



Original Contribution

CLIMATOTHERAPY IN DERMATOLOGY: WHY, HOW AND WHEN ?

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ABSTRACT

Since the days of Hippocrates 500 B.C., climatotherapy has been regarded as a therapy of different chronic inflammatory skin disorders. In the current study we explored Indications, the models of treatments and results of Climatotherapy for psoriasis, atopic dermatitis and vitiligo at the Dea Sea. The different factors involved in this spa treatment are discussed. It is essential to determine the treatment modality for each disease with respect to the adverse effects. We compare the mean UVB radiation intensities absorbed by 80 psoriatic patients undergoing a 4 week climatotherapy at the Dead sea with UVB intensities absorbed by psoriatic patients in radiation cabins at the University clinics. When all relevant factors are taken into account, the mean UVB exposure dose at the Dead Sea is one of the lowest reported for clearance of psoriatic plaques. In conclusion our results suggest that climatotherapy at the Sea is an alternative treatment with a high therapeutical index and lower risk of side effects.

Key Words: Climatotherapy, dermatology, psoriasis, atopic dermatitis, vitiligo, UVB radiation

“Health Resort Medicine”, “Climatotherapy”, “Spa Therapy”, “Kurortology” or as it is called in different countries, is nothing else but a therapeutic complex with sea-and mineral waters and its technical applications as principal factors, but also that in which natural and artificial environment factors, the ordination of daily activities, the nourishing regimen climate, and psychosocial influences etc., actively intervene (1) Climatotherapy modalities employed at the Dead and Black sea area include heliotherapy (sun exposure), thalassotherapy (bathing in the Sea water), balneotherapy (immersion in baths and pools of thermomineral water), pelotherapy (heated Sea mud puck). This type of treatment utilizing the atmosphere, temperature, humidity, barometric pressure, and light. Nowadays Climatotherapy as a therapeutic procedure have been incorporated completely into the scientific evolution of our times.

Bulgaria is pioneer in organized Climatotherapy of skin diseases at the Coast

of Black sea with important research. Pionering pilot studies of the effect of thalassotherapy on psoriasis and vitiligo at the Black Sea reported by Balevska et al, in 1966 and Petkov et al in 1972. Zlatkov [1993] reported that out of 3300 patients with skin diseases who spent four weeks on its shore (mean 120-150 h) and 6 weeks with vitiligo (180h) became improved significantly, both clinically and mentally (2).

In a recent publication Botev-Zlatkov, Dourmishev, Kirjakova and Tzankov, Berova carried out a different investigations with beneficial influence on psoriatic skin and immunological status of patients (3, 4, 5).

Indications for climatotherapy at the Black Sea are proposed: psoriasis, parapsoriasis, pityriasis rubra pilaris, mycosis fungoides, ichthyosis vulgaris, vitiligo, eczema endogens, eczema exogenes, eczema seborrhoicum, keratoses, prurigo, urticaria, acne vulgaris, tuberculosis cutis, lichen planus, scleroderma progressive (6).

The Dead Sea region is recognized worldwide for its efficacy in the treatment of dermatological and non-dermatological diseases. The beneficial effect of Dead Sea climatotherapy for dermatological diseases, such as psoriasis, eczema, lichen planus and

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vitiligo has been documented in a multitude of publications and presentations at international meetings over the last 40 years. The Dead Sea is the lowest inhibited place on earth, about 400 m below sea level. The mean air temperatures of The Dead Sea are about 32 gr C in the summer, with peaks of 40 or more, and 19 in the winter, with an average year – round temperature in the shade of 30 gr C. Naturally filtered ultraviolet radiation combine with other unique climatological conditions of this region, represent the major factor involved in this therapy. The diminution of UVB rays permits longer exposure to the sun. Psychological factors have also been taken into consideration in this respect. People not only bathe in Dead Sea water or cover themselves in the mineral-rich mud, but they also get a full course of UV exposure (7).

