Paris staging system for primary gastrointestinal lymphomas

Currently, much effort is put into the development of specific therapeutic approaches that are tailored to specific lymphoma entities. As a consequence, more specific information needs to be collected to support the choice of therapy. In gastric marginal zone B cell lymphoma of MALT-type, the need for specialisation in the documentation of tumour extent in the organ wall has been stressed by the high predictive value for failure of response after *Helicobacter pylori* eradication of infiltration beyond the mucosa, a predictive parameter irrespective of the presence of the t(11;18) translocation.** With new techniques such as endosonography, this infiltration depth can be assessed with improving accuracy. However, the information cannot be translated into the current staging systems. The dissemination patterns of extranodal lymphomas are essentially different from primary nodal lymphomas. As tumour stage is one of the most important guidelines in the choice of local therapy (surgery, radiotherapy) and chemotherapy, adequate documentation of tumour localisation in the organ related lymph nodes and beyond is essential.

The Ann Arbor staging system, developed for and routinely used in nodal non-Hodgkin’s lymphoma, is not optimal for documentation of the specific relevant features of primary extranodal lymphoma in the gastrointestinal tract. Several modifications and alternatives have been proposed. However, neither differentiation of stage I (confinement of lymphoma to the mucosa and submucosa) from stage II (tumour extension beyond the submucosa according to Rasdazkiewicz and colleagues) nor discrimination of stage II (involvement of regional lymph nodes) from stage III (node involvement beyond the regional area, as assessed in the Musshoff modification) is sufficiently serving to meet these shortcomings. The Lugano classification was constructed by Roithner and colleagues introducing stage IIE for “serosa penetration” without lymph node involvement into the Ann Arbor system. This represents a change in meaning of stage II that originally indicated lymph node involvement. Therefore, the Lugano system is causing more confusion than benefit.

TNM staging for tumours of epithelial origin has also been proposed as an alternative in gastrointestinal lymphoma to describe localised disease. The “T” part of this system pertains to the anatomical structure of the organs and sufficiently fulfills the requirements for staging of local extent of the disease. The European Gastro-Intestinal Lymphoma Study Group (EGILS) is a multidisciplinary group of investigators, including clinical investigators such as gastroenterologists, medical oncologists, radiotherapists, and pathologists, as well as basic researchers such as cellular and molecular biologists. Several groups from the UK, France, Germany, the Netherlands, Spain, and Austria now take part and have come together regularly since 1999 to discuss and study subjects in epidemiology and molecular and cell biology of gastrointestinal lymphoma. Clinical protocols and trials have been developed and performed as a collaborative effort. As a result of discussions on staging protocols and reporting systems over the past years, we would like to propose a modified TNM staging system, named after the first venue of the group in Paris. The staging system adequately records: (1) extent of tumour infiltration; (2) extent of nodal involvement; as well as (3) specific lymphoma spreading (table 1). It is adjusted to the gastrointestinal origin of the lymphoma, considering histopathological characteristics of extranodal B and T cell lymphomas. The use of this system in future studies will permit accurate comparison of the reported cohorts and should allow rapid accumulation of good data for proper stratification of patients for risk assessment and treatment options.

### Table 1 Paris staging system for primary gastrointestinal lymphomas*

<table>
<thead>
<tr>
<th>TNM</th>
<th>Clinical staging: status of tumour, node, metastasis, bone marrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>B0</td>
<td>No evidence of bone marrow involvement</td>
</tr>
<tr>
<td>B1</td>
<td>Lymphomatous infiltration of bone marrow</td>
</tr>
</tbody>
</table>

#### TNM

<table>
<thead>
<tr>
<th>pTNM</th>
<th>Histopathological staging: status of tumor, node, metastasis, bone marrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>B0</td>
<td>No evidence of bone marrow involvement</td>
</tr>
<tr>
<td>B1</td>
<td>Lymphomatous infiltration of bone marrow</td>
</tr>
</tbody>
</table>

*Valid for lymphomas originating from the gastro-oesophageal junction to the anus (as defined by identical histomorphological structure).

**In case of more than one visible lesion synchronously originating in the gastrointestinal tract, give the characteristics of the more advanced lesion.

