

Commentary: LE test in retrospect

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This article is based on the demonstration¹ that LE cells could be made artificially by simply adding cell-free LE plasma to normal bone marrow cells. Before that discovery, the LE cell was thought to be a unique cell, found only in the concentrated bone preparations of patients with systemic lupus erythematosus (SLE).

I shall never forget the day Mary Stepien mixed plasma from one of my SLE patients with bone marrow cells obtained by Dr. Donald Bortz from a normal volunteer, and made smears from the buffy coat. She could not contain her excitement: "We have reproduced the entire LE phenomenon in that normal marrow: rosettes, LE cells, everything!"

Many medical discoveries are made simultaneously. Two months after we submitted our paper¹ to the *Journal of Investigative Dermatology*, the *Mayo Clinic Proceedings* published an article on the in vitro induction of the LE phenomenon in April 1949. Although our article was not published until August 1949 and American authors understandably credited the other workers with the discovery, European authors (notably Professor Alberto Marmont of Genoa) noted our earlier "submitted for publication" date (February 1949) and credited us with the discovery.

In subsequent studies at the Cleveland Clinic, Dr. Lena Lewis separated LE plasma into four

components. Each was added separately to normal bone marrow cells. Only the gamma globulin portion induced LE cells. Later, Dr. Lawrence Berman of Detroit mixed "pure" nucleoprotein with LE plasma and ordinary leukocytes to show that all three parts were necessary to artificially induce the LE phenomenon. Thus, the concept of the autoimmune disease began, for here was one part of the human system (LE gamma globulin) reacting to an otherwise normal component (nucleoprotein).

This article converted these laboratory results into a reliable test for SLE. Literally thousands of serum specimens were sent to us from all over the country. Mary Stepien and her associate technicians were busy for years keeping up with the demand. We found that dog marrow was equally effective in detecting the LE factor in that it produced beautiful rosettes (though rare LE cells). The Research Division supplied us with enough bone marrow samples from their large dogs to meet the demand.

Later the same nucleoprotein/LE gamma globulin combination was detected through fluorescent techniques, known today as antinuclear factor (ANA or ANF). Regrettably, these studies have almost replaced the LE cell test in most institutions.

Reference

1. Haserick JR, Bortz DW. Normal bone marrow inclusion phenomenon induced by lupus erythematosus plasma. *J Invest Dermatol* 1949; 13:47-49.

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