Scientific Report On PhotoTherapy

What exactly is psoriasis?

Psoriasis is an immune-mediated disease. This means that your immune system causes your skin cells to reproduce in 4 days instead of 30 days, as is the case for skin without psoriasis.

Whereas normal skin cells are shed from people unnoticed, skin cells affected by psoriasis build up and form raised, scaly lesions.

Skin with psoriasis becomes red from the increased blood supply to the rapidly dividing cells, and the white scale is composed of dead skin cells.

Psoriasis goes through an unpredictable cycle: flares, improvement, remission and recurrence. It is not contagious.

Severity

The severity of each case depends on how much of your body has psoriasis lesions:

Mild cases involve only a few spots.

Moderate cases cover 3 to 10 percent of the body. (The palm of your hand represents 1 percent of the body's skin surface.) Severe cases involve more than 10 percent of the skin surface and may include all of a person's skin.

Onset & Flaring

Ordinarily, people have their first outbreak of psoriasis between the ages of 15 and 35, but it can appear at any age. Thirty percent of those who get psoriasis are less than 20 years old when the disease first surfaces.

Though psoriasis is believed to be an immune-mediated disease, heredity seems to play a part and so do environmental factors. About 25 percent of young people report the onset of their psoriasis followed an infection, particularly strep throat. One-third to one-half of all young people with psoriasis may experience a flare up two to six weeks after an earache, strep throat, bronchitis, tonsillitis or a respiratory infection.

Stress is thought to play a role in psoriasis, but stress alone is not a cause. Some studies have linked stress to psoriasis outbreaks and more severe progression of the disease, but other studies have found no connection between stress and psoriasis.

Treatments

Psoriasis treatments—and there are many—work by slowing skin cell reproduction. Some work to remove scale. Some help soothe itchy or uncomfortable skin. All prescription psoriasis medications can be effective in improving lesions, but not all people with psoriasis react the same way to different medications. It may require experimentation to see which treatments, or combination of treatments, work for you.

There are three basic categories of psoriasis treatments:

1. Topical treatments like creams and ointments are used on the areas of skin that exhibit psoriasis plaques and lesions.

2. Ultraviolet light therapies (UVB and UVA) work by exposing the skin to light waves, sometimes over the whole body and sometimes only affected areas, like hands or feet.

3. Systemic medications are taken by mouth or injected into the body.

Dermatologists and other doctors prescribe treatments according to the type and severity of the psoriasis, the areas of the skin affected and your age and past medical history. Some of the treatments available for adults are used less often for teenagers because of the possibility of long-term or delayed side effects.

Ultraviolet Light B (UVB) Phototherapy

This type of treatment involves exposing the skin to a particular wavelength of ultraviolet light called ultraviolet light B (UVB). UVB is an effective treatment for psoriasis. It is present in natural sunlight. It is a common, safe and very effective treatment for moderate to severe psoriasis.

Two types of UVB treatment

There are two types of UVB treatment: broad-band UVB and narrow-band.

Narrow-band UVB units emit a more specific range of UV wavelengths than broad-band.

UVB treatment is used for adults and children. It is effective in at least two-thirds of patients who have thin plaques with moderate to severe disease. It is often used when topical treatments are not successful.

Some patients have had success by combining UVB with calcipotriene, tazarotene (brand name Tazorac), anthralin, coal tar, Methotrexate or acitretin.

How does it work?

It involves regularly treating the skin for a set length of time, either in a medical setting or with a home unit prescribed for the patient.

A person stands in a UVB unit containing lamps about 30 times, usually 2 or 3 times per week.

It is recommended that patients moisturize the morning of the light treatments.

The person undresses to expose all of the lesions to the light.

The length of time in the UVB unit depends on how quickly the person responds to light. People with lighter skin, for example, start out with lower exposure times than people with darker skin.

UVB works best when the person follows a regular treatment schedule and follows treatment carefully.

While in general ultraviolet light (sunlight) is known to cause skin cancer, there is no established link between office UVB treatments and skin cancer in psoriasis patients.

About half of those who try it will clear for about three months after stopping treatment, while others, particularly those using narrow-band, need about 8 maintenance sessions per month after the skin clears depending on the psoriasis severity and skin type.

