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.

MF MCMULLIN
HJ WILKIN
Mater Hospital Trust,
Crumlin Road,
Belfast

E ELDER
Royal Victoria Hospital,
Grosvenor Road,
Belfast

- Goodrick MJ, Boon RJ, Bishop RJD, Coppelstone JA, Prentice AG. Inaccurate haemoglobin estimation in Waldenström's macroglobulinaemia: unusual reaction with monomeric IgM paraprotein. *J Clin Pathol* 1993;46:1138-9.
- Lewis SM, Garvey B, Manning R, Sharp SA, Wardle J. Lauryl sulphate haemoglobin: a non-hazardous substitute for HiCN in haemoglobinometry. *Clin Lab Haematol* 1991;13:279-90.

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.

J AMIL DIAS
TR SOUSA
M SANTOS
FC RODRIGUES
A AGUIAR
Department of Paediatrics,
S. João Hospital,
Porto,
Portugal

F CARNEIRO
Department of Pathology
AV TEIXEIRA
Department of Gastroenterology

- Shidrawi RG, Przemoislo R, Davies DR, Tighe MR, Ciclitira PJ. Pitfalls in diagnosing coeliac disease. *J Clin Pathol* 1994;47:693-4.
- Dias JA, Rodrigues FC, Aguiar A, Carneiro F, Brites J. Coeliac disease is not disappearing. In: Kumar PJ, Walker-Smith JA, eds. *Coeliac disease: 100 years*. Leeds: Leeds University Press, 1991:303-5.
- Monteiro I, Mota TC, Santos M, Rodrigues FC, Aguiar A, *et al.* "Falsos" celíacos: a história continua ... *Arq Med* 1995; in press.
- Meeuwisse GW. Diagnostic criteria in coeliac disease. *Acta Paediatr Scand* 1970;59:461-3.
- Walker-Smith JA, Guandalini S, Schmitz J, Shmerling DH, Visakorpi JK. Revised criteria for diagnosis of coeliac disease. *Arch Dis Child* 1990;65:909-11.
- McNeish AS, Harms HK, Rey J, Shmerling DH, Visakorpi JK, Walker-Smith JA. The diagnosis of coeliac disease. *Arch Dis Child* 1979;54:783-6.

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