Liver disease and pulmonary hypertension

EDITORS—I read with interest the leading article on hepatopulmonary syndromes (Gut 2000;46:1–4). The author describes explicitly the various associations between the liver and lung disorders. Several clinical studies and autopsy findings have demonstrated a 20% higher prevalence of pulmonary hypertension in patients with advanced liver disease and portal hypertension, the histological findings of which show features similar to those seen in pulmonary hypertension from other causes.1–4 However, the underlying mechanism(s) responsible for pulmonary hypertension in these patients is not known. It has been recently hypothesised that increased circulating levels of noradrenaline (NA) or increased activity of uL adrenergic receptors in the pulmonary arteries can produce excessive pulmonary vasoconstrictor and proliferative responses leading to pulmonary hypertension.5

It is generally believed that pulmonary hypertension results from defective hepatic elimination of a vasoconstrictive agent produced by the hepatic parenchymal territory which reaches the pulmonary arteries through porto-systemic shunts.6 The mesenteric organs produce about 50% of the total NA present in the human body7 which is rapidly metabolised by liver parenchymal cells to vanillylmandelic acid before it reaches the systemic circulation.7 Following hepatectomy, circulating levels of NA have been shown to be increased by up to 10-fold in experimental animals8 while patients with liver cirrhosis or those undergoing extracorporeal hepatic resection or liver transplantation have levels of circulating NA up to 2.6-fold greater.9 Increased pulmonary vasoconstrictor vasoreactivity has often been observed during the anhepatic phase of liver transplantation10 while several studies have demonstrated that pulmonary hypertension occurs more frequently in patients with liver cirrhosis following liver transplantation.11 Formation of a portocaval shunt without liver cirrhosis has also been shown to produce severe pulmonary hypertension.12 It has been demonstrated recently that hepatopentomy produces a sharp increase in pulmonary vascular resistance which correlates positively with pulmonary arterial NA levels.13 Defective hepatic metabolism by diseased liver parenchymal cells could greatly increase circulating levels of NA. The resulting portal hypertension and porto-systemic shunt also transfers large amounts of NA directly from circulating levels of NA. The resulting portal hypertension and porto-systemic shunts could greatly increase systemic levels of NA and could produce severe pulmonary hypertension. Increased NA levels could also explain the association of increased cardiac output noted in patients with porto-pulmonary hypertension. Antagonists or drugs that rapidly metabolise circulating levels of NA could therefore prevent the development of pulmonary hypertension in patients with advanced liver disease and portal hypertension.

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UDCA, PBC, and biochemistry, what does normal mean?

EDITORS—We read the commentary by Lindor (Gut 2000;46:8) with great interest and would like to raise the following points.

Lindor states that our finding of no correlation between the percentage of UDCA in serum bile acids and biochemical response is not only from one stage to the next, but to the more hydrophilic to a more hydrophobic acid concentrations in serum and a shift from it is improbable that a further increase in bile acid concentrations in serum and a shift from the more hydrophobic to a more hydrophilic bile acid pool could be responsible for a complete response to UDCA therapy. Further results are awaited.

Lindor speculates that in our study the high percentage of patients with early stage PBC could have been an artefact because there was no correlation between histological stage at entry and biochemical response. We started UDCA therapy for PBC in 1978/79. In that time we had 120 patients under constant supervision and over this period of 21 years only three patients have undergone liver transplantation and two have died as a result of late stage liver disease. Hence our patients underwent regular liver biopsies and some even laparoscopy. That we have seen no more deaths or complications can only be explained by the fact that patients were in the early stages of the disease and that they were treated continuously with UDCA.

Lindor says that improvement in liver histology in our patients treated with UDCA (p<0.05) differs from the overall experience in other studies. However, it is very likely that a more determined treatment of incomplete responders whereas in other trials complete and incomplete responders were evaluated together and compared with an untreated group.

In addition, Lindor is surprised that the histological progression reported in our series, even in incomplete responders, was slow. Based on modelling studies of untreated patients with PBC, he stated that a substantial number of patients with PBC could have been an artefact because this is not possible for ethical reasons, histological findings should not be over interpreted. Clinical data, development of complications, outcome, etc, are more relevant.