Psoriasis may worsen for a while before improving.

The skin may itch and redden; the treatment may need to be reduced to avoid irritation.

The Goeckerman Regimen

People with severe or disabling psoriasis may go to a hospital for concentrated treatment with UVB and topical coal tar. This treatment is called the Goeckerman regimen, and usually takes five weeks of daily treatments. Most people will clear for about 6 to 12 months.

Phototherapy

Phototherapy involves exposing the skin to wavelengths of ultraviolet light under medical supervision. This is a standard treatment for patients with moderate to severe psoriasis who have not responded to topical therapies. It also may be used for patients whose psoriasis is extensive or disabling.

Treatment usually takes place in a doctor's office or a psoriasis day clinic, although this option is becoming rare.

UVB: This type of treatment involves exposing the skin to ultraviolet light B (UVB). It is a common, safe and very effective treatment, and generally works best when the psoriasis plaques are thin.

Home Phototherapy

Most people get ultraviolet light B (UVB) treatments at doctors' offices or clinics. However, under a doctor's supervision, a person can get a prescription to purchase a home UVB unit.

Home phototherapy is useful for patients who live far from a medical facility or sometimes for people who need maintenance UVB treatments to keep psoriasis at bay. A dermatologist will provide instructions for how to use the treatment depending on the person's skin type, the type of UVB device and its intensity of light.

A home UVB unit is not the same as a tanning bed (in general, tanning beds offer a different form of UV light); home phototherapy is a medical treatment that must be monitored by a physician.

Narrow-band (TL-01) ultraviolet B phototherapy for chronic plaque psoriasis: three times or five times weekly treatment?
Three and five times weekly narrow-band TL-01 (311-313 nm) ultraviolet (UV) B phototherapy regimens for chronic plaque psoriasis were compared in a randomized, observer-blinded, half-body, within-patient paired study.

Twenty-one patients entered the study, Sixteen reached clearance or minimal residual activity on both sides. Of the other five, three withdrew because they did not reach clearance on the 5 x weekly side by a maximum of 30 treatments, one when he was satisfied with moderate improvement and one because of repeated failure to attend.

Those who completed treatment reached clearance or minimal residual activity after a median of 35 days with 5 x weekly treatment compared with 40 days with 3 x weekly treatment.

Fifteen (of 16) developed at least one episode of well-demarcated erythema during 5x weekly treatment compared with just three of 16 treated 3x weekly.

There was no significant difference between regimens in duration of remission, For this skin phototype I-III population, the more rapid clearance of psoriasis with 5x weekly phototherapy is not, for the majority of patients, sufficient to justify the extra exposures and higher UVB dose.

We no longer use 5 x weekly phototherapy for psoriasis

Dawe RS, Wainwright NJ, Cameron H, Ferguson J BRITISH JOURNAL OF DERMATOLOGY 138: (5) 833-839 MAY 1998

Fall/Winter Questions and Answers

Fall and winter can be the toughest times of year for people with psoriasis and/or psoriatic arthritis.

Here are answers to some of the most frequently asked questions about psoriasis and the cooler seasons

Why does my psoriasis get worse in the winter?

A combination of dry air, decreased sunlight exposure and colder temperatures all contribute to psoriasis getting worse in the winter. Frequent moisturizing and using a home humidifier can help alleviate some of the symptoms. Also, discuss treatment such as UVB or home phototherapy with your doctor.

Can I get the flu shot or other immunizations if I have psoriasis?

Yes, as long as your psoriasis is not actively flaring and you get the attenuated or "non-live" version of the vaccine. However, not all vaccines are a good idea for psoriasis sufferers. For example, the smallpox vaccine is one that may not be recommended to psoriasis patients. This is because the smallpox virus can be passed from person to person through an open wound. Always talk with your dermatologist before getting an immunization or vaccine.

Do tanning beds help improve psoriasis?

In general, tanning beds are not considered as effective as UVB phototherapy that is administered in your doctor's office. However, it can serve as a good alternative for those who have difficulty getting to their doctor frequently or have no health coverage. Use common sense when trying light treatment. Gradually increase exposure time to help avoid burning. If you experience intense itching following a light treatment, try decreasing your exposure time and using a good moisturizer.

