Anti-DNA Activity in Systemic Lupus Erythematosus

Hughes GR, Cohen SA, Christian C.

Ann Rheum Dis 1971; 30: 259-64

IMAJ 2011; 13: 273

In 1967, four groups reported the finding of antibodies directed against DNA in the serum of lupus patients [1-4]. Two years later, a young post-doc fellow, Ted Pincus, working with Peter Schur, Norman Talal, John Decker and Charles Christian, described a sensitive radioimmunoassay for the detection of anti-DNA antibodies – a process based on a method previously described by R.S. Farr [5]. This assay, subsequently published in the *New England Medical Journal* [6], looked very promising as a clinical tool, and Dr. Christian asked two of his new fellows, Selwyn Cohen and myself, helped and guided by Rob Lightfoot, to set it up and look into its clinical potential.

Both of us were new recruits to the lab: our learning curves were steep – even the making up of buffer solutions required serious concentration. And improvisation played a prominent role. For example, to photograph our ouchterlony plates we cut circular holes in the base of upturned polystyrene ice buckets in order to get a good light source from below.

For me, the true excitement of laboratory research came with our initial studies of the DNA-binding test – at the end of each day setting up the assay incubations, the results rolling out on the printer were striking in their clarity: DNA binding of normal serum 0%, 10%, 5%, 15% ….DNA binding our lupus patients' sera 90%, 85%, 100%, 95%. In serial clinical studies, we found that fluctuations in DNA binding broadly (though not slavishly) mirrored disease activity, and concluded that "since the serological phenomena may antidate clinical exacerbations of SLE …they can provide guides in management…" [7].

For me, and I'm sure for my other clinical fellow colleagues, the experience gained from working with Chuck Christian, and rubbing shoulders with some of the great of American rheumatolology, were to leave a lifelong impression.

References

1. Robbins WC, Holman HR, Deicher H, Kunkel HG. Complement fixation with cell nuclei and DNA in lupus erythematosus. *Proc Soc Exp Biol* 1957; 96: 575-9.
2. Seligmann M. Mise en evidence dans le serum de malades atteints de lupus erythemateux. *Compte Ren Acad Sci* 1957; 245: 243.
3. Meischer P, Strassle R. New serological methods for detection of LE factor. *Vox Sang* 1957; 2: 283.
4. Cepellini R, Polli E, Celada F. A DNA reacting factor in serum of a patient with lupus erythematosus diffuses. *Proc Soc Exp Biol Med* 1957; 96: 572-4.
5. Farr RS. A quantitative immunochemical measure of the primary interaction between I.BSA & antibody. *J Infect Dis* 1958; 103: 239-62.
6. Pincus T, Schur PH, Rose JA, Decker JL, Talal N. Measurement of serum DNA-binding activity in SLE. *N Engl J Med* 1969; 281: 701-5.
7. Hughes GRV, Cohen SA, Christian CL. Anti-DNA activity in systemic lupus erythematosus: a diagnostic and therapeutic guide. *Ann Rheum Dis* 1971; 30: 259-64.