

Cryoglobulinemia in Lepromatous Leprosy: An Immune Complex Phenomenon¹

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A peculiar feature of lepromatous leprosy (LL) is the rather frequent occurrence of serum protein alterations, such as an increase of immunoglobulins (2, 6), positive tests for rheumatoid factor (4, 8), thyroglobulin antibodies (1), biologic false-positive serologic tests for syphilis (5, 9), etc.

Another abnormality which may be demonstrated in a certain number of sera from leprosy patients is the occurrence of cold-precipitable serum proteins or "cryoglobulins." Indeed, according to our experience (Bonomo and Dammacco, unpublished observations) cryoglobulinemia may be found in about 40 per cent of patients with LL.

The present report gives a preliminary account of the immunochemical studies carried out on the isolated cryoglobulins obtained from five patients with LL. Serum specimen collection, isolation and purification of cryoprecipitates, antigamma globulin activity, immunofluorescence studies and analytic ultracentrifugation were performed as described elsewhere (3).

Table 1 summarizes sex and age of patients, and amount and immunochemical characteristics of cryoproteins. All the isolated cryoproteins were mixed IgG-IgM cryoglobulins. Actually, in all cases two precipitation lines only, identified as IgG and IgM, were detected by immunoelectrophoresis (Fig. 1). These findings were also confirmed by analytic ultracentrifugation.

The antigamma globulin activity present in all sera was recovered from the isolated cryoglobulins and little, if any, was left in

TABLE 1. Summary of cases studied.

| Patient | Age and Sex | Cryoglobulins | | |
|---------|-------------|----------------|------------------|---------------|
| | | Amount (gm. %) | Light chain type | |
| | | | IgG component | IgM component |
| A.S. | 55, F | 1.1 | K + L | K + L |
| Q.C. | 46, M | 1.2 | K + L | K + L |
| C.N. | 27, F | 1.3 | K + L | K + L |
| D.O. | 41, M | 0.7 | K + L | K + L |
| C.C. | 38, M | 0.09 | K + L | K + L |

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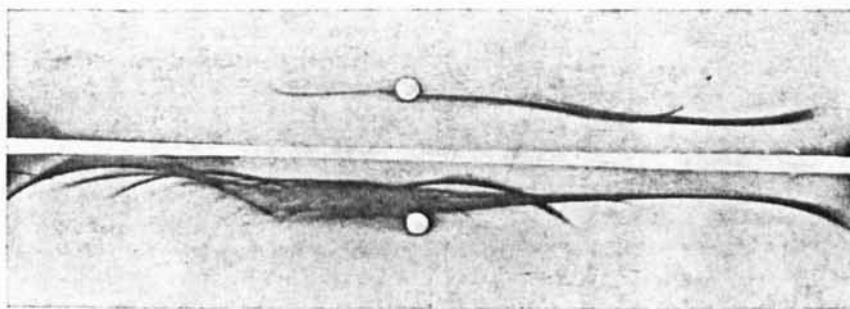


FIG. 1. Immunoelectrophoresis of the isolated cryoglobulin from patient A. S. (upper well) and of a pooled normal human serum (lower well). Horse antihuman antiserum in the trough. Two precipitin lines are clearly recognizable in the cryoprecipitate, which were identified as IgG and IgM by specific antisera.

the supernatant. Further, such rheumatoid factor activity was always confined to the IgM fraction only of each mixed cryoglobulin. In contrast, thyroglobulin antibodies, when detected in whole sera, were always left in the supernatant after removal of the cryoprecipitate.

Our results indicate that the cryoglobulins frequently found in sera from patients with LL belong to the mixed IgM-IgG type first described by LoSpalluto *et al.* (7). The fact that the IgM component of these mixed cryoglobulins constantly possesses antigamma globulin activity supports the view that they represent circulating immune complexes of the IgG/anti-IgG type.

Such cryoglobulins may play a role in the pathogenesis of some clinical features of leprosy patients, particularly of the neurovascular, cutaneous and renal structures.

SUMMARY

Immunochemical investigations of the cryoglobulins isolated from five patients with lepromatous leprosy (LL) were performed.

All cryoglobulins were of the mixed IgM-IgG type. Further, owing to the antigamma globulin activity consistently detected in the IgM fraction, such cryoglobulins were considered as immune complexes of the IgG/anti-IgG type.

The possible pathogenetic significance of the immune complex cryoglobulinemia in LL is emphasized.

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