Should I move to a warmer climate for my psoriasis?

For some people, moving to a new location can be helpful. However, there is no guarantee that your psoriasis will improve. Many people have reported when they first moved to a new climate, their psoriasis did improve. However, maintenance of that improvement is not always seen.

Will my psoriasis get worse if I get sick?

Anything that can affect the immune system can, in turn, affect psoriasis. Having a cold or the flu can definitely play a role in your psoriasis. Make sure you get plenty of rest, wash your hand frequently, and try to be aware of other triggers in your life, such as stress, that can increase your susceptibility to sickness.

Is there a link between strep throat and psoriasis?

One form of psoriasis called guttate is often associated with strep throat. A microorganism

called Streptococcus causes strep infections. Many times a person may not even have symptoms of strep throat but still have an active flare of psoriasis. Talk with your doctor about getting a streptococcal antibody test to determine higher than normal levels of strep in your system.

Treatment of vitamin D deficiency due to Crohn's disease with tanning bed ultraviolet B radiation.
In Crohn's disease, severe skeletal demineralization, secondary hyperparathyroidism, and muscle weakness can occur. This may be caused by impaired vitamin D absorption, resulting from extensive intestinal disease and resection of duodenum and jejunum, where vitamin D is absorbed.

We report a 57-year-old woman with a long history of Crohn's disease and short-bowel syndrome who had only 2 feet of small intestine remaining after 3 bowel resections. She was taking a daily multivitamin containing 400 IU of vitamin D(3) and was dependent on total parenteral nutrition that contained 200 IU of vitamin D and calcium (18 mEq in a 1-L bag infused over 8 hours daily) for a period of 36 months.

Despite the above replacement, she complained of bone pain and muscle weakness, and she continued to be vitamin D-deficient with a 25(OH)D level <20 ng/mL.

She was then exposed to ultraviolet B (UVB) radiation in a tanning bed wearing a 1-piece bathing suit for 10 minutes, 3 times a week for 6 months at the General Clinical Research Center, Boston University Medical Center.

She tolerated the irradiation well without evidence of erythema.

After 4 weeks, her serum 25(OH)D level increased by 357% from 7 to 32 ng/mL, parathyroid hormone level decreased by 52% from 92 to 44 pg/mL, and the serum calcium level increased from 7.8 to 8.5 mg/dL.

After 6 months of UVB treatment, her serum 25(OH)D level was maintained in the normal range and was free of muscle weakness, and bone and muscle pain..

Koutkia P, Lu Z, Chen TC, Holick MF.

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Ultraviolet light therapy in chronic urticaria.
Fifteen patients with chronic urticaria were treated with ultraviolet light B (UVB) for 1-3 months during the spring 1984 and a follow-up study was performed in November 1984-January 1985.

Patients with cold urticaria, cholinergic urticaria and dermographism became clearly better or got rid of their symptoms more often than those with "non-specific" chronic urticaria.

The good results achieved during the phototherapy held during the summer but in the autumn urticaria became worse in one third of the cases.

The result suggests that UV-therapy might be worth trying in many patients with chronic urticaria.

Hannuksela M, Kokkonen EL

Acta Derm Venereol. 1985;65(5):449-50.

Narrow-band UVB (TL-01) phototherapy: an effective preventative treatment for the photodermatoses.

Twenty patients with photodermatoses [actinic prurigo (n = 6), hydroa vacciniforme (n = 4), idiopathic solar urticaria (n = 1), amiodarone-induced photosensitivity (n = 1) and a range of cutaneous porphyrias (n = 8)] were treated with a 'hardening' course of narrow-band ultraviolet B (TL-01) phototherapy in springtime.

The response to phototherapy was monitored subjectively, by interviewing patients after the summer, and objectively by monochromator phototesting, before and after phototherapy.

Fifteen patients reported that treatment was worthwhile.

Monochromator phototesting after phototherapy revealed a fourfold increase in the minimal erythema dose in those with abnormal photosensitivity to ultraviolet A wavebands.

Adverse effects included erythema (seven patients), pruritus (five) and provocation of the eruption (four).

We now routinely consider narrow-band UVB phototherapy for problem photodermatoses.

Collins P, Ferguson J.

