

INTRACUTANEOUS FLUORESCENT ANTIGLOBULIN TEST IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

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In patients with systemic lupus erythematosus (SLE) not only the diseased skin shows the presence of bound antibody in the region of the basal membrane (*Burham et al.* (1)), but a similarly bound globulin factor may be found sometimes—though to a much lesser extent—in the normal skin biopsy samples as well (*Cormane* (2)). The hypothesis of the present study was that this globulin binding property of the skin could be perhaps detected by a clinical method, with the intracutaneous injection of fluorescein-conjugated antihuman globulin. The idea was that if there is a bound antibody in the skin, the absorption of the antihuman gamma globulin will be retarded and the spot of the injection will fluoresce for a longer time.

MATERIAL AND METHOD

To two groups of otherwise unselected patients (one with SLE and an other control group without any autoimmune disease) intracutaneous injections of 0.15 ml were given into the volar side of the intact skin of the forearm. Two injections were given each time: one with a dilution 1:80 of fluorescein labelled rabbit antihuman immunoglobulin (Difco) and an other distally from this with fluorescein as control in a dilution which gave the same fluorescence *in vitro* as the diluted fluorescein labelled antihuman immunoglobulin (abbr.: FAHIC). The fluorescence of the spots was observed in 5 minute intervals under an analytical quartz lamp. The test was taken as one plus (+) positive when the fluorescence of the FAHIC lasted 10 minutes longer than that of the control fluorescein on the same patient on the same occasion. If at that time the fluorescence of the FAHIC was still very bright and lasted much longer, the

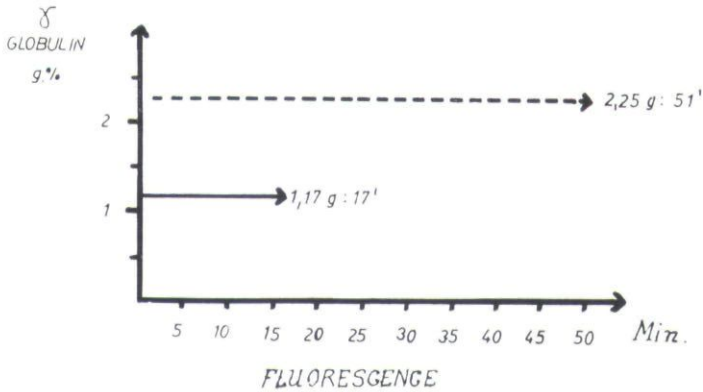


Fig. 1.

test was judged as two plus positive ($++$). The other data of the patients were determined with conventional clinical methods. The SLE cases were in a mildly active state of the disease, with slight fever, accelerated BSR and mild inflammations at different parts of their bodies (arthralgia, etc.).

RESULTS

The first results were very disappointing. Only 3 of 6 SLE patients gave one plus fluorescence, the other three being negative and there were positive cases as well in the control group. So it was thought that either the idea was wrong, the intracutaneous technic is not a suitable method for the detection of antibody in the skin, or the antibody-binding is not a frequent event in the normal skin of the SLE patients.

At that stage of the investigations a control patient solved the problem. This patient had a most positive long lasting $++$ fluorescence and his diagnosis was well established: myeloma multiplex (plasmocytoma). His serum-protein-concentration was very high, 12 g%, with a gammaglobulin-content of 9.4 g%. This case gave the new idea that we ought to compare the positivity or negativity of fluorescein AHIG test not with the diagnosis of the patients, but rather with their serum-gammaglobulin concentration.

Fig. 1 shows the results of the first series of patients irrespective of their diseases, grouped now only as positives

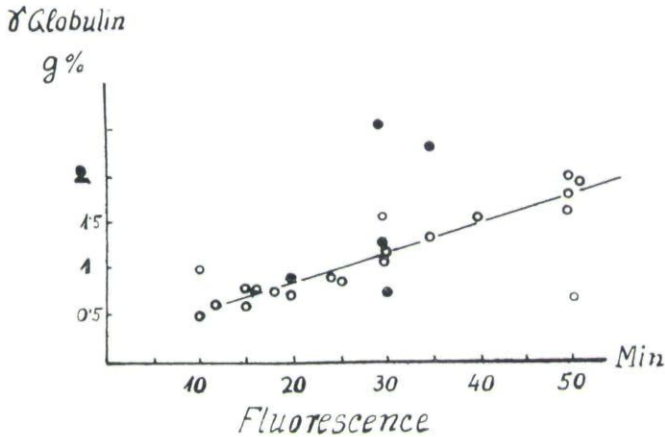


Fig. 2.

and negatives. We had tested 18 patients of whom 10 were positive and 8 negatives. The mean gammaglobulin content of the sera in the negative group was 1.17 g%, whereas it was approximately the double, 2.25 g% in the positive group.

Since in this preliminary series of the investigation we did not know the exact fluorescence time in the positive cases, in a second series a dilution of 1:40 FAHIG was given, the whole time of fluorescence measured in minutes and plotted against the gamma globulin concentration of the serum.

Fig. 2 shows the results obtained in this way. Although there is a considerable scatter about the straight line which represents the trend of the phenomenon from the observed 20 cases, the correlation seems to be fairly good. Since we did not intend to suggest the intracutaneous FAHIG test as a clinical substitute of the direct gammaglobulin determination, calculations are omitted. The black dots in the graph indicate that in these cases there was some inflammation at the site of the injection that can alter the results, but there is no explanation for the outstanding case on the right lower part of the graph (= long fluorescence with normal gamma globulin). It seems there is a definite tendency for a longer intracutaneous

fluorescence of the FAHIG in patients with higher serum globulin content, although great individual exceptions may occur.

These exceptions may have many different causes: different technic of the injection, irritation of the injected material, etc. We do not know exactly how the higher gamma globulin content of the blood delays the absorption of the FAHIG and what is the actual gamma globulin content in the skin. One could even think that perhaps not the whole serum gamma globulin content may be responsible for this delay, but only an unknown fraction of it. After these results some doubt must arise as to the meaning of the globulin which is sometimes demonstrable in the normal skin of the SLE patients.

SUMMARY

The measurement of the fluorescence time of the intracutaneously given fluorescein-labelled antihuman immunoglobulin is of no use in the detection of systemic lupus erythematosus cases. This test does not show any relevance as to this diagnosis but rather it shows some correlation with the serum gamma globulin content of the patients irrespective of the diagnosis.

REFERENCES

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