The most important objection of Lindor is the question of the relation between normalisation of liver function tests and clinically relevant findings. This is in contrast with a statement by Lindor himself (personal communication, November 9, 1998, 5th AASLD Meeting, Dallas, Texas) where he told us that in his incomplete responders the disease progressed in 38% of patients and in full responders in only 5%. We believe our results are comparable. In our study Lindor states that our finding of no correlation between the percentage of UDCA in serum bile acids and biochemical response is different from other reports. However, he quotes only one study. Based on data from the literature, reported in our paper that
The most important findings in our study were that: (1) UDCA improved cholestatic indices in incomplete and full responders in a strictly parallel manner; (2) in incomplete responders, the curves leveled off after about 3–5 years and did not normalise; and (3) cholestasis and that other reactions are secondary. Therefore, more potent choleretic compounds or a combination of various choleretic substances could further improve response in incomplete responders. As stated previously, we are about to conclude such a study and the results seem to support our hypothesis.

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Endoscopic gastrin test and Helicobacter pylori infection

EDITOR,—In their recent article in Gut, Iijima and colleagues conclude that reduced acid secretion in gastric ulcer patients and gastric acid hypersecretion in duodenal ulcer patients were both normalised after H pylori eradication. We agree with the recovery of gastric secretory function in the former group of patients, who constantly bear chronic gastritis which improves greatly after disappearance of the germ, with subsequent restoration of gastric glandular tissue. However, we disagree with their conclusion regarding the latter group, because it is not supported by the experimental data they obtained. It is surprising that they found an increase in acid secretion (although not significant) in duodenal ulcer patients one month after eradication. This finding is difficult to explain, because basal gastric levels were significantly reduced compared with those before eradication in the same patients, and others have found a rapid decrease of acid output in relation to the decline of serum gastrin. The Japanese researchers state that this disparity may depend on the premature assessment of gastrin stimulated acid output (one month), because the same evaluation performed after seven months showed significantly decreased values compared with those before eradication. It must be pointed out, however, that there is a tremendous overlap between acid outputs measured before and after seven months of eradication, and those pertaining to H pylori negative controls. Moreover, the rate of decrease of acid secretion after seven months was only 23% in their study.

This reduction is very low and similar to the level of 16% seen after six months of eradication by Parente et al, who acknowledged in their paper that this small percentage casts doubt on the unique role of H pylori in determining the acid secretion typical of duodenal ulcer. Although the data obtained by Iijima et al and Parente et al after cure of H pylori infection were significantly different from those before eradication, we believe that statistical significance does not mean physiological relevance in this case.

Apart from the previously mentioned over-lapping, some patients even show an increase in acid secretion after seven months, and others have found no change in maximal acid secretion 12 months after eradication of the bacterium. It is clear that the deregulation of gastric physiology in duodenal ulcer is caused by a combination of factors and H pylori is only one of them. In addition, it should not be forgotten that 20% of patients with duodenal ulcer have been shown to relapse despite ascertained H pylori eradication, and a high acid output has been found in patients with duodenal ulcer recurrence after the disappearance of H pylori.

These findings seem to suggest that a genetic predisposition to secrete more acid is present at least in a subset of patients with duodenal ulcer, independent of H pylori status. Therefore, overenthusiastic statements that eradication of H pylori is followed as a rule by normalisation of gastric acid output are deceiving and should be attenuated.

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Losartan and renal sodium handling

EDITOR,—We read with great interest the paper by Girgrah et al (Gut 2000;46:114–120). Their report suggests that the subtle sodium retention that is characteristic of preischaemic cirrhosis is improved by administration of low dose losartan. This is despite the paradoxical observation of an angiotensin concentration that is significantly lower in patients compared with healthy volunteers (mean (SEM) patients 6 (2); controls 40 (10) pmol/l). Our results of angiotensin II measurements are at variance with those published by Girgrah et al and are shown in fig 1.12 Our studies suggest that there is a progressive increase in angiotensin II concentrations with increasing severity of sodium retention. In fact, this increase in angiotensin II is evident before any measurable derangement in systemic haemodynamic characteristics. The values measured in healthy volunteers are also significantly higher than those reported in the literature. We are not sure if these differences in measured values are the result of different patient populations, differences in the method of collection of the sample (Girgrah et al — EDTA and aprotinin; Newby et al and Helmy et al — EDTA and aprotinin) or different assay techniques (were the samples extracted prior to the radioimmunoassay?).

