

Based on the above, the following screening test procedure is employed. Serum, 0.1 ml, is mixed by hand shaking with 0.9 ml 12.5% acid-washed kaolin in borate-buffered saline pH 9.0 (Clarke and Casals, 1958) and 2 pasteur pipette drops (approx 0.065 ml) of 50% pigeon RBCs in RBC diluent. Mixtures are incubated at 4°C for 20 min with shaking after 10 min and then centrifuged at 3000 rpm for 5 min. Taking the supernatants as a 1 in 10 dilution the sera are screened at a dilution of 1 in 20 against 4HA units with a control lacking antigen for each serum. Virus/serum mixtures are then incubated overnight before adding the indicator RBC suspensions and developing the tests as described above.

Using this procedure we have found that less than 3% of screens require repeating, considerable time is saved since the duration of pretreatment of sera is reduced to 25 min and the partial haemolysis of pigeon RBCs in the presence of kaolin facilitates the placement of test sera in the colourless microtitre plates.

J. R. PATTISON
JENNIFER E. MACE
*The School of Pathology,
The Middlesex Hospital
Medical School,
London*

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Haemagglutination Test for Toxoplasmosis

We have read with special interest the paper by Thorburn and Williams (1972), since we were indebted to them for some technical advice when we were experimenting with pyruvic-aldehyde-

treated red cells some time ago. Since then we have tested a large number of sera by this technique and have found our results similar to theirs. We too have been impressed with the possibility of using this technique for screening sera for toxoplasma antibodies, as a preliminary to carrying out titrations or other tests on those giving positive reactions.

Our work, which it is hoped to publish in due course, has largely been on the changes in titre in various serological tests in the course of toxoplasma infection. This has shown that in the first few months of a case of acquired toxoplasmosis it is normal for the HA test to have a much lower titre than the dye test, eg, the HA test may give a titre as low as 1/64 in the presence of a dye test titre of 1/8192. More important, we have had two examples of a negative haemagglutination test with a high titre dye test—one, a case of 'lymphocytosis' with a dye test titre of 1/2048, the other a child of 7 weeks with hepatosplenomegaly and a dye test titre of 1/4096. Dr Fleck also has reported two cases to us with the same type of serological response, one with our sensitized cells, the other with a commercial kit using a similar antigen. We have not encountered this discrepancy in eye cases, where it is usual to find the HA test yielding titres similar to or higher than the dye test.

We believe there is a good case for using this screening test in routine work but we hesitate to recommend it in suspected acquired cases (other than eye cases) of under six months' duration or in children under 1 year. Nevertheless, even in these cases a false negative result need only be expected on rare occasions.

K. A. KARIM
G. B. LUDLAM
*Public Health Laboratory,
Leeds, 15*

Reference

- Thorburn, H., and Williams, H. (1972). A stable haemagglutinating antigen for detecting toxoplasma antibodies. *J. clin. Path.*, 25, 762-767.

Book review

Methods of Biochemical Analysis Volume 19 Edited by David Glick. (Pp. vii + 632; illustrated. £9.85.) New York, London, Sydney, and Toronto: John Wiley and Sons Ltd. 1971.

The book starts with an admirable description of isoelectric focusing in LH gradients. This technique has come to the fore in the last two years in relation to the separation of proteins and of haemoglobins; it has an undoubted future in medicine and deserves more attention than it has received in pathological laboratories.

The second section deals with mass spectrometry in the determination of structure of certain natural products containing sugars, a very specialized field.

The third section deals with the determination of carbohydrate in biological materials by gas-liquid chromatography. To a worker in the field it is a valuable collection of references; it is not very critical and it is of little interest to anybody else.

The fourth section is concerned with activation analysis of the biological trace elements and is an uncritical compilation of the results of many authors: it has, of course, a very full bibliography.

The last section is a good description of the polarography of proteins. This technique of polarography has not been applied to clinical problems sufficiently for it to be possible to assess its value. It is a field which needs study and the present chapter would certainly be helpful to anybody seeking to study the subject.

It is impossible to resist the thought that books such as the present are unnecessary—what is worthwhile should appear as a review in a suitable journal and the rest should not be published.

ARTHUR JORDAN



Haemagglutination test for toxoplasmosis.

K A Karim and G B Ludlam

J Clin Pathol 1973 26: 162

doi: 10.1136/jcp.26.2.162-a

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