

بسم الله الرحمن الرحيم

Sudan University of Science and Technology

College of Post Graduate Studies

**Use of Low Power Laser 675nm and
820nm Diode Laser in the Treatment
of Stretch Marks .**

A dissertation submitted for partial fulfillment of the
degree of post graduate diploma of laser application
in medicine – dermatology.

By:

Dr: Nevian Abdalla Fadl Almoula
M.D dermatology.

Suppervisers:

Dr.Nagi Zarif Malati
M.D Dermatology.

Dr.Wafaa Salih
Ph.D.Laser Physics.

Abstract

Back ground:

Stretch marks are a common disfiguring cutaneous condition characterized by linear smooth bands of atrophic appearing skin, which occurs in areas of dermal damage produced by stretching. They are a very common cutaneous disorder for which treatment remains a challenge; currently, there is no treatment which consistently improves the appearance of striae and is safe for all skin types. LLLT is one of these treatment modalities that newly discovered.

Material and Methods:

For this study five ladies, having red striae were recruited for treatment with LLLT (675nm and 820nm) diode lasers, three sessions per week for a total of 16 sessions, Lesions were divided into two groups; lesions on the right side of the body were treated with 820 nm diode laser, while lesions on the left side of the body treated with 675 nm diode laser. In each patient we select two identical lesions (on the same site and on bilateral sides of the body) to be treated and measured (length, width and depth) by using Vernier pre and post treatment. questionnaires were evaluated to determine the patients satisfaction index and photographic pictures pre and post treatment were taken.

Results:

There were improvements in lesions treated with red 675nm diode laser and also in lesions treated with infrared 820nm diode laser but reduction was better in lesions treated with 675nm than 820nm.

Mechanical striae responded earlier to LLLT than steroidal striae, late beneficial effect of LLLT were noticed, and absence of side effects and complications.

Conclusion:

Treatment of stretch marks with LLLT (675nm and 820nm) diode laser used in this study showed marked improvement with an interesting absence of side effects and complications in dark skin, suggesting that it can be used to treat stretch marks in Sudanese patients

الملخص

الخلفية:

علامات الشد هي من اكثر الحالات الجلدية المشوهة حدوثا والتي تمتاز بخطوط نديبه ناعمه وتحدث في المناطق التي تتعرض فيها طبقة الادمه للاتلاف نتيجة الشد, هي بالرغم من كونها حاله شائعه الا أن علاجها ما زال تحديا, و حتى الان لا توجد وسيله علاجيه آمنه لكل انماط الجلد. العلاج بالليزر منخفض القوة هو واحد من هذه الوسائل العلاجيه المكتشفه حديثا .

المادّة والطرق:

في هذه الدراسه 5 سيدات يعانين من علامات الشد الحمراء, وقد تمت معالجتهم بالليزر منخفض القوه 820-675nm بمعدل 3 جلسات اسبوعيا لاتمام 16 جلسه, ولذلك قسمت الندبات في المريض لمجموعتين, اللتي على الجهه اليمنى عولجت ب820, واللتي على الجهه اليسرى فعولجت ب675, اخذت قياسات الندبات (الطول, العرض والعمق) بواسطة الفيرنيا قبل وبعد العلاج واجابت المريضات على الاسئله الخاصه بكل حاله كما اخذت صور فوتوغرافيه قبل وبعد المعالجه

النتائج:

كان هنالك تحسن في الاجزاء المعالجه ب675 و820 لكنه كان اكبر مع 675, علامات الشد الناتجه عن تغير الوزن كانت استجبتها للعلاج بالليزر منخفض القوه اسرع من تلك الناتجه عن استخدام الكورتيزون. كان هنالك استجابته متاخرة, مع عدم حدوث اي مضاعفات.

الاستنتاجات:

علاج علامات الشد بالليزر منخفض القوه 675 و820 اعطى نتائج جيده, مع عدم حدوث اي مضاعفات في البشره السمره, مما يجعله احد الخيارات لعلاج علامات الشد في السودانيين.

Table of contents

Section	Topic	Page No
	Quoranic Verse	I
	Dedication	II
	Acknowledgement	III
	Abstract	IV
	Abstract Arabic Version	VI
	Table of Contents	VII
	List of Appreviations	VIII
	List of Figures	IX
	List of Tables and Graphs	XI
	Chapter One	
1-1	Introduction and Literature Review	1
1-2	Epidemiology	1
1-3	Etiopathogenesis	2
1-4	Pathology	3
1-5	Clinical features	3
1-6	Diagnosis	4
1-7	Prognosis	5
1-8	Treatment	5
1-8-1	Medical Care	5
1-8-2	Diet and exercise	7
1-8-3	Microdermabrasion	7
1-8-4	Radiofrequency Devices	8
1-8-5	Lasers and light Devices	8
1-8-5-1	Low Level Laser Therapy	9
1-8-5-2	Pulsed Dye Laser	9
1-8-5-3	Excimer Laser	10
1-8-5-4	Copper-Bromide Laser	10
1-8-5-5	Diode Laser 1450nm	11
1-8-5-6	Nd:YAG Laser 1064nm	11
1-8-5-7	Intense Pulsed Light Laser	12
1-8-5-8	UVB/UVA1 Combined Therapy	12
1-8-5-9	Fractional Photothermolysis	13
1-9	Principles Of Laser	15
1-9-1	Properties Of Laser	16
1-9-2	Laser Design	17

1-9-3	Types Of Lasers	19
1-10	Laser Tissue Interactions	19
1-11	Low Level Laser Therapy	22
1-11-1	Mechanisms Of Low Level Laser Therapy	23
1-12	Laser Hazards	33
1-13	Laser Safety	35
1-14	Objectives Of The Study	37
	Chapter Two	
	Research Methodology	38
2-1	Study Duration	38
2-2	Study Area	38
2-3	Sample Size	38
2-4	Inclusion Criteria	38
2-5	Exclusion Criteria	38
2-6	Data Collection Technique	38
2-7	Data Analysis	39
2-8	Ethical Considerations	39
2-9	Laser Devices	40
2-10	Procedure	42
	Chapter Three	
	Results And Discussion	44
3-1	Introduction	44
3-2	Results	44
3-3	Discussion	58
3-4	Conclusion	59
3-5	Recommendations	59
	References	60
	Appendix	75