The authors hypothesise that the increase in renal sodium excretion observed after administration of losartan was possibly due to its effect on intrarenal angiotensin II secretion. However, the results were true even when there was significant increase in plasma angiotensin II concentrations after administration of losar-
Values of angiotensin II observed in this study are contradictory to expected values. It is more likely that improvement in sodium excretion after administration of losartan was due to its effect on reducing portal pressure which in turn alters renal function through the hepato-renal axis.13


3 Jalan R, Hayes PC. Sodium handling in patients with cirrhosis is determined by sinusoidal circulation, which is upon the severity of liver disease and portal pressure. Gut 1998;42:27–33.


5 Schneider AW, Kalk JF, Klein CP. Effect of losartan, an angiotensin II receptor antagonist, on sodium handling found in preascitic cirrhotic patients after low dose losartan may well be due in part to the differing effect of losartan on portal pressure.13

6 Schneider AW, Kalk JF, Klein CP. Elevation of angiotensin II levels in preascitic patients, whereas those from the Edinburgh group used in their studies.1,7 In addition, their preascitic patients had normal levels of atrial natriuretic peptide, which is also at variance with much of the literature, as summarised in the review by Bernardi and colleagues.1,7 Hence how do we explain these differences? We cannot explain them in terms of the angiotensin II levels with deterioration of liver disease. Therefore, we concur with their conclusion remark that improvement in renal function through the hepato-renal axis.

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In summary, angiotensin II levels in cirrhotic rats.29 We conclude that angiotensin II levels in cirrhotic patients compared with patients after low dose losartan may well be due in part to the differing effect of losartan on portal pressure.13

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Repeat replication error phenotype in colorectal cancer

Editor,—The results presented in the article by Curran et al (2000)42 may have been different if the authors had classified DNA microsatellite instability status as stable (MSS), low (MSI-L) or high (MSI-H), as recommended by a National Cancer Institute sponsored workshop.11 “RER+” group included both MSI-H and MSI-L cancers. The finding of bandshifts in two of eight dinucleotide markers is not specific for MSI-H cancers and will pick up a proportion of MSI-L cases.12 Two of the three RER+ cancers with a K-ras mutation (study Nos 52 and 129) showed bandshifts at only two loci, were left sided, and were positive for nuclear p53. It would be interesting to know if these cancers are MSI-L. The finding of bandshifts at the mononucleotide markers BAT25, BAT26, or BAT40 (specific and sensitive for MSI-H) and/or show loss of expression of hMLH1.13 We expect these (and other cancers) will be found to be MSI-L. This would also explain the high frequency of p53 positivity, not seen by others.13 Their conclusions with respect to RER+ cancers regarding molecular profiles and prognostic significance only compound the confusion generated by earlier studies that failed to draw the fundamental distinction between MSI-L and MSI-H.

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EDITOR,—Jass has pointed out that the criteria we used to define microsatellite instability (MSI) status are not in accordance with the recommendations produced by the National Cancer Institute workshop on microsatellite instability.1 We would point out that the conclusion of our study and submission of our manuscript were contemporaneous with the publication of these recommendations. It is clear that the criteria we used may have resulted in some MSI-L cases being categorised. It is clear that the criteria we used to define microsatellite marker, BAT-25 or BAT-26 may have resulted in some MSI-L cases being classified as MSI-H. Therefore, while we readily concede that our study included a number of cases that would have been MSI-H, we do so with the caveat that we used criteria that were not in accordance with those recommended by the National Cancer Institute workshop.

We based our analysis on eight dinucleotide repeat markers and defined tumours as RER+ if two or more markers (that is, 25%) exhibited allelic shifts.2 This analysis categorised 14% of tumours (22 of 159) as RER+. The NCI recommendations for analyses involving greater than five markers were that MSI-H would be defined as having allelic shifts in >30–40% of markers.3 This would suggest that our RER+ cohort must contain a number of MSI-L tumours but that, by the NCI criterion, the majority are likely to have been MSI-H. Therefore, while we fully concede that our study included a number of MSI-L tumours in the RER+ category, we believe that this number was small (in the context of a total patient cohort of 159) and does not completely invalidate our conclusions. Furthermore, as we have pointed out in our paper, we believe that our decision to include only patients who underwent potentially curative surgery for cancers which had penetrated beyond the bowel wall but which had not breached the peritoneal surface, spread to other organs or metastasised to lymph nodes or distant sites at the time of operation (T3, N0, M0), lends significant strength to our study in avoiding potentially confounding effects of tumour stage on microsatellite instability or other parameters.