<table>
<thead>
<tr>
<th>T</th>
<th>Anatomical designation of lymph nodes as “regional” according to site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stomach: perigastric nodes and those located along the ramifications of the coeliac artery that is, left gastric artery, common hepatic artery, splenic artery</td>
</tr>
<tr>
<td>2</td>
<td>Duodenum: pancreaticoduodenal, pyloric, hepatic, and superior mesenteric nodes</td>
</tr>
<tr>
<td>3</td>
<td>Jejunum/ileum: mesenteric nodes and, for the terminal ileum only, the ileocolic as well as the posterior caecal nodes</td>
</tr>
<tr>
<td>4</td>
<td>Colon: pericolic and perirectal nodes and those located along the ileocolic, right, middle, and left colic, inferior mesenteric, superior rectal, and internal iliac arteries</td>
</tr>
</tbody>
</table>

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**LETTERS**

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Log onto our website (www.gutjnl.com), find the paper that interests you, and send your response via email by clicking on the ‘eLetters’ option in the box at the top right-hand corner.

Please note that our ‘eLetters’ option is currently in beta testing. If you have any comments or suggestions, we would be delighted to hear from you.

**Table 1** Paris staging system for primary gastrointestinal lymphomas†

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T = Lymphoma extent not specified</td>
</tr>
<tr>
<td></td>
<td>T0 = No evidence of lymphoma</td>
</tr>
<tr>
<td></td>
<td>T1 = Lymphoma confined to the mucosa/submucosa</td>
</tr>
<tr>
<td></td>
<td>T1m = Lymphoma confined to mucosa</td>
</tr>
<tr>
<td></td>
<td>T1sm = Lymphoma confined to submucosa</td>
</tr>
<tr>
<td></td>
<td>T2 = Lymphoma infiltrates muscularis propria or subserosa</td>
</tr>
<tr>
<td></td>
<td>T3 = Lymphoma penetrates serosa (visceral peritoneum) without invasion of adjacent structures</td>
</tr>
<tr>
<td></td>
<td>T4 = Lymphoma invades adjacent structures or organs</td>
</tr>
<tr>
<td></td>
<td>N = Node involvement</td>
</tr>
<tr>
<td></td>
<td>N0 = No evidence of lymph node involvement</td>
</tr>
<tr>
<td></td>
<td>N1 = Involvement of lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N1a = Involvement of regional lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N1b = Involvement of intra-abdominal lymph nodes beyond the regional area</td>
</tr>
<tr>
<td></td>
<td>N2 = Spread to extra-abdominal lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N2a = Spread to contiguous abdominal lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N2b = Spread to non-contiguous abdominal lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N2c = Spread to extrathyroidal lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N2d = Spread to non-abdominal lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N3 = Spread to non-contiguous extrathoracic lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N3a = Spread to contiguous extrathoracic lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N3b = Spread to non-contiguous extrathoracic lymph nodes</td>
</tr>
<tr>
<td></td>
<td>N4 = Spread to extra-thoracic lymph nodes</td>
</tr>
<tr>
<td></td>
<td>M = Metastasis</td>
</tr>
<tr>
<td></td>
<td>M0 = No evidence of extranodal dissemination</td>
</tr>
<tr>
<td></td>
<td>M1 = Non-continuous involvement of separate site in gastrointestinal tract (eg, stomach and rectum)</td>
</tr>
<tr>
<td></td>
<td>M2 = Non-continuous involvement of other tissues (eg, peritoneum, pleura) or organs (eg, tonsils, parotid gland, ocular adnexa, lung, liver, spleen, kidney, breast etc.)</td>
</tr>
</tbody>
</table>

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*Valid for lymphomas originating from the gastro-oesophageal junction to the anus (as defined by identical histomorphological structure).

†For staging and reporting systems over the past years, we would like to propose a modified TNM staging system, named after the first venue of the group in Paris. The staging system adequately records: (1) extent of tumour infiltration; (2) extent of nodal involvement; as well as (3) specific lymphoma spreading (table 1). It is adjusted to the gastrointestinal origin of the lymphoma, considering histopathological characteristics of extranodal B and T cell lymphomas. The use of this system in future studies will permit accurate comparison of the reported cohorts and should allow rapid accumulation of good data for proper stratification of patients for risk assessment and treatment options.

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A new cause for CA19.9 elevation: heavy tea consumption

Serum carbohydrate associated antigen (CA19.9) is a reliable tumour marker of biliopancreatic malignancies. A number of benign diseases are also known to be related to CA19.9 elevation. Here we report a case of markedly raised levels of CA19.9 associated with heavy tea consumption.

Case report
A 52 year old woman was referred to our unit for epigastric pain and anaemia of two months’ duration. She also complained of nausea and a 2 kg weight loss. Her past medical history was unremarkable. She was a non-smoker and denied alcohol abuse or medication intake but remarked on overconsumption of warm black tea for several months (1.5–2 litres/day). Physical examination was normal.

