The Occurrence of Antinuclear, Anti-SSA/Ro and Anti-SSB/La Antibodies in Patients with Polymorphous Light Eruption

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Serological features were investigated in 22 patients with polymorphous light eruption. The diagnosis was made from the history and clinical patterns and confirmed by phototesting and histological examinations. In 4 patients with polymorphous light eruption, anti-RNP antibodies were detected in the serum despite the fact that the antinuclear antibody tests were negative in all cases. The serum levels of anti-SSA/Ro antibodies in the patients were mildly but significantly elevated ($p < 0.001$) as compared with healthy controls. No difference was found between the patients and controls regarding the serum concentrations of anti-SSB/La antibodies. The conclusion is drawn that it is necessary to examine patients with polymorphous light eruption with regard to a 'late autoimmune course' and it is worthwhile to study the relationship between the photosensitivity and the occurrence of anti-SSA/Ro antibodies. ***Key words: Photosensitivity; Circulating autoantibodies.***

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Polymorphous light eruption (PMLE) is an idiopathic, acquired syndrome characterized by a delayed abnormal response to light and a varied morphology of recurrent erythema, papules, vesicles, or plaques, on light-exposed areas of skin (1). Because lupus erythematosus (LE) is often exacerbated by sun exposure and because the cutaneous lesions of LE may show some clinical similarity to those of PMLE, the possible relationship of these two diseases has often been discussed (2, 3). The current view is that there is no specific relationship between LE and PMLE (4). In a detailed analysis of 114 patients with PMLE, Jansén & Karvonen (5) did not find any patients who met the diagnostic criteria for LE.

Our present study demonstrated the occurrence of antinuclear, anti-SSA/Ro and anti-SSB/La antibodies in a certain proportion of 22 patients with PMLE.

MATERIALS AND METHODS

Patients

Twenty-two patients (9 males and 13 females, age range 20–62 years, mean 36 years) participated in this study. PMLE was defined as a recurring pruritic summer eruption, confined predominantly to exposed skin, precipitated by sun exposure and unrelated to the intake of any photosensitizing drugs or topical photosensitizers (6, 7). To exclude other diseases with light sensitivity such as lupus erythematosus and porphyrias, immunofluorescence investigations of cryostat sections from the involved skin, appropriate laboratory tests, including antinuclear antibody, anti-dsDNA, anti-Sm, LE cell preparations, and porphyrin measurements were performed. Serum immunoglobulin (IgG, IgM and IgA) concentrations were in the normal ranges. PMLE diagnosis was supported by phototesting (8) and histological examinations (9). Twenty healthy blood donors served as controls (8 males and 12 females, age range 21–56 years, mean 36 years). None of them complained of light sensitivity. All sera were stored at −20°C before use.

Methods

Antinuclear antibodies (ANA) from the sera were determined by indirect fluorescence with cryostat sections of rat organs. Extractable nuclear antigens (ENA) were prepared from calf thymus (10). Antibodies against ENA were detected by counter-immunoelectrophoresis (10, 11). Anti-ENA positive sera were tested against trypsin- and ribonuclease-treated ENA extracts (12). SSA/Ro and SSB/La antigens were isolated from calf thymus and human spleen (13). Antibodies against SSA/Ro and SSB/La were determined by ELISA technique (13). Antibody positivity was accepted when the special ELISA optical density (OD) was higher than the mean value ($\bar{x}$) increased by two standard deviations (SD).

Student's *t*-test was used for statistical analysis.

RESULTS

Antinuclear antibodies were not demonstrated at all by indirect immunofluorescence in our patients with PMLE. Four serum samples from 22 patients were found to have precipitating antibodies to calf thymus extract (ENA). The enzyme digestion studies with trypsin and ribonuclease revealed that in each anti-ENA-positive case the antigen(s) proved to be trypsin- and ribonuclease-sensitive. We think that these antibodies must be of anti-RNP type.

