Letter to the Editor

Counterelectrophoresis on Human Serum in Coxsackie Virus Infections

Encouraging results have been obtained by Schmidt *et al* (1968; 1973) on the diagnosis of Coxsackie infections using gel diffusion for demonstration of antibody in patients' sera.

They found that with concentrated Coxsackie antigens human serum produced a group line close to the antigen cup with antigens not necessarily of the infecting virus type, and a specific line, closer to the serum cup, consisting of IgM antibody combined with intact virus particles, of the current infecting virus type, or occasionally with virus for which the serum had a high neutralizing antibody level.

When antigen was inactivated by heating at 56°C for 30 min the specific antigen was converted to group antigen.

Counterelectrophoresis should theoretically enable a less concentrated antigen to be used and be more rapid than simple gel diffusion, but preliminary studies have proved disappointing.

Counterelectrophoresis and antigen preparation were as described (MacWilliam and Cook, 1975). Antigens were normally used at 50 to 100 times the concentration of the original tissue culture fluid, but as the antigens were unstandardized, effective concentrations were not comparable.

Using this method, the results resembled those described for simple gel diffusion in some respects. Some sera produced double precipitation lines, and the majority produced single lines against one or more of the antigens tested. Double lines occurred with sera which by neutralization had high titres or significant rises between the acute and convalescent phase sera against the appropriate antigens.

By careful placing of the holes, it could be shown in six pairs of sera tested that fusion occurred between the line nearest to the antigen cup in a serum with double precipitation lines and the single line in a serum with only one precipitation line, suggesting that these were group lines.

When antigen was inactivated one line only was produced.

However, results using different batches of antigen were not always reproducible, and three sera fractionated on sucrose density gradients showed two precipitation lines in the IgG fraction.

One reason for the discrepancies could be unsuitable relative concentrations of antigen and antibody, a well-known hazard of counterelectrophoresis, and titration of antigen and antibody supported this. In addition, one batch of Coxsackie B_3 antigen 260 times the concentration of original tissue culture fluid produced no precipitation lines at all when inactivated although double and single lines were produced by uninactivated antigen, suggesting that the inactivated antigen was too concentrated to react.

However, apart from concentration there may well be other problems, and more work on technique and interpretation is needed. Further sucrose density gradients would need to be done, and should these confirm the presence of double precipitation lines in the IgG fraction, the origin of at least some of these lines must be different from those described by Schmidt *et al* (1968).

We are grateful to the British Heart Foundation and St Mary's Hospital Joint Standing Research Committee for funds which supported this work, to Mrs M. Cooper and Mr C. Kenny for technical help, and to Professor K. R. Dumbell for help and advice.

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Book reviews

Drug Disposition and Pharmacokinetics with a Consideration of Pharmacological and Clinical Relationships By Stephen H. Curry. (Pp. viii + 214; illustrated; £4·50) Oxford: Blackwell Scientific Publications. 1975.

The growing interest in drug absorption, distribution, and disposition and recognition of their importance in drug therapy has led to increasing use of blood drug measurements, in some cases, as a means of monitoring treatment and a guide to dosage. This short book by Stephen Curry will be of value to those clinical pathologists who undertake such measurements and wish to know more about their meaning and interpretation. It is a readable and relevant book in which mathematics, the essence of pharmacokinetics, are kept firmly in place as the handmaiden of the text rather than as a substitute for it.

V. MARKS

Pathobiology Annual, Volume 4, 1974. Series Editor Harry L. Ioachim. (Pp. 346; illustrated; £13·20). New York: Appleton-Century-Crofts.

Recent years have seen an increasing appreciation of the importance of function and its correlation with gross and microscopic structure in studies of the causation and mechanisms of disease. In this respect, investigations of the endocrine system led the research path which is now being extended to a wide variety of other tissues and organs.

The present *Pathobiology Annual* is the fourth in the series. Although the title may appear at first glance to be a contradiction in terms, it serves to focus attention upon one of the aims of the series, namely, to illustrate the value of a comprehensive knowledge of the normal properties of the tissues before attempting to interpret pathological changes.

Topics in the current volume range from the role of the macrophage, through immunology, lymphoreticular disease, and oncogenic viruses to studies of endocrine and metabolic diseases. In each chapter, normal parameters are presented prior to discussion of the functional and structural aspects of pathological derangements. This concept is particularly well illustrated in the excellent chapters dealing with the macrophage, connective tissues and cardiac function, and the

J Clin Pathol: first published as 10.1136/jcp.28.12.926 on 1 December 1975. Downloaded from http://jcp.bmj.com/ on April 19, 2024 by guest. Protected by copyright.