Laboratory data demonstrated normal ranges for electrolytes, liver function tests, blood count, urea, creatinin, C reactive protein, amylase, and lipase. Fasting blood glucose, triglycerides, cholesterol, and thyroid function tests were normal. Autoantibodies for epigastric pain and anorexia of two months later revealed no clinical abnormalities. Abdominal ultrasound showed normal results. Abdominal computed tomography and computed tomography scan showed no signs of biliary obstruction. The patient underwent laparoscopic cholecystectomy and bile duct exploration. Pathological examination revealed no evidence of malignancy.

Discussion
CA 19.9 (sialyl Lewis-a) is a monosialo-ganglioside with small increases in a number of benign diseases, with highest levels in pancreatic adenocarcinoma, hepatocellular, and cholangiocellular cancer, and also in gastric, colorectal, and occasionally other cancers. Physiologically elevated concentrations are present in many secretions of healthy individuals. In this case, the usual causes of CA19.9 elevation were ruled out before a link with the tea beverage was suspected. After tea consumption withdrawal, a dramatic improvement occurred and the patient became symptom free, suggesting the diagnosis of tea intoxication. At the same time, serum CA19.9 levels dropped and a positive rechallenge test proved the relationship between tea overconsumption and raised levels of CA19.9.

To our knowledge, this is the first reported case of markedly raised levels of CA19.9 associated with heavy tea consumption. The mechanism of this relation remains unclear. In addition, the epithelial tissue target involved in CA19.9 secretion by tea overdose is unknown. Individual susceptibility to abnormal CA19.9 secretion triggered by tea overconsumption could not be excluded.
Table 1

<table>
<thead>
<tr>
<th>Hepatic steatosis (y/n)</th>
<th>Without GH deficiency</th>
<th>With GH deficiency</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/5</td>
<td>21.29 (1.2)</td>
<td>23.54 (2.21)</td>
<td>0.035</td>
</tr>
<tr>
<td>1/4</td>
<td>135.8 (25)</td>
<td>95.4 (10)</td>
<td>0.30</td>
</tr>
<tr>
<td>T-ch (mg/dl)</td>
<td>202.5 (18)</td>
<td>180 (6.0)</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Values are mean (SD). BMI, body mass index; TG, serum triglyceride level; T-ch, serum total cholesterol.

Figure 1 History of the liver biopsy. Macrovesicular steatosis, pericellular and centrilobular fibrosis, and ballooned hepatocytes are all observed in this section. (Method: needle biopsy, haematoxylin-eosin staining.)

Non-alcoholic steatohepatitis and hepatic steatosis in patients with adult onset growth hormone deficiency

Adult onset growth hormone (GH) deficiency closely resembles syndrome X. Patients with syndrome X often suffer from obesity, dyslipidemia, insulin resistance, and hypertension, and hepatic steatosis and non-alcoholic steatohepatitis (NASH) have also been characterised as symptoms of syndrome X. However, the relationship of GH deficiency to hepatic steatosis and NASH remains unclear. We looked for the presence of hepatic steatosis using computer tomography (CT) in a study of 18 patients with adult onset anterior lobe pituitary hormone deficiency, with or without GH deficiency. We also performed a liver biopsy in one patient with adult onset GH deficiency. None of the patients was positive for hepatitis B surface antigen, hepatitis C virus antibody, antinuclear antibody, or antimitochondrial antibody. The criterion used for diagnosing hepatic steatosis was a ratio for liver/spleen CT value of less than 0.69. In 13 patients with GH deficiency, seven showed hepatic steatosis (53.8%) while in five patients without GH deficiency no hepatic steatosis was present (p=0.035). Body mass index (BMI kg/m²), serum triglyceride level (TG mg/dl), and serum total cholesterol (T-ch mg/dl) were similar in patients with or without GH deficiency (table 1). The significance of the per cent hepatic steatosis was evaluated by χ² test. BMI, TG, and T-ch were analysed using an unpaired Student’s t test. The male patient on whom we performed a liver biopsy was diagnosed with GH deficiency at 58 years old. He showed hepatic steatosis, measured by CT, at 64 years. Serum aspartate aminotransferase level fluctuated from 20 to 80 U/l. The patient did not have a history of alcohol abuse but was slightly obese (BMI 30 kg/m²). Liver biopsy was performed when the patient was 72 years old, and this showed the presence of NASH (fig 1).

We have demonstrated that hepatic steatosis is more frequently observed in patients with GH deficiency than in those without GH deficiency. Furthermore, by liver biopsy, we have shown that a patient with GH deficiency also had NASH. These results indicate that adult onset GH deficiency is a possible risk factor for hepatic steatosis and NASH.

