

The Effect of Grenz Ray Therapy on Pustulosis Palmoplantaris

A Double-blind Bilateral Trial

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The effect of grenz ray therapy in the treatment of pustulosis palmoplantaris was assessed in 15 patients by randomly allocating active treatment of the lesions of one side of the body, while the lesions on the other side, which received stimulated therapy, served as a control. Four Gy of grenz rays 10 kV were applied on 6 occasions at intervals of 1 week. A significantly better therapeutic result was recorded on the lesions which had received active grenz ray therapy. However, the therapeutic response was moderate. It is concluded that grenz ray therapy could be useful in pustulosis palmoplantaris mainly as an adjunct to other therapies. Key word: Ionizing radiation.

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Various therapeutic principles are used in the treatment of pustulosis palmoplantaris, but the results are usually unpredictable and not always successful. When corticosteroids, tar, and dithranol work

poorly, there are few treatment modalities left. PUVA, etretinate alone or in combination (1) have proved to be effective but distressing side effects are frequent. Grenz ray therapy has been used in the treatment of psoriasis for more than 65 years with encouraging results (2) and the side effects of grenz ray therapy have also proved to be few and mild when certain therapy recommendations are followed (2). The present double-blind placebo-controlled trial was, therefore, designed to assess the efficiency of grenz ray therapy on pustulosis palmoplantaris. The exposure dose, kV and fractionation of the grenz ray therapy is the standard regime which has been used at the Department of Dermatology, Karolinska Hospital, Stockholm, for several decades.

PATIENT AND METHODS

Patients

Seventeen patients with pustulosis palmoplantaris took part in the study (median age 54 years, range 26-84 years). Duration of disease was: median 3 years, range 0.5-35 years. The patients had been untreated for at least 3 weeks before the start of the study, except for 2% salicylic acid in

Table I. Improvement in score after grenz ray therapy and placebo in 15 patients with pustulosis palmoplantaris (4 Gy x 6, 1 wk interval).

	After treatment (n=15)
Grenz rays better	13
Placebo better	1
No difference	1
p ^{a)}	<0.01

^{a)} Mc Nemar's test

petrolatum. The patients were also encouraged to use this emollient throughout the study. No other treatments were allowed. The patients had moderate to severe pustulosis palmoplantaris. Nine patients had lesions both on feet and palms and 8 patients had lesions only on feet.

Grenz rays

The grenz ray machine factors were 10kV, 10mA, half-value layer 0.02 mm Al., halfvalue depth in tissue 0.5 mm, focus-skin distance 10 cm.

Experimental procedure

The design of the study was that of a double-blind trial. Each patient received 4 Gy of grenz rays given on 6 occasions at intervals of 1 week. The lesions on one hand or/and foot received active treatment, the other side was treated with placebo. This was done by allowing the apparatus to hum without irradiation. The nurse treating the patient gave the active radiation or placebo treatment according to a randomized predetermined code. Neither the patient nor the evaluating doctor knew which side had received active grenz ray therapy.

Clinical assessments

Clinical evaluation was done before grenz ray therapy, after the 6th treatment and 6 weeks after treatment. Photographs of the lesions were obtained prior to the grenz ray treatment in all patients. The observer made a graded assessment of the lesions of each side of the body. The symptoms assessed were erythema, scaling, itching, pustulation and distribution (size of the affected area). A 5-grade scale was employed, where 0 denoted absence of symptoms and 4 denoted very severe symptoms. A visual analogue scale was employed to estimate itching by patient. This analogue scale was then transformed to a 5-grade scale by the observer. Total score was estimated by adding the scores for each symptom. In case the patients received treatment on both a foot and a palm, the total score was the sum of the two scores. Active treatment was then given also to the lesions of the former placebo-treated side of the patient and the side first treated was followed up when this treatment was finished. Any side effects were recorded during the period.

RESULTS

The results are summarized in Table I and Fig. 1. All patients were smokers and 2 had a history of thyroid disease. Of the 17 patients who started the trial, 2 patients failed to participate throughout the study. One patient withdrew because of a severe flare up reaction of psoriasis on other parts of the body and one elderly patient withdrew because of illness. Thus, 15 patients completed the treatment period of 6 weeks. Eleven of them also received treatment on the previously placebo-treated side and 4 patients preferred to withdraw after the initial treatment period.

A greater improvement on the hand and/or foot receiving active grenz ray therapy was found significantly more often at 6 weeks ($p < 0.01$) (Table I). The mean total scores were lower on the hands and/or feet receiving grenz rays than those receiving placebo at 6 weeks. However, the decrease in score after treatment was moderate (Fig. 1). No local or systemic adverse reactions were noted. Particularly no pigmentation of the soles or palms were observed.

DISCUSSION

In this study it has been shown that grenz ray therapy has a significantly better effect on pustulosis palmoplantaris than placebo treatment. However, this response was moderate. No lesions healed com-

Total score for severity of PPP

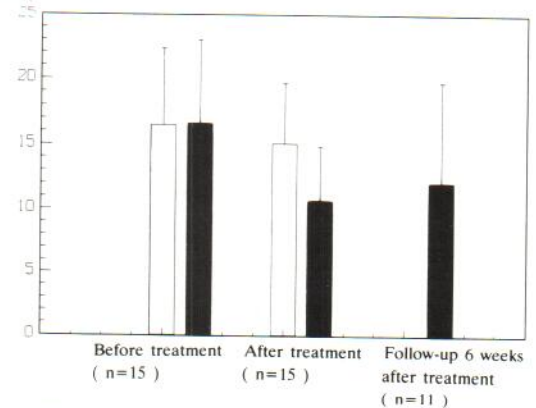


Fig. 1. Total scores for severity of pustulosis palmoplantaris (PPP) on grenz ray (■) and placebo (□) treated side; before, after 6 weeks of treatment (n=15) and 6 weeks after treatment (n=11). Vertical range bars show standard deviation.

pletely and during the follow-up period there were no signs of further improvements.

Grenz ray therapy has proved to be effective in particularly psoriasis of the scalp (2,3). Therefore, one possible explanation for the results in this study may be the small penetration of grenz rays. The half-value depth in tissue is only 0.5 mm which might be enough for scalp psoriasis but not for the thick and pustular lesions of pustulosis palmoplantaris. However, grenz ray therapy can act as an adjunct to other therapy forms, since it is a fast and convenient method. The combination of oral - etretinate with grenz rays has to be evaluated because of other therapy modalities as PUVA has been proved to be much more effective when combined with etretinate (1).

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