Other correspondence

Limitations of Chlamydiazyme in general hospital laboratories

Chlamydiazyme, an enzyme linked immunosorbent assay (ELISA, Abbott Laboratories), has had two conflicting assessments of its sensitivity and specificity^{1,2} both of which have been reported in this Journal. The conclusion of Taylor-Robinson *et al*² that the assay "was not considered to be sufficiently sensitive, specific, or reproducible for routine use" has serious implications for general hospital laboratories. In the four months since the publication of the last article,² we attempted to confirm all positive Chlamydiazyme samples by testing with Syva (Micro Trak), an immunofluorescence technique for the detection of *Chlamydia trachomatis* elementary bodies. After the initial ELISA test the original specimen buffers were centrifuged and the cell deposit stained by immunofluorescence. All procedures were according to kit protocols.

The specimens were from the female genital tract, taken from 190 patients from sexually transmitted diseases (STD) clinics, and from 368 patients of general practitioners (GP). Of the positive ELISA results, 10 (31%) of those from STDs and 19 (40%) of those from GPs could not be confirmed by immunofluorescence (table 1). The paper of

Taylor-Robinson *et al*² shows similar results among STD patients, but our laboratory has to deal with many samples from general practitioners and our results show a similar lack of specificity in these samples.

Examination of the absorbance values of all the ELISA positive specimens (whose number exceeds the number of patients as several specimens were received from some patients) was instructive (table 2). Our ability to confirm an ELISA result by immunofluorescence increased as absorbance values increased, with all values of ≥ 2.000 being confirmed.

It has been suggested that the lack of specificity of Chlamydiazyme is due to cross reactivity with other micro-organisms.³ Our tests confirm cross reactivity with *Neisseria gonorrhoeae*, *Escherichia coli*, and *Acinetobacter calcoaceticus*. High concentrations of these organisms only produced absorbance values of 0.177–0.778. Thus cross reactivity is only a major consideration in samples with absorbance values of < 1.000 .

General hospital laboratories are often limited by constraints of finance, time, staffing and expertise. For many, ELISA has attractive financial benefits compared with cell culture or immunofluorescence,³ but false positive results can have serious social consequences. We have shown that absorbance values of 0.100–0.499 are probably negative, those of 0.500–0.999 may be influenced by cross reactions, those of 1.000–1.999 are probably positive, and those of ≥ 2.000 are positive. Thus it is possible for laboratories to assess the relative benefits of

the ELISA system in this difficult area of false positive results, especially among a low prevalence group such as samples from patients being seen by general practitioners.

SM CHISHOLM

BA MATHESON

DO HO-YEN

Microbiology Department,

Virology Section,

Raigmore Hospital,

Inverness

IV2 3UJ

References

- 1 Mumtaz G, Mellars BJ, Ridgway GL, Oriel JD. Enzyme immunoassay for detection of chlamydia trachomatis antigen in urethral and endocervical swabs. *J Clin Pathol* 1985;38:740–2.
- 2 Taylor-Robinson D, Thomas BJ, Osborne MF. Evaluation of enzyme immunoassay (Chlamydiazyme) for detecting Chlamydia trachomatis in genital tract specimens. *J Clin Pathol* 1987;40:194–9.
- 3 Levy RA, Warford AL. Evaluation of the modified Chlamydiazyme immunoassay for the detection of chlamydia antigen. *Am J Clin Pathol* 1986;86:330–5.

Drs Thomas and Taylor-Robinson comment:

We were interested in the analysis undertaken by Chisholm *et al* of the results they obtained with the ELISA system for *C trachomatis*. Apart from our original detailed assessment,¹ which incorporated an examination of the presence or absence of chlamydiae in the Chlamydiazyme buffer, we also examined the association between ELISA absorbance values and results obtained by the MicroTrak immunofluorescence technique (Table). We agree that an absorbance value of ≥ 1.0 is highly indicative of a true positive result, one that is also positive by immunofluorescence, but we must point out that while values below this are less often associated with a true positive result, 50 (66%) of 75 of our true positive

Table 1 Results obtained by ELISA and immunofluorescence for detection of *Chlamydia trachomatis* in specimens from female patients

	Patients from STDs		Patients from GPs	
	ELISA positive (%)	ELISA positive (%)	ELISA positive (%)	ELISA positive (%)
Confirmed by immunofluorescence	32 (17)	158 (83)	48 (13)	320 (87)
Not confirmed by immunofluorescence	22 (12)		29 (8)	
	10 (5)		19 (5)	

Table 2 Comparison of absorbance values of ELISA positive specimens with immunofluorescence results

Absorbance value	No confirmed by immunofluorescence (%)	No not confirmed by immunofluorescence (%)
0.100–0.499	6 (19)	25 (81)
0.500–0.999	13 (72)	5 (28)
1.000–1.499	8 (80)	2 (20)
1.500–1.999	9 (90)	1 (10)
≥ 2.000	38 (100)	0 (0)

Table Comparison of ELISA absorbance values with MicroTrak results

Absorbance value	Proportion (%) of specimens positive by MicroTrak*
> 2.0	16/16 (100)
1.0–2.0	9/11 (82)
0.5–0.99	6/10 (60)
0.1–0.49	20/40 (50)
< 0.1	24/258 (9)

*One or more elementary bodies.