Department of Dermatology, Ninewells Hospital and Medical School, Dundee, U.K.

Br J Dermatol. 1995 Jun;132(6):956-63.

A systematic review of five systemic treatments for severe psoriasis.

We systematically reviewed the evidence concerning the ability of five systemic treatments to induce remission in patients with severe psoriasis: ultraviolet B (UVB), photochemotherapy (PUVA), methotrexate (MTX), retinoids (RET) and cyclosporin A (CYA).

An elaborate literature search was performed. The validity of studies was assessed, and data were analyzed. In total, 89, 193, 101, 155 and 127 studies (n = 665) concerning UVB, PUVA, MTX, RET and CYA were found.

The exclusion rate was high, mainly because of concomitant antipsoriatic therapy, outdated dosages or inadequate documentation.

No study on MTX could be included.

A total of 129 patient series was included in the analysis, reporting on 13,677 patients. Study size-weighted averages of the proportions of patients with clearance and good,moderate and poor response (defined, respectively, as 95-100%, 75-100%, 50-75% and 50% reduction in the outcome measurements as compared with baseline) were calculated.

PUVA therapy was associated with the highest average proportion of patients with clearance (70%), and the highest proportion of patients with good response (83%), followed by UVB (68%) and CYA (64%).

Incidence of side-effects per week was highest in the RET group and lowest in the phototherapy groups.

This review may provide a basis for the development of guidelines for the treatment of psoriasis, Trials comparing oral modalities applied according to currently accepted standards

should also be carried out.

Spuls PI, Witkamp L, Bossuyt PMM, Bos JD BRITISH JOURNAL OF DERMATOLOGY 137: (6) 943-949 DEC 1997

Experience with UVB phototherapy in children.

Twenty children age 14 months to 12 years with photoresponsive dermatoses were treated with ultraviolet B (UVB) phototherapy over four years.

Ten children had psoriasis, five had pityriasis lichenoides, and five had atopic dermatitis.

All received short courses (average 34 treatments) of phototherapy with either no maintenance or short maintenance.

Treatment was effective and well tolerated in most patients, and no serious side effects were seen.

Patients with psoriasis and pityriasis lichenoides cleared completely.

No patient with atopic dermatitis cleared completely, but all were moderately improved, with reduction of the extent of eczema and decreased pruritus.

It appears that UVB phototherapy is a valuable and safe therapeutic option for selected children who do not respond to other treatments.

Tay YK, Morelli JG, Weston WL PEDIATRIC DERMATOLOGY 13: (5) 406-409 SEP-OCT 1996

Update on Phototherapy and Photoprotection.

Broadband UVB is the oldest type of phototherapy. Indications include psoriasis, atopic dermatitis, prutirus, CTCL, HIV associated eosinophitic folliculitis

The protocol for BB UVB (270-290 nm) for skin types I/II is to begin with 50% MED-B and increase by 50%/40/30/20/10% increments.

For skin types III, IV, you begin with 60% MED-B and increase by the same increments.

Another protocol is to begin at 15 mJ/cm2 for skin types I, II, 30 mJ/cm2 for types III, IV, and 45mJ/cm2 for skin types V-VI.

The question of the association of non-melanoma skin cancer and UVB was addressed in the Archives of Dermatology in July 1999. The evidence was insufficient to quantify an excess incidence of non-melanoma skin cancer. The incidence is unlikely to exceed 2% per year which is less than PUVA.

Narrowband UVB is much more efficient (313nm). In 1984 the TL-01 (Philips) bulb was developed which delivers 311-312 nm. European studies were published in 1988 and US studies in 1997.

Indications include psoriasis, viligo, CTCL, PMLE and atopic dermatitis. Dr. Lim then reviewed a number of studies examining the effectivesness of Narrowband UVB.

A study in the Archives in 1997 compared NB vs BB UVB both with and without tar. Twenty-two patients with psoriasis were treated daily with narrowband UVB, 86% of lesions had clinical resolution versus 73% with Broadband. Narrowband were also significantly better than

BB with tar.

In the Archives in 1999, NB was compared to PUVA in 25 patients. The PASI score decreased 84% with NB-UVB versus 89% with PUVA.

