Comparison of cyanmethaemoglobin method of estimating haemoglobin concentration using four different analysers

Parameter	Analyser			
	Sysmex NE8000	Sysmex NE8000 (1 in 5 dilution)	Coulter S880	Cobas Argos
Haemoglobin (g/dl)	12.9	11	10.4	10.5
HCT	0.329	0.31	0.323	0.325
MCV (fl)	101.5	NA	100	99
MCH (pg)	39.8	35.5	32.2	32.2
MCHC (%)	39.2	36.1	32.2	32.4
WCC ($\times 10^9/l$)	6.45	NA	7.6	8
Patient's sample ($\times 10^9/l$)	166	NA	181	182

HCT = haematocrit; MCV = mean corpuscular volume; MCH = mean corpuscular haemoglobin; MCHC = mean corpuscular haemoglobin concentration; WCC = white cell count.

Inaccurate haemoglobin estimation in Waldenström's macroglobulinaemia

We read with interest the article by Goodrick *et al.*¹ A similar problem was observed in a patient with Waldenström's macroglobulinaemia using the Sysmex NE 8000 automated blood analyser when the patient's plasma haemoglobin concentration was overestimated. The blood sample repeatedly failed the critical limits for mean corpuscular haemoglobin and mean corpuscular haemoglobin concentration. A 1 in 5 dilution of the sample in Sysmex diluent partially corrected the problem.

The Sysmex NE 8000 converts haemoglobin to a sulphate derivative using sodium lauryl sulphate.² Other analysers using the cyanmethaemoglobin method of estimating haemoglobin concentration gave satisfactory results (table).

The Sysmex diluent PK-30L is described as an isotonic solution containing boric acid, sodium tetraborate, dipotassium EDTA, and sodium chloride. Whole blood (6 μ l) is diluted with 2.0 ml diluent before mixing with 1.0 ml Sulfolyser 220A, a lysing solution containing 0.17% sodium lauryl sulphate. The haemoglobin sulphate is measured at 534 nm within two minutes of sampling. We have used the patient's plasma (3.6 μ l) and measured the absorbance at 534 nm after mixing with diluent and Sulfolyser. There was an increase in optical density (OD) of 0.07 units on addition of the lysing agent. This could be abolished by pretreating the plasma with 2-mercaptoethanol. Substitution of normal saline as diluent or substitution of a 0.17% sodium lauryl sulphate solution in water as lysing agent also prevented the rise in OD. Plasma from a patient with IgG myeloma and plasma from a normal donor did not exhibit this phenomenon.

We conclude that pentameric IgM in the patient's plasma is barely soluble in PK-30L diluent. Addition of Sulfolyser decreases the solubility of the paraprotein and the time taken to redissolve is longer than the analysis time of the instrument. We suggest that individual IgM paraproteins may present problems with haemoglobin measurement depending on the instrument and the measurement method used. The falsely elevated haemoglobin concentration in our patient was not sufficient to be obvious clinically.

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Pitfalls in diagnosing coeliac disease

We were interested to read the recent paper by Shidrawi *et al.*¹ which confirms our experience in a central hospital. Coeliac disease is commonly identified in northern Portugal² and recently we reviewed 25 children referred to our unit over a period of eight years with a provisional unconfirmed diagnosis of coeliac disease.³ All of these patients failed to relapse on postchallenge small bowel biopsy after at least nine months on a normal diet.

To identify the probable cause for the "false" diagnosis of coeliac disease we analysed the diagnostic criteria and reviewed the histology of all previous biopsy specimens. The pathologist, experienced in paediatric intestinal histology (FC), was unaware of clinical details of each patient.

Results showed that mean age of presentation was 8.6 months and symptoms were typical of coeliac disease, mainly diarrhoea and a failure to thrive. Seven (28%) patients had been placed on a gluten-free diet based on clinical suspicion without small bowel biopsy. Of the remaining 18 children who underwent prediet biopsy, histological reassessment showed that three had been inadequately processed leading to difficult interpretation, five had minor abnormalities including partial villous atrophy, six had "flat mucosa", and four were inappropriately reported as having subtotal villous atrophy.