The Liver. Biology and Pathobiology. 2nd ed. Ed IM Arias, WB Jakoby, H Popper, D Schacter, DA Shafritz. (Pp 1405; \$244.00.) Raven Press. 1987. ISBN 0-88167-345-5.

This book is a stupendous compendium of basic sciences which covers much more than its title suggests. All major advances in immunology, molecular biology, human biochemistry, ultrastructure, physiology, and many more are described, evaluated, and expected further developments indicated. The stated aim of the editors is to bridge the gap between science and clinical practice that few on either side are able to cross unaided. Yet, it is paramount that the two do not grow further apart. The aim throughout is to integrate and this is reflected in section headings like interrelated cell functions, relation of the liver to other organs, and analysis of disease mechanisms. This is not a book on *how* but on *why*. Its massive physical size and appropriately high cost place it in the category of departmental or library, rather than individual purchase but all major hospitals should possess a copy.

PP ANTHONY

Inflammatory Diseases of Muscle. Ed FL Mastaglia. (Pp 203; £39.50.) Blackwells. 1988. ISBN 0-632-01903-4.

This concise volume provides an authoritative account of these puzzling diseases which still present to the managing physician, whether internist, neurologist, paediatrician, or rheumatologist, a number of therapeutic challenges. The work comprises a series of chapters commencing with an introductory overview on clinical features and differential diagnosis by Sir John Walton. Further chapters are to be found on muscle biopsy techniques (open, needle, and conchotome methods are well described), immunological aspects, juvenile dermatomyositis, adult polymyositis and dermatomyositis, viral myositis, bacterial myositis, parasitic and fungal infections, and miscellaneous conditions. The work is as up to date as can be expected (the most recent cited reference is 1986), and the standard of monochrome photographic illustrations of techniques, muscle biopsy material, histology, histochemistry, and electron microscopy are at a high standard. The few colour photographs illustrate particular clinical features and modern immunofluorescent histochemical techniques. The work is heavily biased (intentionally) on diagnosis and aetiopathology, and therefore it is perhaps to

be expected that therapeutic considerations receive limited coverage.

For the price this volume will be of value to all interested in muscle diseases.

RHT EDWARDS

Biochemical Function Tests. A Guide to Specialized Investigations in Chemical Pathology. MS Billingham, MJ Wheeler, RA Hall. (Pp 273; soft cover £9.50.) Blackwells. 1987. ISBN 0-632-02023-7.

The authors have successfully produced a pocket size handbook of practical procedures employed in dynamic function tests commonly used in general medicine.

The first two chapters relate to the provocative tests frequently used in endocrinological cases, while the third chapter is a compilation of tests used in gastric, renal, and oncological medicine. The section on adrenal cortex function is particularly well documented. Steroid hormone biochemistry is a specialty often shunned by clinicians and biochemists because of its reputedly complex and specialised nature. This book will enhance the interaction between the clinician and biochemist to ensure that the biochemical function test is expedited correctly and interpretation of the result is correct. This will ensure that their effort is not wasted, nor is the patient subjected to an unpleasant and perhaps unnecessary test.

The information is well presented and I am sure that it will not be long before most laboratories have this book on their shelves.

LA PERRY

Notices

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Corrections

On page 355 of *J Clin Pathol* 1987;41, G W Marsh, one of the coauthors of the letter about haemoglobin electrophoretic pattern in single cell disease, was attributed an incorrect address. It should have been Department of Haematology, North Middlesex Hospital, Edmonton, N18.

In the same issue, a table pertaining to the letter from Ho-Yen *et al* on limitations of Chlamydiazyme in general hospital laboratories (P357) was published with all columns ELISA positive: it should have read as follows:

Table 1 Results obtained by ELISA and immunofluorescence for detection of *Chlamydia trachomatis* in specimens from female patients

	Patients from STDs		Patients from GPs	
	ELISA positive (%)	ELISA negative (%)	ELISA positive (%)	ELISA negative (%)
Confirmed by immunofluorescence	32 (17)	158 (83)	48 (13)	320 (87)
Not confirmed by immunofluorescence	22 (12)		29 (8)	
	10 (5)		19 (5)	