Combination therapy of NB-UVB with tazarotene was studied on 10 patients in the JAAD 2000:42:493. At both two weeks and four weeks of therapy, NB-UVB plus tazarotene was better than NB-UVB alone. In contrast, calcipitriol with NB-UVB had no increased effectiveness.

NB-UVB has been used for Vitiligo. In the Archives 1997, Westerhof compared topical PUVA and NB-UVB done twice weekly. Repigmentation was noted after four months in both groups. A study of 51 children treated with NB-UVB for Vitiligo noted 53% of patients with greater than 75% repigmentation and 80% with stabilization of disease.

NB-UVB has been used for treatment of CTCL. (Archives 1999) 20 patients, six with patch stage and 14 with small plaques stage were studied. In 19 patients there was clinical and histological clearing, however, all relapsed within nine months.

In the Archives in June 2000, eight patients, all with patch stage MF, received NB-UVB three times per week. Six of eight patients obtained clinical clearance after 26 treatments (approximately 9 weeks). Duration of clinical improvement was 20 months. Therefore, NB-UVB is an alternative therapy for patch stage MF.

NB-UVB has also been used for PMLE densitization. A study by Man using NB-UVB three times per week for five weeks resulted in 63% of patients with a good response and 26% with a moderate response.

Other indications for NB-UVB are atopic dermatitis, seborrheic dermatitis and photodermatitis.

A protocol used is to start with 70% MED and increase by 15% per treatment. The mean MED skin types I-III is 200-600 mJ/CM2 and for IV-V 650-1600 mJ/CM2.

Side effects of NB-UVB include erythema similar to NB-UVB.

NB-UVB is two-three times more carcinogenic per MED than Broadband UVB in the animal model, however, as NB-UVB is more efficient, to clear psoriasis the MED of NB is less than BB. Therefore, the long term carcinogenic risk of NB is probably no more than BB.

The 308nm Eximer Laser is a new form of phototherapy. In the Archives in May 2000, 13 patients with psoriasis were studied (four plaques each). Eight doses were delivered to each plaque either low (.5, 1 time MED), medium (2-6 times MED), or high 8-16 times MED) dose. All patients were treated from 1-20 treatments, at two times per week. After four weeks, the high dose group was significantly better than the medium and low dose groups. After four months, the low and medium groups had a recurrence. The high dose group remained in remission. This laser has also been studied in Vitiligo. The proximal extremities were more responsive than the distal extremities.

Indications for UVA include atopic dermatitis usually in combination with UVB, solar urticaria, and psoriasis.

A newer form of UVA is UVA1 (340-400nm). There are three different ways of delivering this phototherapy; High (130J/cm2), medium (50J/cm2) and low (20J.cm2). The indications are localized scleroderma, systemic sclerosis, urticaria pigmentosa, CTCL, Graft vs host disease, generalized GA, and atopic dermatitis.

UVA1 is currently not approved in the USA. Limitations include the cost (approximately $50,000), and also treatment times. The long term side effects are still unclear.

Visible light was discussed next. Use in acne was studied in the BJD in May 2000. Blue (415 nm) and red (660 nm) were used in 107 patients who received one of four treatments. The combination group of blue and red light after 12 weeks had a 76% improvement in inflammatory lesions and 58% comedone improvement.

Dr. Lim concluded his lecture with a review of photoprotection, including the FDA sunscreen monograph and the AAD response and use of fabrics in sunprotection.

Henry W. Lim, M.D. Professor and Chairman of the Department of Dermatology Henry Ford Hospital Detroit, Michigan

Action spectrum for phototherapy of psoriasis

Using a monochromator the action spectrum for ultraviolet phototherapy of psoriasis was determined for radiation between 254 and 313 nm and compared to the action spectrum for erythema of uninvolved adjacent skin.

Daily exposures of different doses of 254, 280, 290, 296, 300, 304 and 313 nm radiation were observed.

Wavelengths of 254, 280, 290 nm were erythemogenic but not therapeutic even at 10 to 50 times the minimal erythema dose.

At the other wavelengths studied, the 2 action spectra were similar.

In general, fixed daily doses cleared at lower cumulative dose than did incrementally increased daily doses.

The small number of suberythemogenic exposure doses required suggests that monochromatic radiation may have advantages over broadband sources.

