TECHNICAL METHODS

A SIMPLE METHOD FOR THE DETECTION OF L.E. CELLS

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In 1948 Hargraves, Richmond, and Morton reported the "L.E. cell" phenomenon. These cells are usually polymorphonuclear leucocytes containing a round, homogeneous, or, more rarely, reticular or granular body. Occasionally similar inclusions are to be seen in eosinophils and monocytes.

The inclusion bodies may be derived from either polymorphonuclear nuclei (Rebuck and Berman, 1950) or from lymphocytic nuclei (Moyer and Fisher, 1950). They are strongly Feulgen-positive and stain weakly with methyl green, indicating the presence of deoxyribose nucleic acid (Klemperer, Gueft, Lee, Leuchtenberger, and Pollister, 1950). Haserick and Lewis (1950) have shown that the formation of L.E. cells depends upon the presence of an abnormal factor in the gamma globulin fraction of the plasma of patients suffering from lupus erythematosus.

Over the past few years we have used many methods for the detection of L.E. cells. The techniques involving the use of anticoagulants with or without bone marrow preparations have, in our hands, proved to be either tedious and often involving procedures in many steps and/or have lacked a degree of sensitivity desirable in a routine laboratory.

We have followed more recently and more successfully the general lines of Eppes and Ludovic (1951).

Method

Twenty millilitres of venous blood are defibrinated by agitation in a universal (1-oz. bottle) container holding a bent paper clip. The defibrinated blood is transferred to a conical tube and centrifuged for five minutes at 1,800 r.p.m. The upper cellular layer is transferred by a Pasteur pipette to a Wintrobe tube, which is again centrifuged at 1,800 r.p.m. for five minutes. Smears are made from the buffy coat, and stained by the Leishman method (Fig. 1). The number of L.E. cells per 500 leucocytes is then determined. The inclusions show varying grades of density and of colour from deep blue to pink.

Results

In view of the encouraging results we have obtained with this simple and rapid method, others may be interested in our preliminary results (Table I). Only one search for these cells has as yet been made on each patient in the majority of

TABLE I
RESULTS WITH DEFIBRATION TECHNIQUE

Case No.	Diagnosis	No. of L.E. Cells per 500 W.B.C.s
1	Chronic discoid L.E.	3
2	" " "	1
3	" " "	1
4	Generalized discoid L.E.	2
5	" " "	3
6	" " "	3
7	" " "	3
8	Acute disseminated L.E.	5
9	" " "	1
10	" " "	15
11	" " "	3
12	Subacute disseminated L.E.	11
13	" " "	3

FIG. 1.—Typical L.E. cell with adjacent polymorphs and lymphocytes. $\times 1,350$.

cases. The examinations were carried out at random irrespective of the type or stage of disease and of treatment. Extracellular amorphous material was neglected in the counts. The clinical classification of O'Leary (1934) was adopted in this series.

We failed to detect L.E. cells in 32 normal people, two cases of generalized discoid lupus erythematosus, 43 cases of chronic discoid lupus erythematosus, two cases of dermatomyositis, four cases of sunlight eruption, and single cases of polyarteritis nodosa, rosacea, and generalized erythrodermia due to phenobarbitone.

An oxalate method using peripheral blood which was mentioned by Holman (1951) was compared with the defibrination technique in 39 subjects. Included in this group were seven cases listed in Table I. The criteria already described were used in the clinical diagnosis and in making the cell counts. Positive results are shown in Table II. Negative findings with both methods

erythematosus, in four out of six cases of generalized discoid lupus erythematosus, and in three out of 46 cases of chronic discoid lupus erythematosus. Negative results were found in 32 normal and nine miscellaneous pathological states.

A further investigation comparing the defibrination technique with an oxalate method was then made. Positive results with the former were found in seven cases of chronic discoid lupus erythematosus,* three cases of generalized discoid lupus erythematosus,† and in one case of subacute disseminated lupus erythematosus.† The oxalate technique gave positive findings in only one case of subacute disseminated lupus erythematosus. Here the L.E. cells were much fewer than in similar smears made by the defibrination method from the same case.

Although the L.E. cell is not absolutely qualitatively specific for lupus erythematosus (Berman, Axelrod, Goodman, and McClaughry, 1950; Lee, 1951), it has only rarely been detected in other conditions and then in relatively small numbers.

So far as we are aware, in only one other case of chronic discoid lupus erythematosus have L.E. cells previously been detected (Berman *et al.* 1950). Our seven cases of chronic discoid lupus erythematosus in which L.E. cells were found have never shown any clinical evidence of dissemination of the disease over periods of years. Hence, the finding of L.E. cells does not always appear to coincide with clinical systemic involvement.

We hope to record more detailed clinical and laboratory results, including the significance of the grading of L.E. cells, in the near future.

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* Three of these cases have been included in Table I.

† These cases have also been included in Table I.

TABLE II

COMPARISON OF RESULTS WITH DEFIBRINATION AND OXALATE TECHNIQUES

Case No.	Diagnosis	Defibrination Technique	Oxalate Technique
		No. of L.E. Cells per 500 W.B.C.s	
100	Chronic discoid L.E.	2	—
101	" " "	1	—
102	" " "	1	—
2	" " "	1	—
1	" " "	2	—
3	" " "	1	—
110	" " "	1	—
7	Generalized discoid L.E.	1	—
4	" " "	3	—
6	" " "	5	—
13	Subacute disseminated L.E.	94	4

were found in 10 normal people, 17 cases of chronic discoid lupus erythematosus, and in one case of hydroa aestivale. Hence we agree with other workers that the use of an anticoagulant is not only unnecessary but may actually exert inhibitory effects upon the production of L.E. cells (Lee, 1951).

Comments and Summary

The results of a simple, apparently efficient, method of detecting L.E. cells in the peripheral blood without the use of an anticoagulant are described. Positive findings were obtained in all cases of acute and subacute disseminated lupus