A definite diagnosis of coeliac disease in young children requires three intestinal biopsies.⁴ In older children a simpler diagnostic approach may be acceptable in some circumstances.⁵ Despite wide medical awareness of the need for an intestinal biopsy before placing patients on a gluten-free diet it is still common to see patients placed on the diet without undergoing biopsy, leading to unnecessary strain on the patients and their families, and makes it difficult to decide when to stop taking postchallenge biopsy specimens, and may divert attention from the correct diagnosis. Our results also stress other aspects: (a) small intestinal biopsy specimens need to be handled very carefully, and preferably should be assessed first through a dissecting microscope; and (b) special expertise in evaluating intestinal biopsy specimens is important in order to reduce the risk of misinterpreting artefacts and minor abnormalities.

Six children with true villous atrophy at onset did not relapse and have been symptom-free on a normal diet; transient gluten intolerance must be considered as a likely diagnosis in these patients although strict criteria were not adhered to.⁶ Despite scepticism about this entity, no other factors could be identified and the gluten-free diet alone led to marked improvement in these patients. In summary, our data reinforce the conclusions of Shidrawi *et al.*¹ and stress the relevance and need for accurate interpretation of histology in the diagnosis of coeliac disease.

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Book reviews

The Endometrium. A Clinicopathologic Approach. DS Heller. (Pp 224; £68) Igaku-Shoin. 1994. ISBN 0-89640-244-4.

Coming from a background in gynaecology and pathology, the author aims to improve communication between the specialties by presenting short sections on both subjects. She has missed her opportunity, however, by dividing the book into separate pathology and gynaecology sections rather than discussing them together in a clinicopathological context.

Both parts are too short and do not include much information that would be useful to anyone other than a beginner in their own specialty and contain too much that is irrelevant to someone from another discipline. For example, neither gynaecologists nor pathologists need a picture of a microtome, which in any case is rotated through 90°. There are many excellent illustrations but some are wrong, covered in other chapters or contradicted by others elsewhere in the book. If the pathology section is aimed at gynaecologists, then it is too detailed but there is insufficient detail for it to be used as a bench book in histopathology. Many of the references are to standard texts, such as *Biopsy Pathology of the Endometrium* by Buckley and Fox (which is a better book), and references to original papers are out of date: nothing

after 1982 is cited on distinguishing endometrial and endocervical carcinoma.

In summary, this is a missed clinico-pathological approach which undershoots the mark by a good distance. I do not recommend it.

LJR BROWN

Liver Biopsy Interpretation. 5th edn. Vol 31 in the Series Major Problems in Pathology. PJ Scheuer, JH Lefkowitz. (Pp 315; £50.00.) Harcourt Brace & Company Ltd. 1994. ISBN 0 7020 1594 6.

As a general histopathologist who dabbles in the occasional liver biopsy specimen, and as a frequent user of the previous version of this book, the invitation to review the new edition inspired me with great enthusiasm. The book could not have arrived at a better time. Deep in preparation for an undergraduate lecture on liver pathology, I decided to consult my newly acquired tome. The book fell open at the chapter on normal liver and as I started to read, neurones were reawakened that had lain dormant since medical student days: types of collagen in the space of Disse, canals of Hering, pit cells, lipocytes (Ito cells), types of cytokeratin in bile duct epithelium. Then I came across a section on the changes found with ageing, a topic which somehow had always eluded me in the past. I'd recently put to one side a liver from a necropsy on an octogenarian; the changes I'd seen made much more sense now. This chapter was interesting and relevant. So far so good.