Parrish JA, Jaenicke KF. J Invest Dermatol 1981 May;76(5):359-62

Is UVB Administered in Phototherapy Carcinogenic?

Ultraviolet light B, which is recognized as a carcinogen (a cancer-causing agent) in sunlight, consists of wavelengths similar to those administered in UVB phototherapy.

Does UVB treatment increase one's risk of developing malignant melanoma or other skin cancers?

The answer appears to be no.

Studies performed over the last two decades have consistently shown that the incidence of skin cancer in patients receiving UVB phototherapy is not significantly increased above the incidence in the general population.

These findings include the investigation of UVB treatment alone, in addition to UVB supplemented by another known carcinogen, topical coal tar, in the Goeckerman regimen (a day-treatment program in which patients receive tar and light treatments).

Goeckerman patients studied in one of the most comprehensive studies of this subject, Mark Pittelkow, M.D., and co-authors at the Mayo Clinic retrospectively reviewed 280 psoriasis patients in a 25-year follow-up.

All of the patients had been hospitalized and treated with crude coal tar and ultraviolet light.

The incidence of skin cancer in those patients was not significantly increased over the expected incidence.

In a second study of skin cancers in patients with atopic dermatitis who were treated with Goeckerman regimen, Willard Maughan and co-authors completed a 25-year follow-up study of 426 patients and again found no significant increase in the incidence of skin cancer.

Results surprising.

These results are surprising, considering the established carcinogenic properties of UVB light. Yet study after study has consistently proven that UVB treatment does not pose as much risk as PUVA (Psoralen plus ultraviolet light A).

At 1982 a study was set out to determine the carcinogenic risks of UVB by studying 85 psoriasis patients who had received more than 100 UVB treatments over a long period of time. This population was compared to a control group with regard to precancerous and cancerous skin lesions. While the percentage of these lesions in the control population was 10.1%. in the UVB-treated psoriasis patients it was 5.9%.

Because of studies such as these, some investigators at the time even suggested that patients with psoriasis carried a lower risk of developing skin cancer, thought this has not proven to be true, especially in light of the recent long-term PUVA study conducted by Robert Stern, M.D., of Harvard Medical School (see "Long-term PUVA study emphasizes need for regular skin examinations," May/June 1997 Bulletin Dr.

Stern's investigation linking PUVA treatments to squamous cell carcinoma also demonstrated that long-term UVB treatment poses minimal risk of skin cancer except in male genitalia. It is because of this increased risk male genitals are shielded during standard phototherapy treatment.

Sunburn is worse.

The surprisingly low carcinogenic risk associated with UVB phototherapy is not completely understood, but can be explained in terms of low amounts of UVB dosage involved in typical phototherapy.

Even an aggressive phototherapy regimen subjects patients to much lower UVB than a bad, blistering sunburn. Moreover, it is possible that low dosage UVB treatments that are gradually increased result in a thickening of the outermost layer of skin that might play a protective role against skin cancer as it does in sunburn.

Phototherapy units have very little output in the wavelength attributed to UVB-induced cancer.

It is possible that the ratio of therapeutic UVB to carcinogenic UVB is more favorable in phototherapy units than in sunlight.

Saving face

Finally, it is well known that psoriasis tends to spare the face. Therefore, it is common practice in phototherapy to routinely shield the faces of patients with no facial lesions.

Since skin cancer risk is greatest on the face because of lifetime cumulative sun exposure, it is possible that UVB to the parts of the body that are usually protected from sunlight such as the elbows, knees, and lower back may never get the total exposure the face receives.

This also may account for the fact that no increase in skin cancer of any type has been attributed to UVB for psoriasis.

UVB remains one of the safest effective psoriasis treatments currently available.

Ben Lebwohl, Harvard College, and John Y. M. Koo, M.D. University of California

Treatment of Vitiligo vulgaris with narrow band UVB (311 nm) for one year and the effect of addition of folic acid and vitamin B12.

Narrow band UVB is succeeding Psoralen and UVA irradiation as the main treatment of Vitiligo vulgaris in several European countries.

Vitamin B12 and folic acid deficiency in some Vitiligo patients has prompted researchers to investigate the efficacy of these vitamins in the treatment of Vitiligo.

