incidence and mortality, while a third figure is a rather pointless flow chart of “preventive steps” for patient groups at average, moderate, and high risk from colorectal cancer. The steps are identical for the first two groups: change in lifestyle, chemoprevention and screening, and early diagnosis. These steps are again repeated for the high risk group, with preventive surgery added. There is no subject index.

I like the table in each chapter stating what are “in”, what are “out”; what are contentious, and what are still needed. However, it is irritating that many of the items mentioned as “in” or “out” have neither been discussed in the text nor referenced.

In the discussion on endoscopic treatment of gastro-oesophageal reflux, the EndoCinch and implantation of microspheres were discussed, but not the Stretta procedure. Both Freedman’s study on the association between cholecystectomy and oesophageal adenocarcinoma as well as Schnell’s report on non-surgical management of Barrett’s oesophagus with high grade dysplasia, were reviewed in the oesophagus chapter and again in the chapter on gastrointestinal cancer. Tighter editing could have avoided this duplication as space in this book is clearly at a premium.

I was surprised to read that “rectal examination as the only test for colorectal cancer” was “out”. This statement was not referenced!

These brief reviews cannot by their nature represent a small selection of the many advances over a one to two year period, and falls far short of the excellent reviews in the Current Opinions in Gastroenterology series. It is probably unsuitable for a library collection, and is not a book I would myself keep for reference. I am uncertain who may wish to purchase this volume, even though it is modestly priced at £15. While it is an easy read, I suspect that few consultant gastroenterologists would want to buy this book. I doubt if many trainees would either.

J Y Kang

CORRECTION

In the paper by Higham et al (Gut 2002;50:460–4) the heading for table 4 should read “Number of items (thousands) prescribed in England from 1990 to 1999. Prescription Cost Analysis system (Department of Health)”.

NOTICES

38th EASL Annual Meeting
The European Association for the Study of the Liver will be holding its 38th annual meeting on 29 March–1 April 2003 in Istanbul, Turkey. Further information can be found on the website www.easl.ch/easl2003.

Falk Workshop—Inflammatory Bowel Disease: Turning New Advances into Practice
This will be held on 3 April 2003 in Berne, Switzerland. Further details: Falk Foundation e.V., Congress Division, PO Box 6529, Leinenweberstr. 5, 79041 Freiburg/Br, Germany. Tel: +49 761 15 14 10; fax: +49 761 15 14 339; email: symposia@falkfoundation.de; website: www.falkfoundation.de

International Symposium on Viral Hepatitis and Liver Disease
This conference will take place on 6–10 April 2003 in Sydney, Australia. Further information: ISVHLD 2003 Congress Managers, GPO Box 128, Sydney NSW 2001, Australia. Tel: +612 9262 2277; fax: +612 9262 3135; email: isvhld@tourhosts.com.au; website: www.tourhosts.com.au/isvhld

Prague Hepatology Meeting
To be held on 5–7 June 2003 in Prague, Czech Republic. Leading speakers from Europe and the USA will present new ideas and suggestions on pathophysiology, diagnostics, and therapy of liver diseases in ten programmes blocks. Further details: Ms Veronika Revicka. Tel: +420 241 445 799; fax: +420 241 445 806; email: veronika@congressprague.cz

Falk Symposia—New Findings on Pathogenesis and Progress in Management of IBD
Two symposia and a workshop will be held on 10–14 June 2003 in Berlin, Germany. Further details - see Falk Workshop details above.

Gastroenterology and Endotherapy: XXIst European Workshop
This will be held on 16–18 June 2003 in Brussels, Belgium. Further details: Nancy Beuyprez, Administrative Secretariat of the Workshop, Gastroenterology Department, Erasme Hospital, Route de Lennik 808, B-1070 Brussels, Belgium. Tel: +32 (0)2 555 49 00; fax: +32 (0)2 555 49 01; email: beuyprez@ulb.ac.be

The Association of Coloproctology of Great Britain & Ireland
This annual meeting will be held on 7–10 July 2003 in Edinburgh, UK. Further details: Conference Secretariat, The ACGBI at the Royal College of Surgeons of England, 35–43 Lincoln’s Inn Fields, London WC2A 3PE. Tel: +44 (0)20 7973 0307; fax: +44 (0)20 7430 9235; email: acgbi@asgbi.org.uk; website: www.acgbi.org.uk