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References


Expression of thiouperine methyltransferase in South Asians

Azathioprine and its metabolite 6-mercaptopurine (6-MP) are widely used in the treatment of Crohn’s disease, ulcerative colitis, autoimmune hepatitis, and a range of other inflammatory and autoimmune diseases, as well as for prevention of transplant rejection. Thiouperine methyltransferase (TPMT) converts 6-MP to 6-methylMP. As TPMT deficiency is a risk for severe adverse reactions, and the expression of this enzyme is highly variable among different races, treatment in patients from South Asia often requires a lower dose of thiopurines. There have been several studies investigating the expression of TPMT in South Asians. One study

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suggests that the frequency of individuals with the mutant TPMT allele, TPMT*3A, is lower in Southwest Asians than in Caucasian; allele causes reduced enzyme activity in vitro.1 However, there are no data on the phenotypic expression of TPMT in South Asian populations.

We have compared expression of TPMT in South Asian and Caucasian patients attending gastroenterology, renal, rheumatology, and dermatology clinics who were being considered for treatment with thiopurines. TPMT activity was assayed by tandem mass spectrometry for 6-methylMP (assays kindly provided by Purine Research Laboratory, Guy's Hospital, London SE1 9RT, UK). Homozygous deficiency of TPMT was defined as a level <10, heterozygous as 10–25, and normal as > 25 pmol/h/mg haemoglobin.

Of 83 Caucasian patients, one (1.3%) was homozygously deficient, 10 (12%) were heterozygous, and 72 (86.7%) had normal expression of TPMT. The corresponding values in 77 South Asian patients were 0.7 (9%), and 70 (91%), respectively.

The prevalence of deficiency of expression of TPMT in South Asian patients resembles that in Caucasians. Use and monitoring of azathioprine and 6-MP should therefore follow similar principles in both ethnic groups.

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References

Fatigue is associated with high circulating leptin levels in chronic hepatitis C

We read with great interest the recent paper from Piche and colleagues (Gut 2002;51:434–9) relating serum levels to fatigue in chronic hepatitis C patients. On the surface, their observation that serum leptin levels correlate with the fatigue impact scale are very intriguing. However, leptin shows a gender based difference and women have circulating plasma leptin concentrations that are at least three times higher than men, even when matched for body fat mass.1 This sex needs to be considered when investigating any association with leptin levels, and multivariate analysis is necessary to reduce the bias caused by this confounding variable. Indeed, in the study by Piche et al the fatigue impact scale was found to be significantly higher in females. Therefore, without a multivariate analysis the authors cannot affirm that serum leptin levels are implicated in fatigue development in patients with chronic hepatitis C.

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Reference

Mutant K-ras2 in serum

Ryan and colleagues’ careful and well conducted study (Gut 2003;52:101–8) raises once again the interesting issue of whether molecular analysis and knowledge of mutations of the Kirsten ras gene in particular, have a role in the management of patients with colorectal cancer.

The two RASCAL (Kirsten Ras in Colorectal Cancer Collaborative group) studies1–3 which eventually enrolled data from 4266 patients from 42 centres in 21 countries showed that although the frequency of Kirsten ras mutations at codons 12 and 13 may vary a little between populations, overall they are only present in just over one third of patients. This is significantly less frequent than quoted by Ryan et al. In addition, the RASCAL study also showed that Kirsten ras mutations are not associated with sex, age, tumour site, or Dukes’ stage.

Much more importantly, however, they also showed that of the 12 different possible specific point mutations at codons 12 or 13, only a guanine to thymidine mutation, which are found in less than 10% of all patients, is an independent variable for relapse and death. Indeed, the most common mutation, guanine to adenine, exerted an effect on survival barely different from wild-type ras. Others have shown there is a reasonable biological basis for these findings.

As a collaborative group, therefore, we felt it was generally unhelpful to consider Kirsten ras mutations collectively, rather than the effect of each individual mutation separately when considering the prognosis of patients with colorectal cancer. With this in mind, we believe that two crucial questions are left unanswered by the study of Ryan et al. Without definitive answers to these, it is unlikely that serum detection of mutated Kirsten ras gene will ever be clinically useful.

Firstly, discovery of any new mutation in the serum of a patient who has had colorectal cancer raises the possibility of tumour recurrence, although the presence of a Kirsten ras mutation is not colonic specific. However, more than one third of patients in Ryan’s study did not clinically relapse despite the presence of a serum mutation for very long periods. Others have also detected tumour DNA in patients for long periods without evidence of overt clinical recurrence.1,4 Therefore, screening for the presence of Kirsten ras mutations per se is unlikely to be clinically helpful very often. However, it would have been very interesting to know whether the patients who did not relapse in this study were those who had what the RASCAL group considered as “benign” rather than “aggressive” mutations.

