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Prevalence and expression of photosensitivity in systemic lupus erythematosus

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SUMMARY Photosensitivity was assessed in 125 patients with systemic lupus erythematosus (SLE) and in 281 patients with rheumatoid arthritis (RA) as controls. Photosensitivity was reported by 87/119 (73%) patients with SLE and in 62/269 (23%) patients with RA; involving the face in 72/122 (59%) patients with SLE, then arms, chest, and neck. Patients with SLE reported that sun exposure could exacerbate various systemic symptoms, 51/121 (42%) reported medical treatment for photosensitivity and 41/118 (35%) reported that photosensitivity had a significant impact on their lifestyle. There was no significant difference in disease severity, as judged by physician or laboratory results, between patients scoring high or low on the photosensitivity scale.

Patients with systemic lupus erythematosus (SLE) are known often to be sensitive to sun exposure.[1 2] Although information about the prevalence of photosensitivity has been reported,[3–12] this information is not current and there are few data about the expression and impact of photosensitivity and its relation to systemic, non-cutaneous disease.

We presented a photosensitivity questionnaire to a group of patients with SLE and a control group of patients with rheumatoid arthritis (RA). Then, to investigate further the relation between photosensitivity and SLE disease activity we examined the relation between the photosensitivity score and various SLE variables obtained from the ARAMIS (American Rheumatism Association Medical Information System) data bank.

Patients and methods

PATIENTS AND CONTROLS

Consecutive patients with SLE and RA from Stanford University and Johns Hopkins University were assessed by questionnaires mailed biannually as part of routine outcome studies conducted by ARAMIS.

PHOTOSENSITIVITY QUESTIONNAIRE

This questionnaire assessed the degree of photosensitivity on a visual analogue scale, dermal and systemic reactions to sun exposure, chronological relation of photosensitivity to disease initiation, and its impact on medical treatment and lifestyle.

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RELATION BETWEEN PHOTOSENSITIVITY AND DISEASE EXPRESSION

Patients with SLE were divided into two subgroups—those scoring below or above the SLE mean score on the photosensitivity analogue scale. These two subgroups were compared by 47 ARAMIS variables divided into three main categories: (*a*) patients' self reported symptoms; (*b*) physicians' assessments; (*c*) laboratory tests. For patients with multiple recordings of a variable the last recorded value was used.

Statistical analysis was by two tailed Student's *t* test, two way Wilcoxon's test, and χ^2 test for interval, ordinal, or nominal distribution of data respectively. Correlation was by Pearson's product moment correlation coefficient.

Results

The photosensitivity questionnaire return was 77·6% for the SLE group and 83·8% for the RA group. There was no difference in background data for patients with SLE and RA who did, or did not, return the questionnaire, or between Stanford and Johns Hopkins data banks.

The study included 125 patients with SLE, mean age 42·5 (SD 13·4) years and 281 patients with RA, mean age 55·8 (13·8) years. Age had no correlation

with photosensitivity (r=0·01 for SLE, r=0·03 for RA). The patients with SLE had dark complexions, hair, and eyes. Patients with light complexion, hair, or eyes scored higher on the photosensitivity scale (data not shown).

Patients with SLE scored an average of 1·9 (SD 0·9) out of 3·0 on the photosensitivity scale, while patients with RA scored 1·2 (0·9) (p<0·0001). Eighty seven out of 119 (73%) patients with SLE and 62/269 (23%) patients with RA scored above 1·5 on the scale.

Tables 1 and 2 show the skin areas and systemic reactions reported to be involved in photosensitive reactions. Table 3 shows the effect of photosensitivity on lifestyle.

Twenty nine per cent of patients with SLE reported use of corticosteroid cream, 22% use of antimalarial drugs, and 21% increase of steroid dose, all owing to photosensitivity. Forty two per cent of the patients with SLE entered a positive reply for one or more of the possible treatments.

