The Use of Narrow Band UVB in Combination with Coal Tar in Comparison to Petrolatum in the Treatment of Plaque Psoriasis

THESIS
Submitted for partial fulfillment of master degree in
DERMATOLOGY, VENEREOLOGY AND ANDROLOGY

BY

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بسم الله الرحمن الرحيم

"وفي أنفسكم أفلا تبصرون"

صدق الله العظيم

سورة الذاريات – آية21

LIST OF ABBREVIATION

APC	Antigen presenting cell
CCT	Crude coal tar
HLA	Human Leukocyte Antigen
IL	Interleukin
MED	Minimal erythema dose
NB-UVB	Narrow band ultraviolet B
PASI	Psoriasis Area Severity Index
PSORS	Psoriasis susceptibility gene
PUVA	Psoralens and ultraviolet A
PGA	Physician global assessment
SPT	Skin prototype
UVA	Ultraviolet-A
UVB	Ultraviolet-B
UVC	Ultraviolet-C
UVL	Ultraviolet light
UVR	Ultraviolet radiation
VEGF	Vascular endothelial growth factor

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PROTOCOL FOR THESIS

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The Use of Narrow Band UVB in Combination with Coal Tar in Comparison to Petrolatum in the Treatment of Plaque Psoriasis

INTRODUCTION

Psoriasis is a common chronic and relapsing disease with a worldwide average prevalence of about 2% and reaching up to 11.8% among some ethnic groups. The clinical picture of scaling and erythema is complicated with marked negative impact on quality of life ***(Gudjonsson and Elder, 2007).***

Several modalities of treatment are available for psoriasis. However, phototherapy is still the mainstay in the treatment of the disease. Since UVB is easier to administer and does not involve an oral photosensitizing medication, this form of phototherapy is often selected before psoralen photochemotherapy (PUVA) ***(Valkova, 2007).***

There are several types of UVB radiation in clinical use: Broad band UVB (280-320 nm), selective UVB phototherapy (SUP) (peaks at 305 and 325 nm) and narrow band UVB (311 nm). Patients treated with narrow band UVB (311 nm) showed faster clearance of psoriatic lesions, fewer episodes of excessive erythema, and longer period of remission when compared with broad band sources. However, only few studies have been performed on the value of NB-UVB in treatment of psoriasis, especially with topical preparations like tar ***(Storbeck et al, 1993; Coven et al, 1997; Braun-Falco et al, 2000).***

Several topical preparations, such as, tar, salicylic acid, petrolatum, mineral oils and others have been used to pretreat the skin before exposure to UVB light. In 1925, **Goeckerman** described a regimen for the treatment of psoriasis that has been used in a modified form to treat patients to this day. The original regimen consisted of the application of crude coal tar ointment for 24 hours. It was then removed with olive oil, and the patients were exposed to UV light. Since then, the regimen has undergone numerous modifications ***(Goeckerman, 1925; Lowe et al 1983).***

Tar and petrolatum have been used in conjunction with UVB with contradicting reports regarding their clinical benefit. While some studies reported their effectiveness, others reported them as either ineffective or moreover acting as UV light screens. However, the reported screening effect was found due to the physical properties of the preparation; the thickness and/or the color of the film, which was overcome in present practice with thin

clear films of the preparation ***(Lowe, 1986; Stern et al, 1986; Dijkstra and Andreano, 1987; Lebwohl et al, 1995; Kornreich et al, 1996).***

The variety of topical preparations available, as well as, the contradicting reports regarding their effectiveness; specially tar and petrolatum, signify the importance of clearly and precisely identifying the clinical outcome served by these agents when combined with NB-UVB.

AIM OF THE WORK

The aim of this study is to:

- Evaluate the efficacy of crude coal tar in conjunction with NB-UVB in a modified Goeckerman treatment of plaque psoriasis.
- To compare between the effects of combining crude coal tar with NB-UVB on one side and petrolatum with NB-UVB on the other side.

MATERIALS AND METHODS

- This study will include **20** patients with plaque type psoriasis who will be collected from the out-patient dermatology clinic of Ain Shams University Hospitals.

Inclusion criteria:

- Plaque type psoriasis
- Lesion < 50% of BSA
- Age < 40 years.
- Patient should stop medications 4 weeks prior to joining the study.

Exclusion criteria

- Lesion > 50 % BSA
- Young age < l2 years
- Low intelligence and inability to follow instructions
- Unreliable and uncooperative patient.