B CURRAN K LENEHAN H MULH CAHY O TIGHE M A BENNETT E EAGAN D P ODONOGHUE M LEADER D T CROKE

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Fibrosing colonopathy in an adult caused by over use of pancreatic enzyme supplements

EDITOR,—We read with interest the report by Bansi and colleagues (Gut 2000;46:283–285) describing fibrosing colonopathy secondary to high dose pancreatic enzyme therapy in an adult patient. Some details of the patient’s history is required. The clinical symptoms of the adult patient with cystic fibrosis and fibrosing colonopathy described previously.1 In this patient with cystic fibrosis, chronic cholangitis and cholelithiasis required repeated endoscopic retrograde cholangiopancreatography, and severe pancreatic insufficiency was the reason for high dose pancreatic enzyme supplementations. Bansi et al assume that their patient was not suffering from cystic fibrosis. As previously discussed in the commentary by Dodge in the same issue, negative results after even extensive mutation analysis of the cystic fibrosis transmembrane regulator gene cannot rule out cystic fibrosis. Furthermore, as outlined by the Cystic Fibrosis Foundation Consensus Panel, sweat testing is the standard test for diagnosis of cystic fibrosis. In patients with typical clinical symptoms but normal or borderline sweat chloride concentrations and normal genetic findings, nasal potential difference measurements should be performed. The clinical symptoms of the patient described by Bansi et al are highly indicative of cystic fibrosis with exclusive involvement of the gastrointestinal tract. Moreover, the histopathology of the pancreatic tissue, chronic cholangitis and fibrosis and atrophy, is also typical of cystic fibrosis, as are frequent bowel actions.1

Proof of fibrosing colonopathy in a patient not suffering from cystic fibrosis may contribute considerably to a better understanding of the pathogenesis of fibrosing colonopathy which is still a matter of discussion.1,4 It would underline the aetiological impact of toxic effects of high dose pancreatic enzyme supplementations but caution against overestimating the contribution of factors possibly related to the cystic fibrosis transmembrane regulator gene mutation, such as increased intestinal absorption.1 We would therefore be interested in the patient’s sweat chloride concentration and, if normal, in the result of nasal potential difference measurements. This paper strongly advocates well thought out supplementation of pancreatic enzymes in adults who, like infants and children, are at risk of developing fibrosing colonopathy.

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Coeliac disease and unfavourable outcome of pregnancy

EDITOR,—We read with interest the paper by Martinelii et al (Gut 2000;46:332–335) in which the authors found that 12 of 845 (1 in 70) pregnant women were positive for antidiomysium antibody (AEA). We have conducted a similar study: we examined sera from 450 consecutive unselected pregnant women and 125 normal non-anæmic female blood donors as controls. We found that 2/450 and 0/125 women were AEA positive, respectively. Both AEA positive patients were anaemic (haemoglobin <11 g/dl). Hence in continuing the study we elected to examine only sera from anaemic pregnant women. Of a total of 216 consecutive samples, five were positive for AEA (1 in 43).

In the study of Martinelii et al, 9/12 women with AEA were anaemic by these criteria. The other three were associated with good outcome. In view of this and our own findings, we agree with the authors that pregnant women should be screened for coeliac disease but we would suggest that this could be made considerably more cost effective by screening only those who are anaemic. As anaemic pregnant women, whether pregnant or not, should be investigated for coeliac disease.

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Reply

EDITOR,—We are pleased that Dr Unsworth and colleagues have had a similar experience of undiagnosed coeliac patients among pregnant women. Their rate of 2/450 women is not very different from that observed in our study. It is also surprising that so many cases have been found in a country where coeliac disease has recently been reported as “disappearing”.

We agree that anaemic women should be screened for coeliac disease.

L GRECO
BOOK REVIEWS


A booklet a little larger than the size of a two column review may seem unimportant. But this is an exception. This publication is for patients with ulcerative colitis and some sources of information should be the concern of gastroenterologists. It has been written by Andrew Robinson, whose self management programme for patients with colitis leads to fewer outpatient visits, more rapid treatment worldwide, and improved patient satisfaction (p 31). A criticism is that they should be working on the 2001 edition now.


When I was a fellow with Allan Walker fifteen years ago, gut development was a topic of interest to a handful of researchers worldwide. A classic review by Grand, Watkins and Torti published in Gastroenterology in 1976, and Koldovsky's monograph Development of the Functions of the Small Intestine in Mamman Fats and Man in 1969, brought together much of what was then known about the ontogeny of the human gut. Developmental biologists were beginning to recognise the opportunities offered by the rapidly differentiating organ to understand the interactions of genetic endowment and environmental influences in early life. The focus of much research was on the process of adaptation to milk feeding. With the survival of ever more preterm infants the function of the immature gut and its capacity to deal with enteral feeds prematurely, were questions of increasing practical concern.