In the present controlled study we investigated the value of narrow band UVB phototherapy in the treatment of Vitiligo and the possible additive effect of vitamin B12 and folic acid.

Twenty-seven patients with long-term stable Vitiligo were included and randomized in a "UVB only" (UVB) or "UVB combined with vitamin B12 and folic acid" (UVB+) group.

Patients were irradiated twice weekly for one year, whilst repigmentation was carefully monitored.

In 92% (25/27) of the patients up to 100% repigmentation was seen.

Repigmentation was notable in lesions on the face, neck and throat, lower arm, chest, back and lower legs, whilst repigmentation on the hands, wrists, feet and ankles proved to be minimal.

Maximum repigmentation rates did not differ significantly between the UVB group and the UVB+ group.

Our study reconfirms that narrow band UVB phototherapy is an effective treatment for Vitiligo and shows that co-treatment with vitamin B12 and folic acid does not improve the outcome of treatment of Vitiligo with narrow band UVB phototherapy.

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Narrow-band ultraviolet B is a useful and well-tolerated treatment for Vitiligo.

BACKGROUND: The treatment of Vitiligo remains a challenge.

OBJECTIVE: The purpose of this article is to review our results and experience with narrow-band ultraviolet (UV) B phototherapy for Vitiligo.

METHODS: This is a retrospective analysis of our experience and results with patients with Vitiligo who were treated with narrow-band UVB between November 1998 and November 1999.

Narrow-band UVB phototherapy was given as monotherapy 3 times a week. The starting dose was 280 mJ/cm(2), with 15% dose increments at each subsequent treatment.

RESULTS: Seven patients were able to be evaluated for the purposes of this analysis. Their

ages ranged from 19 to 59 years (mean, 37.6 years).

Three patients had Fitzpatrick skin phototype IV and V, and 4 had phototypes II and III.

Five of the 7 patients achieved more than 75% repigmentation with a mean of

19 treatments; the mean duration of disease was 13 months.

The remaining two patients had 50% and 40% repigmentation after 46 and 48 treatments, respectively. Their mean duration of disease was 132 months.

Adverse effects were mild erythema and pruritus.

CONCLUSION: This treatment protocol resulted in rapid repigmentation in many patients, including those with skin phototypes IV and V. In accordance with previous studies, this report indicates that narrow-band UVB is a useful and well-tolerated therapy for Vitiligo.

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Treatment of generalized Vitiligo in children with narrow-band (TL-01) UVB radiation therapy.

BACKGROUND: Only a few clinical trials have been performed on the treatment of generalized Vitiligo in children. Recently, narrow-band UVB therapy has been reported to be an effective and safe therapeutic option in adult patients with Vitiligo.

OBJECTIVE: We studied the efficacy and safety of UVB (311 nm) therapy in children with generalized Vitiligo and evaluated the effect of the therapy on the quality of life in these children.

METHODS: In an open trial, 51 children (20 males, 31 females) with generalized Vitiligo were treated twice weekly with narrow-band UVB radiation therapy for the maximum period of 1 year.

The Children's Dermatology Life Quality Index (CDLQI) was used to evaluate the psychosocial impact of disease and treatment and was scored before and after therapy.

RESULTS: The treatment resulted in more than 75% overall repigmentation in 53% of patients and in stabilization of the disease in 80%.

Responsiveness to therapy was positively correlated with localization of the lesions and the patients' compliance.

Adverse events were limited and transient. The better the repigmentation grade, the better the CDLQI scores had improved.

CONCLUSION:

Narrow-band UVB therapy is effective and safe in childhood Vitiligo; it also may significantly improve the quality of life.

Njoo MD, Bos JD, Westerhof W.
Netherlands Institute for Pigmentary Disorders, Amsterdam.
J Am Acad Dermatol. 2000 Feb;42(2 Pt 1):245-53.

Ten-year experience of phototherapy in Yonsei Medical Center.

Phototherapy with PUVA or UVB has been used to treat a wide variety of diseases such as psoriasis, Vitiligo, atopic dermatitis and mycosis fungoides, etc.

The present study was performed to investigate the pattern of phototherapy in the phototherapy clinic of Yonsei Medical Center.

