

Neonatology—then and now (CHM Walker)

C reactive protein (1957)

The significance of the C reactive protein estimation in streptococcal and allied disease

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By the time this paper was published the existence of C reactive protein had been known for at least 27 years—that is, almost 60 years ago. While originally thought to be a specific antibody against the pneumococcus it was eventually found in humans as a serum reaction to numerous inflammatory conditions and to tissue necrosis. This paper described the further purification by crystallisation of the protein and the production on a commercial scale of a specific antiserum for C reactive protein.

The claim is made that 'the use of this antiserum makes the detection of C reactive protein in serum a simple test' and describes its value in streptococcal and related disorders. Despite the claims that the new test was both qualitative and quantitative (reading a column of precipitate) the fact that the introduction states that C reactive protein 'is absent from normal serum' indicates that it could not have been a very sensitive test at that time. **Today.** It is now known that C reactive protein is only one of several plasma proteins of hepatic origin that increase in concentration in response to tissue inflammation, and the current interest in the newborn is its value in the detection of infection. White blood cell counts and ratios and erythrocyte sedimentation rates (with some recent reservations¹) have on the whole proved adequate in older patients to establish the presence of active inflammation and C reactive protein has been used more to detect other forms of tissue damage, for example, in rheumatic disease. In the newborn, however, white blood cell counts and erythrocyte sedimentation rates are 'fickle friends' because of the wide physiological and pathological variations in red and white cell counts and plasma protein concentrations. Thus serial C reactive protein estimations, even measured semiquantitatively, have come into use with some success in aiding the detection of infection.

Though C reactive protein is the most easily measured reactant it has until recently been a poorly standardised semiquantitative test but its overall value should improve now that an international reference standard is available.

Several rapid quantitative assays are now used and it has a singular advantage of responding vigorously within 6–10 hours of the onset of bacterial (though not viral) infection.²

Of the other acute phase reactants that have been studied in rheumatic diseases the mucoprotein tyrosine has been shown to be more 'stable' in the face of treatments with antibiotics and steroids. If micro methods were available for some of these other reactants they might assist even more than C reactive protein or plasma viscosity in establishing the presence of active infection in the newborn—or is it easier just to treat all preterm babies prophylactically with wide spectrum antibiotics? Even if the latter course is adopted such tests might help to identify those babies who were 'escaping' from such protection and to recognise the need for a change in antibiotic. Nitroblue tetrazolium and an acridine orange leucocyte cytosine test are also being studied in the apparently never ending search for a reliable, preferably single, test for neonatal infection.³

References

- ¹ Stuart J, Lewis SM. Monitoring the acute phase response. *Br Med J* 1988;**297**:1143–4.
- ² Stuart J, Whicher JT. Tests for detecting and monitoring the acute phase response. *Arch Dis Child* 1988;**63**:115–7.
- ³ Kite P, Millar MR, Gorham P, Congdon P. Comparison of five tests used in diagnosis of neonatal bacteraemia. *Arch Dis Child* 1988;**63**:639–43.

Sheila Dawson is a graduate of the University of Leeds (1949) who despite family obligations continued her interest in paediatrics. At the time of writing this article she was part time clinical research assistant to the late Professor Aron Holzel at Booth Hall Children's Hospital, Manchester, the paper appearing in the *Archives* in the same month in which her second child was born. After a period out of medicine she returned as part time clinical assistant in haematology with a concomitant part time appointment in paediatrics, latterly moving to the paediatric section of community medicine. Her son, Dr David Oleesky, has continued her interest in immunology and has written on the subject of complement C 9.