I had the grand idea at that time to produce a short book bringing the field all together. But I quickly realised that not only was it growing too fast, but that a full understanding of gut development and function also required an understanding of the composition and properties of human milk and the metabolism of the newborn. The developing gastrointestinal tract and the developing mummary gland are complementary organs, jointly involved in the transfer of nutrients and other substances from mother to infant. Until weaning, the neonate is an extra-gestate fetus, and breast and gut are analogous to the uterine-placental interface.

This book goes a long way to recognising this. Each chapter (essentially a stand alone review) is written by a leading figure or group expert in its field. Together they cover the major aspects of gut development and function but, apart from a short preface, there is no overview or attempt to synthesise the book's contents. It would be impossible for one author to write this book now. The impact of molecular biology has moved the subject from an essentially descriptive science, with some experimental work in vivo, to the level of the cell and gene. This has shifted it away from the womb, breast, or incubator and into the laboratory. This book is a valuable starting point for students or researchers wishing to get up to date with the basic biology of human gut development, but it will be of little interest to the practising neonatologist struggling to define rational approaches to feeding the preterm neonate.

Medicine is fast becoming a major branch of biology, concerned with the application, often experimentally, of novel therapies based on insights and new understanding of biological processes. However the biological sciences are advancing so rapidly, and manipulation of genes within cells, including those of the embryo is possible, the gap between the world of molecular biology and clinical medicine is widening rather than narrowing.

The last century saw the integration of medicine and science, and a determination to base the practice of the former on the latter. At the beginning of this century it is becoming increasingly important to define a core of knowledge, skills, and ideas to teach our medical students. The wide scope of what we currently regard as the province of medicine now includes sociology, psychology, epidemiology, etc, and the basic sciences have been squeezed. We may be making a mistake in failing to equip medical students and young doctors with a firm understanding of the "new biology"—embryogenesis, genetics, molecular biology, and developmental biology. This book deals with these things and, although its subject is a small part of the totality of human biology, it is dealt with in depth by recognised leaders. Ian Sanderson and Allan Walker must be congratulated for bringing their research together.

Development of the Gastrointestinal Tract is also provided as a CD-ROM, but this offers little more than the facility to read it on screen. It has no search tools, nor is it possible to cut and paste sections (for those wishing to produce a review article overnight). However, the opportunity to omit chapters will abolish the tedium of photocopying, and will also preserve the spine of this handsome and well produced book.

L WEAVER


To paraphrase Mark Twain, reports of the impending demise of the print media have been greatly exaggerated—a trainee can still spend hours browsing new editions in a medical bookshop and, usually during frantic preparation for higher exams while fulfilling DSM-IV criteria for anxiety disorder, part with large sums of money on illustrated texts. There also seems to have been a small explosion of abridged versions of textbooks and specialty handbooks, although some of these "handbooks" can weigh in at more than 500 pages, and entail some serious fitness training if carried around in a coat pocket. Almost qualifying for the cruiserweight division at just over 200 pages, A Colour Handbook of Gastroenterology provides a concise, richly illustrated summary of clinical gastroenterology. Apart from oesophageal varices and ascites, hepaticological conditions are not included. The book contains about 90 subjects organised into 10 colour coded anatomical sections. Each section starts with a short discussion of the anatomy, physiology, as well as techniques for imaging, and functional assessment. Most major areas of gastroenterology are covered, although the level of detail is sometimes a little uneven. For example, small pages are devoted to varices.
disorders of the small bowel and colon, but the less visually glamorous conditions of constipation and irritable bowel syndrome are relegated to a single page or less. The text on these diseases is structured, succinct, and richly illustrated with over 300 high quality radiographs, colour photographs, and tables. Given the increasing availability of electronic textbooks and medical images, one wonders about the future of such handbooks—although, unlike any other medical text on my computer or bookshelf, it was certainly easy to read from cover to cover. The preface states that it is directed towards junior doctors who are preparing for higher qualifications in gastroenterology and general medicine, but it will also appeal to financially solvent medical students who are keen to learn more about gastroenterology.