Secondly, the authors do not say whether each postoperative serum mutation which they detected corresponded with the genotype of the primary tumour. While a number of studies have suggested that occasional metastases may carry a different mutation to the primary, this is very uncommon. If the mutation is not the same as the primary tumour, this raises many issues, not least that despite the very careful use of controls, nested polymerase chain reaction techniques may be too sensitive for clinical practice.

For an individual with colorectal cancer, a multitude of factors may shape the clinical course. To improve our knowledge, we must seek to study the most subtle variation in molecular profiles possible, as small differences may be very important. While rigorous small prognostic clinical studies may be intriguing, they may have significant limitations. Some of us have argued previously that there is only one way forward.8 All bodies funding prospective therapeutic studies in colorectal cancer should insist that a panel of molecular markers are measured and recorded in all patients using a standardised technique, even if they are not included as an end point, and make these results readily available for subsequent analysis. Studies in which only one or two markers are performed prospectively carry the least risk of methodological flaws.

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Radiological Imaging of the Small Intestine


Springer Verlag are producing an extensive range of books on Medical Radiology under the general editorship of Professor AL Baert, and this volume on the small intestine is the latest in the line. Professor NC Gourtsoyiannis is its distinguished editor. This is now a very well established series with topics which vary from recent publication (2002 versus 1999) and in areas where there is rapid technical change—recent publication (2002 versus 1999) and in areas where there is rapid technical change—

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BOOK REVIEW

Radiological Imaging of the Small Intestine


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Barium to ultrasound, CT, and magnetic resonance (MR), etc, still means that it provides a diagnostic challenge.

How does Radiological Imaging of the Small Intestine help? The answer is a consensus conference of all of the small bowel abnormalities with their attendant investigative techniques. The only problem (and it is one which affects all radiological texts) is the question of whether to go for chapters which reflect technique or for those which reflect pathological conditions.

In this case the editor has gone for both and while this results in a superlative volume, there is bound to be some repetition. For example, reference to Crohn's disease or small bowel tumours will appear both in their own section as well as under CT/MR, etc. However, as all of these chapters are written by different authors with their own experiences, this can prove to be an advantage enabling the reader a "second bite of the cherry".

Is there competition in the market place and how does this book hold up? The inevitable comparison has to be made to Clinical Imaging of the Small Intestine by Heitlinger, Maglinte, and Birnbaum, interestingly also published by Springer. This is the more mature book, now in its second edition, having been originally published in 1989. Its authorship is primarily North American with two European contributors whereas Radiological Imaging is primarily a European work with some distinguished North American contributors. Indeed, two of the editors of Clinical Imaging are authors. Both books go for the same layout—that is, chapters which are technically based followed by those on pathological states. Both are totally comprehensive and although Clinical Imaging is slightly larger (576 pp versus 477 pp), it is less expensive (£164 versus £214). This price differential is most likely due to the inclusion of 141 beautiful colour illustrations of both endoscopic views and pathology specimens in Radiological Imaging. This is also the most recent publication (2002 versus 1999) and in areas where there is rapid technical change—typically MR imaging—the reader can appreciate the difference. It has to be said that both books fulfil their remit extremely well but if you be a radiologist, you would choose which, would cost for spending the extra Euros.

Professor Gourtsoyiannis and his team have to be congratulated on producing a superb book that graces the swelling ranks of medical radiology. A must for every radiology department and a continuing source of information for every radiologist.

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NOTICES

New In Vivo Imaging Modalities for Molecular Biology, Cell Biology and Physiology

This Jacques Monod conference will be held on 31 May–4 June 2003 in Roscoff, France. Further information: Bertrand Tavitian, IN- SERM M10103, Service Hospitalier Frédéric Joliot, CEA Direction des Sciences du Vivant, Direction de la Recherche Médicale, 4 place du Général Leclerc, 91401 Orsay Cedex, France. Tel: +33 169 867 779; fax: +33 169 867 739; email: tavitian@ihl.cca.fen

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. Further details: Ms Veronika Revicka. Tel: +420 241 445 759; fax: +420 241 445 806; email: veronika@congressprague.cz

Eighth International Liver Symposium

This symposium will be held on 13 June 2003 in Manchester, UK. Leading speakers from the USA and Europe will present state of the art reviews on recent advances in hepatology. Further details: Professor TW Warnes, Department of Gastroenterology, Manchester Royal Infirmary, Oxford Road, Manchester M13 9WL, UK. Tel: +44 (0)161 276 4316; fax: +44 (0)161 276 8779; email: Judith.harrop@cmnc.nhs.uk