Of the 47 ARAMIS variables examined for a possible relation to photosensitivity, for physician assessment, and for laboratory tests, the distribution was relatively even between more pathological variables in the SLE photosensitive and non-photosensitive groups. Thus platelets were lower in the photosensitive group (247 (88)$\times 10^9$/l *v* 291 (93)$\times 10^9$/l; p=0·04) and urine protein (0–4) higher in the non-photosensitive group (0·54 (1·0) *v* 1·08 (1·4); p=0·06). Of patients' self reported symptoms the photosensitive group had a higher pathological score for global arthritis assessment (32 *v* 18; p=0·02), mouth ulcers (59% *v* 32%; p=0·01), and muscle pain (42% *v* 17%; p=0·017). All differences between the two subgroups of patients with SLE lost statistical significance after correction for multiple comparisons.

Table 1 *Skin areas in which a rash developed or worsened after sun exposure. Figures show number (%) of patients*

Skin area	*SLE* (n=122)*	*RA* (n=269)*	*p Value*
Face	72 (59)	40 (15)	<0·0001
Arms	57 (47)	49 (18)	<0·0001
Upper chest	44 (36)	37 (14)	<0·0001
Neck	37 (30)	28 (10)	<0·0001
Back	30 (25)	13 (5)	<0·0001
Other	22 (18)	14 (5)	0·0001

*SLE=systemic lupus erythematosus; RA=rheumatoid arthritis.

Table 2 *Reported induction or increase of systemic complaints after sun exposure. Figures show number (%) of patients*

Systemic complaint	*SLE* (n=120)*	*RA* (n=268)*	*p Value*
Weakness, fatigue	89 (74)	99 (37)	<0·0001
Joint pain	47 (39)	20 (7)	<0·0001
Rash to unexposed skin	38 (32)	10 (4)	<0·0001
Fever	33 (28)	13 (5)	<0·0001
Hair loss	14 (12)	7 (3)	0·0007
Other	16 (13)	12 (4)	0·0037

*SLE=systemic lupus erythematosus; RA=rheumatoid arthritis.

Table 3 *Effect of photosensitivity on patients' lifestyle.* Figures show number (%) of patients*

	SLE† (n=118)	*RA† (n=262)*
Significant change	41 (35)	14 (5)
Minor change	47 (40)	82 (31)
No change	20 (17)	80 (31)
Not sensitive to sun	10 (8)	86 (33)

*p<0·0001.
†SLE=systemic lupus erythematosus; RA=rheumatoid arthritis.

Discussion

This study gathered information about the prevalence and expression of photosensitivity in patients with SLE. Previous studies have reported photosensitivity in patients with SLE[3–12] ranging from 32·7% of Dubois' patients[9] to 43% of patients in the 1982 revised criteria for SLE.[12]

We differentiated between cutaneous and systemic symptoms secondary to sun exposure. Patients with SLE described photosensitivity over face, arms, chest, neck, and back in descending order, while patients with RA described involvement of these areas with a low, relatively equal frequency. In contrast with patients with SLE, the patients with RA rarely reported systemic symptoms, except weakness and fatigue. Photosensitivity also caused significant changes in lifestyle and medical treatment of patients with SLE.

Patients with SLE reported that several disease symptoms were increased by sun exposure. Our examination of various data bank variables, however, did not show increased disease expression in the photosensitive group according to physician assessment or in laboratory variables but only a tendency towards a higher score for self reported variables. Thus photosensitive patients with SLE report associated systemic problems, but these do not appear to be related to standard laboratory assessments of severity. Although sun exposure may increase systemic disease symptoms in individual patients with SLE, we were unable to show that this phenomenon is related to more severe overall disease expression.

Large fractions of both study (87/119, 73%) and control (62/269, 23%) groups were in the upper half of the self reported photosensitivity scale. This may be explained by the public awareness in general, and in patients with SLE in particular, of potential ultraviolet induced hazards. We also found that 51/121 (42%) patients with SLE reported some change in their medical treatment owing to photosensitivity. Thus the prevalence of photosensitivity in SLE may be somewhere between 42% and 73%. This percentage is actually less important than the observation that apparent increased awareness of potential ultraviolet damage is associated with very significant changes in the lifestyle of patients with SLE.

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