My next struggle was with a liver biopsy specimen from a patient with hepatitis C. "Is there enough damage to merit interferon therapy?" was the question asked. The chapter on chronic hepatitis has been entirely rewritten and much improved, with emphasis on histological division into portal and parenchymal lesions and classification based mainly on aetiology. Given the huge expansion in the literature on hepatitis C since the previous edition, I was a little disappointed that the current chapter on chronic hepatitis dedicated only half a page to this subject. The information present was useful to a certain extent, but it did not really help me in answering the clinician's question and there was no mention of whether the granuloma I saw could be attributed to hepatitis C. Still, not even the large textbooks could help me with the latter problem and I had to resort to a literature search in the end.

The final tricky case of the week was a liver biopsy specimen from a patient with HIV infection and abnormal liver function tests. I could of course have consulted a specialist book on the pathology of AIDS but decided instead to put my new book to the test. Again, the appropriate section was shorter than I'd expected and I was duly a little disappointed. On reflection, however, I suspect the allotted space was probably about right in the overall context of liver pathology. My disappointment had stemmed from the fact that our department sees a lot of HIV associated

biopsy specimens and I'd anticipated a similar proportion of the chapter to be assigned to this topic. In fact, despite its brevity, I found the discussion really quite helpful.

Despite some minor deficiencies, my overall impressions of this book are good. Like all four previous editions, its aim of being a bench book to which the practising histopathologist can turn when confronted with a diagnostic problem is ably achieved. The fifth edition differs from its predecessors in having, firstly, a new publisher and, secondly, a co-author, both of which have resulted in significant improvements. The layout is attractive, the headings and subheadings are easy to follow, keywords are highlighted, and the text is readable with a clarity of expression which many of its competitors lack. The illustrations are of high quality, with many more colour plates than the last edition, and the references are up-to-date and relevant. My main criticism is that the sections which have been expanded the most, on liver transplantation and other techniques, will be of benefit only to specialised centres. Nevertheless, this book undoubtedly merits its place in the library of any histopathology department which reports on liver biopsy specimens as the previous editions have done over many years.

P DOMIZIO

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Notices

Texas Society of Pathologists

75 Years Young

presents

Pathology: Past, Present and Future

Diamond Jubilee Celebration

February 1-4 1996

For further information, please contact: Paula Rigling, Texas Society of Pathologists, 401 West 15th Street, Austin, Texas 78701-1680, USA.

Lung pathology course

October 31 to November 3 1995

National Heart and Lung Institute

For further information, please contact: Professor B Corrin, Histopathology, Royal Brompton Hospital, London SW3 6NP (fax: 0171 351 8435).

Postgraduate course

Current concepts in surgical pathology

November 6-10 1995

The Department of Pathology, Massachusetts General Hospital, Harvard Medical School, will present a postgraduate course in Surgical Pathology under the direction of Drs Nancy L Harris, Robert H Young and Eugene J Mark.

This course is designed for pathologists at resident and practitioner levels. It will provide an in-depth review of diagnostic surgical pathology with emphasis on morphologic features, newly recognised entities, and new techniques, presented by the faculty of the Department of Pathology, Massachusetts General Hospital. Instruction will be primarily by lecture, but will also include discussion periods. Each participant will receive a comprehensive course syllabus.

The course has Category 1 accreditation for approximately 35 hours CME credit by the American Medical Association. The fee for the course is \$825.00 (£522.00) (residents and fellows \$610.00 (£386.00)).

For further information, please contact: Department of Continuing Education, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA (tel: (617) 432-1525).

First Announcement

5th International Congress on Trace Elements in Medicine and Biology

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Therapeutic Uses of Trace Elements

February 4-7 1996

Main topics include: Therapeutic forms of trace elements; large epidemiological and intervention studies related to trace elements; trace element supplementation of population groups of differing ages; and trace elements, bone physiology and bone diseases, among others.

For further information, please contact: Madame A Alcaraz, Laboratoire de Biochimie C, CHURG, B.P. 217, F-38043 Grenoble Cedex 9, France (tel: (33) 76 76 54 84; fax: (33) 76 76 56 64).