S P PEREIRA

NOTES

Sir Frances Avery Jones British Society of Gastroenterology Research Award 2001

Applications are invited by the Education Committee of the British Society of Gastroenterology who will recommend to Council the recipient of the 2001 Award. Applications (TWENTY COPIES) should include:

- A manuscript (2 A4 pages ONLY) describing the work conducted
- A bibliography of relevant personal publications
- An outline of the proposed content of the lecture, including title
- A written statement confirming that all or a substantial part of the work has been personally conducted in the UK or Eire

An applicant need not be a member of the Society. The recipient will be required to deliver a 20 minute lecture at the Annual Meeting of the Society in Glasgow in March 2001. Applications (TEN COPIES) should be made to the Education Section Secretary, British Society of Gastroenterology, 3 St Andrews Place, London NW1 4LB by 1 December 2000.

Joint Meeting of Oesophageal Section of the BSG and Association of Upper GI Surgeons

There will be a joint meeting of the Oesophageal Section of the British Society of Gastroenterology and the Association of Upper GI Surgeons exploring some important issues in oesophageal disease at the Royal College of Surgeons of England, Lincoln’s Inn Fields, London WC2 on Wednesday 1 November 2000. The meeting will take the form of four debates on:

1. The place of chemotherapy in the management of cancer of the oesophagus
2. The appropriate management of high grade dysplasia
3. Identifying the role of anti-reflux surgery in the current management of gastrooesophageal reflux disease
4. The relevance of helicobacter pyloridis in oesophageal disease.

Further information from: WJ Owen, Hon Secretary, Oesophageal Section of the BSG, Suite 406 Emblem House, London Bridge Hospital, 27 Tooley Street, London SE1. Tel: (0)20 7403 3814; fax: (0)20 7403 3814.

Gluten Sensitivity Symposium

The Gluten Sensitivity Symposium meeting, sponsored by SHS International, will be held at the Natural History Museum, London, on Friday 20 October 2000. Speakers include Professor Paul Cicala, Dr Tony Ellis, Dr Geoff Holmes, Professor Markku Maki, Dr Mario Hadjivassiliou, Professor Lionel Fry, Dr Gerd Michaelsson and Professor Tom MacDonald. Further information: Debbie Jones at SHS International. Tel: +44 (0)151 228 1992; email: djones@shsint.co.uk.

Food Allergy and the Gut

The Allergy Research Foundation presents Food Allergy and the Gut, to be held at the Royal Society of Medicine, London on 29 November 2000. Further information: Philip N Goddard, Executive Secretary, The Allergy Research Foundation, PO Box 18, Aylesbury, Bucks HP22 4XJ, UK. Tel & fax: +44 (0)1296 655818.

13th European Intensive Course of Digestive Endoscopy

This course will be held in Strasbourg, France on 18 and 19 December 2000. Further information from Professor G Gay, Service de Médecine Interne J, Hôpital de Brabois, Allée du Morvan, 54511 Vandœuvre-lès-Nancy Cedex, France. Tel & fax: +33 (0)3 83 15 35 49.

Joint Meeting of the American Pancreatic Association and the International Association of Pancreatologists

This meeting will be held in Chicago, Illinois, USA on 1–5 November 2000. Symposia, posters, scientific sessions, “Pancreatology at the Millennium”. Further information: Peter A Banks, Brigham and Women’s Hospital, 75 Francis Street, Boston, MA 02115, USA. Tel: +1 617 732 6747; fax: +1 617 566 0338.

36th Annual Meeting of the European Association for the Study of the Liver (EASL)

This meeting will be held in Prague, Czech Republic on 18–22 April 2001. Abstract deadline: 27 November 2000. EASL will offer 10 travel bursaries to selected young investigators and 30 to Eastern European, pending on submission of an abstract. In addition, first authors under 35 years of age, and in training, who submit abstracts will have free registration. Further information: EASL Liaison Bureau, c/o Kenes International, 17 rue du Cendrier, PO Box 1726, CH-1211 Geneva, Switzerland. Tel: +41 22 908 0488; fax: +41 22 732 2850; email: info@easl.ch; website: www.easl.com.

15th International Workshop on Therapeutic Endoscopy

This workshop will be held in Hong Kong on 5–7 December 2000. Further information: Miss Claudia Mak, Endoscopy Centre, Prince of Wales Hospital, Shatin, N.T., Hong Kong. Tel: +852 2632 2233; fax: +852 2635 0075; email: info@hksde.org