The type of treatment is individually determined for each patient after complete examination and evaluation of the disease extension. Important anamnestic data will be also taken in consideration, percentage of skin involution, skin type, presence of other skin disease, previous treatments, and previous stays at the Dead Sea. Cooperation between patient and physician is primordial.

Time of sun exposition are related to a protocol based on the radiation intensities of the sun for each month of the year and for each hour of the day. The amount of radiation prescribed for each patient, for the length of the stay is calculated for psoriatic patients, to reach in a 4-weeks treatment the amount of

3.1 Joule/cm² (unit of radiation) This regimen is prescribed by the physician and used by the patient after conversion of the amount of daily MED (minimal erythema dose) in a duration (in minutes) of sun exposure at a defined time of the day. For this purpose a personally tailored software has been developed, however preprinted tables are often used, even if they are less personally adjusted for each patient. These tables prescribe a progressively increased sun exposure, starting with a few minutes and reaching up to 4 hours a day, **Table 1**. We compare the mean UVB radiation intensities absorbed by psoriatic patients undergoing a 4-week climatotherapy under supervision at the DMZ Rehabilitation Clinic of Ein-Bokek (The Dead Sea, Israel), with similar climatotherapy studies in Sweden and Switzerland. We also compare the climatotherapy radiation dosages with the UVB intensities absorbed by psoriatic patients in radiation cabins at the university clinics **Table 2**. According to our individually computerized DMZ protocol, a psoriasis patient with skin type IV is exposed during a 4-week climatotherapy to a mean 3.11 J/cm² (148 MED) of UVB, similar to that in Sweden and Switzerland. The range of the in-clinic annual phototherapy in the seven medical centers studied varied from 1.17 to 37.80 J/cm² (56 to 1800 MED). When all relevant factors are taken into account, the mean UVB exposure dose at the Dead Sea is one of the lowest reported for clearance of psoriatic plaques (8).

Table 1. Relationship between dose received and results of UVB solar treatment of 80 patients with psoriasis at the Dead sea expressed as percentage of patients improved

	After 1 week	After 2 week	After 3 week	After 4 week
Dose in mJ/cm ²	399	1092	2100	3108
Dose in MED	19	52	100	148
Completely cleared	0	0	5	30
Almost cleared	0	10	20	40
Markedly improvement	32	40	50	15
Slightly improvement	18	26	20	15
Not improvement	50	24	5	0

Bathing in the Dead Sea water with high mineral content (320 g/salt - KCl, MgCl₂, CaCl₂) for 20 minutes twice a day is usually recommended and has to be done gradually before sun exposure. The skin condition has to be taken into account, requiring a medical examination before the decision of Dead Sea water bathing can be taken.

Emollients such as Vaseline, baby oils and moisturizing creams are used freely by the patients in order to prevent or treat the drying

effect of the atmosphere. For psoriasis patients, topical preparations containing salicylic acid, sulfur, tar or dithranol are sometimes prescribed and applied, but steroidal preparations are not recommended, even for other skin conditions. At the Dead Sea, patients are in a natural health oriented environment which promotes relaxation and reduces psychological stress, a factor which is often associated with Psoriasis, and can aggravate its condition. Thus the quality of

life rises or, as one patient remarked (9). Person with history of sun sensitivity (skin types I and II) or associated disorders like idiopathic photodermatoses and malignance (melanoma malignum, malignant, epithelial tumors and some obligate precanceroses) are

excluded from our treatment. A family history of melanoma and higher -than -average numbers of moles or atypical moles (previously known as dysplastic nevi) signal a substantially heightened risk of melanoma.(relative contraudication).

