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Ocular Side Effects of PUVA-treated Patients Refusing Eye Sun Protection

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We have investigated short- and long-term ocular side effects of psoralen plus UVA (PUVA) therapy in 82 patients who refused to wear UVA blocking sunglasses after the treatments. They had received 321.7 ± 328.8 J/cm² of UVA in 148.8 ± 113.9 exposures over 2–4 years. Results were compared with findings obtained in 749 patients who shielded their eyes. They received 402.6 ± 302.2 J/cm² of UVA in 167.8 ± 136.9 treatments over 2–6 years. 20 patients refusing eye sun protection developed conjunctival hyperemia and 21 patients decreased lacrimation. Among patients who adequately protected the eyes, we observed 5 cases of conjunctival hyperemia and 1 case of decreased lacrimation. Lens opacities did not develop in any patient. Adequate eye sun-protection is thus needed to avoid acute toxicity of cornea and conjunctiva but lens opacities do not appear to be a side effect of long-term PUVA-therapy. ***Key words: cataract; psoralen; photochemotherapy.***

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The risk of short- and long-term ocular side effects of oral psoralen plus UVA (PUVA) therapy is still debated (1–8). We have evaluated the risks run by patients who refuse to wear the recommended ocular sun-protection.

MATERIALS AND METHODS

In a retrospective questionnaire, 749 (360 men; 389 women) psoriatic patients (mean age 43.7 yrs; range 17–75 yrs) claimed to have adequately shielded their eyes following the ingestion of psoralens. They underwent 2–5 therapy cycles over 2–6 years and received 402.6 ± 302.2 J/cm² of UVA split into 167.8 ± 136.9 treatments. 82 (43 men, 39 women) patients (mean age 42.3 yrs, range 22–74 yrs) refused the recommended UVA-opaque spectacles. They had received 321.7 ± 328.8 J/cm² of UVA split into 26 therapy cycles over 2–6 years. The cumulative number of exposures was 148.8 ± 113.9. Patients were examined by trained ophthalmologists before each therapy cycle and then at 1–2 and 6–12 month intervals. They underwent measurements of visual acuity and lacrimal secretion by Schirmer's test and slit lamp examination of the conjunctiva, cornea and anterior chamber. Lens, vitreous body and fundus oculi were examined through dilated pupil. In addition, patients were continuously monitored for acute ocular side effects throughout the treatment period. Data were analysed by χ^2 test. The level of significance was set to $p < 0.05$.

RESULTS

Among the 82 patients without adequate eye protection after PUVA treatments, conjunctival hyperemia developed in 21 (25.6%) and decreased lacrimation in 20 (24.4%). Among 749 patients who had shielded their eyes, 5 (0.7%) had conjunctival hyperemia and 1 (0.1%) decreased lacrimation. The comparisons of the incidences in the two groups were statistically significant ($p < 0.05$). No patient showed an impairment of visual acuity or developed lens opacities or lesions of the vitreous body and fundus. 24 patients refusing ocular sun-protection were affected by lens opacities prior of the treatment, but they did not get worse.

DISCUSSION

Patients undergoing PUVA therapy should be required to wear UVA blocking sunglasses for 12 h when exposed to sunlight after the oral intake of psoralens in order to prevent acute toxicity of cornea and conjunctiva. However, photochemotherapy does not appear to represent a risk factor for the induction of cataracts both in patients wearing adequate ocular sun-protection (1) or, in the present study, in patients refusing it.

Cataract formation was not previously found in 12 patients after 2–12 years of therapy for vitiligo with low doses (10 mg t.i.d.) of psoralen and natural sunlight, despite the fact that eye protection was not recommended (4). In contrast, rare reports have described presumptive PUVA-induced cataracts, almost all in patients with a history of inadequate ocular protection (2, 3) and these discrepancies have not so far been explained.

Concern about the risk of cataract formation was aroused by findings of experimental studies (5–8). Permanent lens opacities were observed in animals after over-treatment with PUVA (5, 6): psoralens were delivered in excess of the amounts usually administered to human beings and the cumulative UVA irradiation was much greater than natural environmental UVA content at an intermediate latitude (5, 6). Furthermore, the extent and reversibility of the damage appeared to vary with the dose and among animal species (6). Studies in humans and other animals have reported that environmental UVA can induce psoralen photoadducts with tryptophan, lens proteins and DNA, resulting in photoproducts that may remain permanently in the lens (3, 7, 8). However, there is no conclusive evidence that they could represent the primary chemical mechanism of the cataractogenic damage.

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