- Pregnancy and lactation
- Lupus erythematous and other connective-tissue disorders.
- History of premalignant or malignant skin tumors
- History of epilepsy, heart failure, photosensitive psoriasis
- Previous history of arsenic intake or treatment with ionizing radiation

All patients will be subjected to:

- Detailed history.
- General examination
- Dermatological examination
- Patients will be subdivided into two equal (10 patients) groups; age, sex and skin phototype-matched:
  - Group I (10 patients): will pretreat their skin 3 times/day with coal tar 3% over plaques one side of their body surface and petrolatum over the other side, then remove applications using corn oil prior to the exposure to NB-UVB phototherapy treatment that will be given 3 times/week for 3 months. This regimen is close to Goeckerman's regimen with specific modifications ***(Goeckerman, 1925).***
  - Group II (10 patients): will serve as active control (undergo NB-UVB phototherapy in the same regimen but without skin pretreatment with any topical applications).
  - NB-UVB will be given according to MED (starting with 70% of MED)
  - Clinical assessment using Psoriasis Area and Severity Index (PASI) scoring system ***(Fredriksson and Pettersson, 1978***) and digital photography at 0 and 3 months of treatment.
- Statistical analysis of all resulting data will be presented.

THE THESIS WILL INCLUDE:

- Introduction and aim of work.
- Review of literature.
- Patients and methods.
- Results.
- Discussion.

- Summary and conclusion.
- References.
- Arabic summary.
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إستخدام الأشعه فوق البنفسجية "ب" محدودة المدى مع القطران بالمقارنة مع الفازلين فى علاج مرض الصدفية

بروتوكول رسالة مقدم للحصول على
درجة الماجستير فى الأمراض الجلدية والتناسلية وأمراض الذكورة

من

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مقدمة:

الصدفية يعد مرضاً مزمناً متعدد الانتكاسات و يقدر متوسط إنتشاره فى العالم بحوالى 2% ويصل فى بعض المجموعات العرقية الى 11.8% . الصورة المرضية التى تتميز بالقشور والإحمرار توثر سلبياً على حياة المريض.

هناك طرق عديدة لعلاج الصدفية، اهمها العلاج الضوئى و تعتبر الاشعة فوق البنفسجية هى الطريقه المثلى للعلاج حيث انها لا تحتاج لتعاطى ادويه تحضيرية بالفم كما يحدث فى من الاشعه فوق البنفسجية "أ" المدعمة بالسورالين.

توجد أنواع عديدة من الاشعة فوق البنفسجية، واسعة المدى (280-320 نانوميتر)، متوسطة المدى (305- 325 نانوميتر)، محدودة المدى (311 نانوميتر) وعند استخدام الأشعة فوق البنفسجية محدودة المدى (311 نانوميتر) مع مرضى الصدفية كانت النتائج مرضية و سريعة مع حدوث معدل انتكاس أقل عند مقارنتها بنتائج الاشعة فوق البنفسجية و اسعة المدى. وعلى أيه حال فان الابحاث التى درست تأثير الأشعه فوق البنفسجية "ب" محدودة المدى خصوصاً مع استخدام الدهانات الموضعيه مثل القطران.

العديد من المستحضرات الموضعية مثل القطران وحمض السالسليك والفازلين والزيوت المعدنية وغيرها تستخدم للمعالجة التحضيرية للجلد قبل التعرض للأشعه فوق البنفسجية "ب" محدودة المدى. فى عام 1925، وصف جوكرمان طريقة لعلاج الصدفية باستخدام قطران الفحم الخام كمستحضر موضعى يدهن به الجلد لمدة 24 ساعة ثم يزال بزيت الزيتون قبل تعرض المريض للأشعة فوق البنفسجية. و قد تم اجراء عدة تعديلات على هذه الطريقة منذ سنة 1925 وحتى الآن.

القطران و الفازلين يستخدمان كعلاج تحضيرى قبل تعرض المريض للأشعة فوق البنفسجية "ب" واسعة المجال وذلك فى وجود تقارير متضاربة حول فاعليتهما السريرية. فبينما أيد فاعليتهما البعض، أوردهما البعض فى التقارير كمواد غير فعالة بل وربما كانت عائقاً أمام الأشعة فوق البنفسجية. هذه الإعاقة وجد أنها تنتج من الخواص الفيزيائية للمستحضر مثل سمك طبقة الدهان ولونه وقد تم التغلب على ذلك باستخدام طبقة رقيقة وشفافة من تلك المستحضرات.

تنوع المستحضرات الموضعية وتضارب تقارير الدراسات على مدى كفائتها كوسيلة علاج للصدفية وبالذات فيما يخص القطران و الفازلين شكل حافزاً على أهمية تقييم مدى فاعلية تلك المستحضرات كعلاج تحضيرى قبل استخدام الاشعة فوق البنفسجيةِ محدودة المدى.

الهدف من الدراسة:

- تقييم كفاءة قطران الفحم الخام مع الأشعة فوق البنفسجية فى طريقة جوكرمان المعدلة.
- المقارنه بين قطران الفحم الخام والفازلين كعلاج تحضيرى قبل الأشعة فوق البنفسجية محدودة المدى.