Table 2. Annual mean intensities of UVB radiation absorbed by patients with psoriasis after climatotherapy and clinic phototherapy

	4 to 6 wk climatotherapy		Annual clinic phototherapy	
	mJ/cm ²	MED	mJ/cm ²	MED
USA*	-		1176	56
Germany	-		3990	190
Sweden	5250	250	-	-
Stara Zagora†	-	-	8400	400
New Zealand	-	-	8820	420
Switzerland	1050	50	32991	1571
Izrael(Hadassah)	-	-	37800	1800
Izrael(DeadSea)	3108	148	-	-

*University of California, San Francisco. The dose is calculated from an average of 20 UVB treatment sessions to attain significant improvement

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Very few comments have been published on side effects of climatotherapy at the Dead Sea. In a retrospective study at the DMZ CLINIC, during the years 1988-1994, the type and incidence of side effects after climatotherapy was studied in more than 5000 patients. The most frequent ones were: sun burns (8.2%), sun allergy (5%), common cold (3.4%), oedema (2%), gastroenteritis (1.4%), herpes labialis (0.8%), circulatory problems, eye and ear infections (< 0.8 %). Most of these side effects were not related to the climatologic treatment, and in a cases they disappeared within a few days, after an ambulatory treatment. None of our patients developed long term side effects. The complete skin examination and Diascopy of risky spots is emphasized as a method to detect photodamaged skin and give patients insight to provide themselves with future photoprotection (10).

Impressive improvement has been reported for patients with psoriasis, with a clearance rate of 79.6% after a 4-week stay. The average remission period in these patients was 8.8 months. Results obtained at the DMZ Clinic show that out of relapsing patients, 62 % had a loghter relapse and only 18 % had a relapse of similar intensity as before their climatotherapy (11), **Figure 1**.

About 21% of the patients coming yearly to the DMZ Clinic at the Dead Sea for climatotherapy suffer from atopic dermatitis. This is a common, chronic, and relapsing

disease which necessitates drug treatment (topical corticosteroids, antimicrobials, antihistamines, or immunomodulators), phototherapy, or climatotherapy. A retrospective study of 1718 patients revealed that previous treatments at the Dead Sea and stays longer than 4 weeks caused a clearance greater than 95%, the length of sun exposure was no longer than 5 h daily, and there was no impact of the percentage of skin involvement on the clearance of patients staying more than 4 weeks. Climatotherapy of atopic dermatitis at the Dead Sea is a highly effective modality for treating this disease. It is also a highly cost-effective method, as the patients take no medications and experience no side-effects. Successful climatotherapy of atopic dermatitis requires strict medical supervision throughout the whole length of the patient's stay on shore (12), **Figure 2**.

One of the three main dermatological diseases frequently treated with a high rate of success is Vitiligo. Vitiligo is a depigmenting disorder of the skin caused by destruction and removal of the melanocyte in the epidermis and mucous membrans by unknown mechanisms. Repigmentation begins after 1-2 weeks climatotherapy as separate spots around the hair follicles, and spreads inwards from the margins. Even if improvement only starts towards the end of the 4-week course, it usually continues after returning home, and in most patients the repigmentation is maintained. After repeated courses of

treatment, usually over a period of years, excellent results (complete repigmentation of many areas) may be achieved(13), **Figure 3**.



Figure 1. Psoriasis vulgaris before and after 4 weeks climatotherapy at the Dead sea



Figure 2. Vitiligo before and after 6 weeks climatotherapy at the Dead sea



Figure 3. Atopic dermatitis before and after 5 weeks climatotherapy at the Dead sea

DISCUSSION

Scientific studies describing the Dead Sea treatments leave no doubt that for most conditions which have shown to respond to this mode of therapy, this natural treatment has major advantages by being:

- Strikingly effective;
- Practically free of side effects during and after the treatment;
- Providing a potent modality of treatment even for refractory cases;
- Suitable for children, elderly and for pregnant women, with only very few contraindications;

- Safe, pleasant and well accepted;
- A highly cost-effective method;
- Successful climatotherapy of dermatological diseases requires strict medical supervision throughout the whole length of the patient's stay on shore.

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