One thousand six hundred ninety two patients who received PUVA or UVB phototherapy were included in this study.

We analyzed the protocols for phototherapy between 1985 and 1994. The number of phototherapy per year increased sharply until 1991 and thereafter it has remained relatively constant.

The most common age group at the start of phototherapy was the third decade. The most common indications for PUVA and UVB phototherapy were Vitiligo and psoriasis, respectively.

Most patients had received less than 50 treatments of PUVA and less than 200 J/cm2 of cumulative UVA. Most patients had received less than 50 treatments with UVB and cumulative UVB doses were variable.

We had not found any malignancy in the skin. Since the maximum safe cumulative doses of UVA or UVB have not yet been established, it is difficult to decide when phototherapy should be discontinued.

The data presented in this study needs to be further analyzed in correlation with photoaging and cancer development for the safe usage of phototherapy.

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Yonsei Med J. 1996 Dec;37(6):392-6.

Treatment of Vitiligo with a topical application of pseudocatalase and calcium in combination with short-term UVB exposure: a case study on 33 patients.

Thirty-three patients with the depigmentation disorder Vitiligo were successfully treated with a new topical application of pseudocatalase, calcium and short-term UVB light exposure.

First repigmentation occurred in the majority of cases after 2-4 months.

Complete repigmentation on the face and dorsum of the hands appeared in 90% of the group.

In all patients, active depigmentation was arrested.

None of them developed new lesions during treatment. No recurrence of the disease was observed during a 2-year follow-up. The rationale for this pilot study originated from a recent understanding of Vitiligo at the molecular level.

The involved epidermis produces hydrogen peroxide due to defective tetrahydrobiopterin recycling and increased monoamine oxidase A activity, whereupon catalase is inactivated.

In addition, calcium homeostasis is perturbed in the affected skin. The substitution for insufficient catalase by a pseudocatalase together with calcium and UVB exposure lead to effective repigmentation.

Schallreuter KU, Wood JM, Lemke KR, Levenig C.

Department of Dermatology, University of Hamburg, Germany.

Dermatology. 1995;190(3):223-9.

Phototherapy with UV-B in Vitiligo

We report on 14 patients suffering from extentise Vitiligo, who underwent phototherapy with UVB.

After 12 months of treatment, 8 (57.1%) of the patients showed repigmentation of more than 75%.

Especially the patients with facial lesions of the skin types V and VI achieved a nearly complete and cosmetically very satisfying repigmentation.

Koster W, Wiskemann A.

Universitats-Hautklinik Hamburg.

Z Hautkr. 1990 Nov;65(11):1022-4, 1029.

Narrow-band ultraviolet B (ATL-01) phototherapy is an effective and safe treatment option for patients with severe seborrhoeic dermatitis.

BACKGROUND: Seborrhoeic dermatitis is a common papulosquamous dermatosis affecting 2-10% of the adult population. Current treatment options are limited and not always satisfactory.

Objectives: We aimed to investigate the efficacy of narrow-band ultraviolet (UV) B (TL-01) phototherapy as an alternative treatment for seborrhoeic dermatitis.

METHODS: Eighteen patients with severe disease were enrolled in an open prospective study. Treatment was given three times weekly until complete clearing or to a maximum of 8 weeks.

A clinical score assessing erythema, scaling, infiltration and pruritus was performed at baseline and every 2 weeks thereafter.

Additionally, the patients were asked to rate the intensity of pruritus on a visual analogue scale. After completion of the study the patients were followed up to determine the median time interval until recurrence.

RESULTS: All patients responded favourably to treatment, with six showing complete clearance and 12 marked improvement.

The median clinical score decreased from 7.5 (range 4-8) at baseline to 0.5 (range 0-3) after 8 weeks of treatment ($P = 0.005$). The median pruritus score decreased from 4.5 (range 0-8) at baseline to 0 (range 0-3) at week 8 ($P = 0.008$). Relapses occurred in all patients after a median of 21 days (range 12-40).

No side-effects of treatment were observed except occasional episodes of a moderate erythemal response.

CONCLUSIONS: Narrow-band UVB phototherapy appears to be a very effective and safe

treatment option for patients with severe seborrhoeic dermatitis.

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