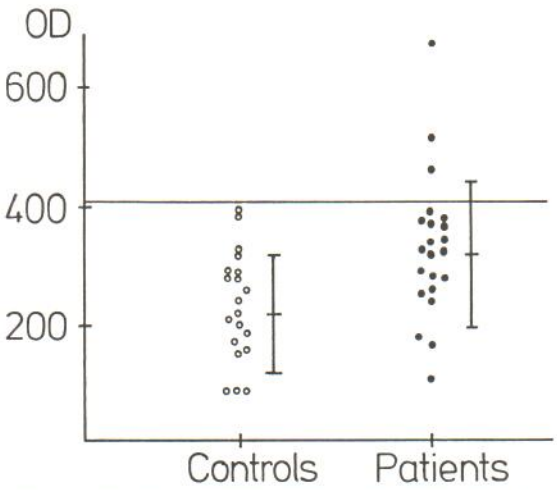

Fig. 1. Anti-SSA/Ro antibody titres are expressed as ELISA optical density units (OD).
Controls: $\bar{x}$ = 208 SD = 101 n = 20
Patients: $\bar{x}$ = 323 SD = 134 n = 22 $p < 0.001$

The serum levels of anti-SSA/Ro antibodies in the patients were mildly but significantly elevated as compared with the healthy controls (Fig. 1). In 3 cases, the titres of anti-SSA/Ro antibodies exceeded our control limit ($\bar{x}$ + 2SD).

We could find no significant difference between the patients and controls regarding the serum concentrations of anti-SSB/La antibodies (Fig. 2). Two patients proved to be anti-SSB/La-positive.

All serological findings are summarized in Table I.

DISCUSSION

Antibodies against RNA protein molecules SSA/Ro, SSB/La and nuclear RNP occur frequently in patients with systemic lupus erythematosus (SLE) and in patients with other autoimmune disorders (14). In spite of the fact that none of our patients with PMLE showed any sign of LE in laboratory, clinical and immunohistological investigations, we demonstrated serological abnormalities in some cases with PMLE similar to autoimmune disorders.

In a 7-year follow-up study, Jansén & Karvonen (5) concluded that PMLE is not a predisposing condition for the development of SLE or other collagen diseases. This view coincides with that of several previous investigators (11, 15, 16). Our long clinical experience also supports this opinion.

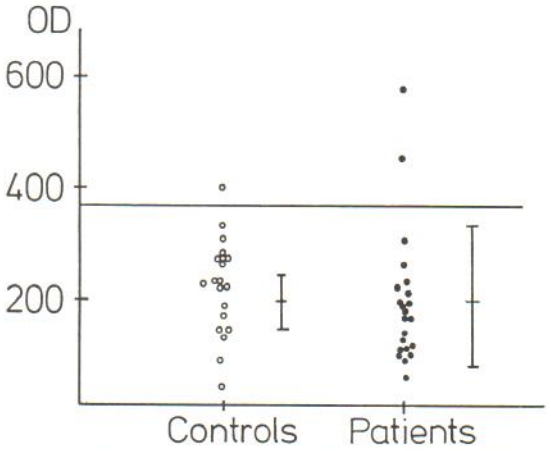

Fig. 2. Anti-SSB/La antibody titres are expressed as ELISA optical density units (OD).
Controls: $\bar{x}$ = 197 SD = 81 n = 20
Patients: $\bar{x}$ = 191 SD = 108 n = 22 Not significant

However, there must be an explanation for the common presence of special antibodies in both conditions. Photosensitivity is a common precipitating factor and some clinical and experimental data confirmed the relationship between the photosensitivity and the presence of circulating anti-SSA/Ro antibodies.

A humoral autoimmune response to the SSA/Ro antigen is seen in several disease states that involve the skin. Circulating anti-SSA/Ro antibodies can be found in the majority of patients with different autoimmune disorders (14) and many of them are accompanied by photosensitivity. It has also been demonstrated that medium and short-wave ultraviolet light exposure produces an increased expression of SSA/Ro antigen in the cytoplasm and plasma membrane of human epidermal keratinocytes in vitro (17).

Our finding, that the serum concentrations of anti-SSA/Ro antibodies were mildly but significantly ele-

Table I. *Serological findings in 22 patients with polymorphous light eruption*

Patients	ANA	anti-ENA	anti-SSA/Ro	anti-SSB/La
P.G ♂	–	+	–	–
Sz.A. ♀	–	+	+	–
R.Z ♂	–	–	+	+
K.F ♀	–	+	+	+
J.J ♀	–	+	–	–
Others	–	–	–	–

vated in the patients with PMLE is new evidence of the relationship of photosensitivity and anti-SSA/Ro antibodies. It must be considered that a late autoimmune course is not excluded, especially in those patients who have both anti-ENA and anti-SSA/Ro antibodies.

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