

Sudan University of Science and Technology

College of Graduate Studies

Institute of Laser



**Efficacy of Fractional wave CO₂ Laser
(10600nm) For Treating Cutaneous
Leishmaniasis**

**Dissertation submitted in partial fulfillment of the
requirement for the Degree of Post Graduate Diploma of
Laser Application in Medicine- Dermatology**

By

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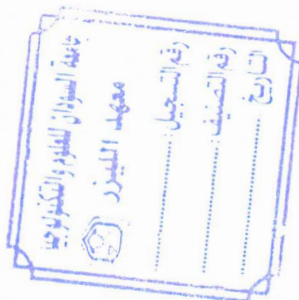
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Abstract

Leishmaniasis, a truly ancient disease, was named after W.B. Leishman who identified organisms in smears taken from the spleen of a patient who died from Dumdum fever in 1901. Cutaneous Leishmaniasis constitutes 50 percent to 75 percent of all incident cases, and is the mildest form of the disease. It can be caused by any *Leishmania* sp. Most cases heal spontaneously within 1 year or more.

Treatment : Given the clinical diversity of Leishmaniasis and the lack of adequately controlled therapeutic trials; each case needs to be individualized base.

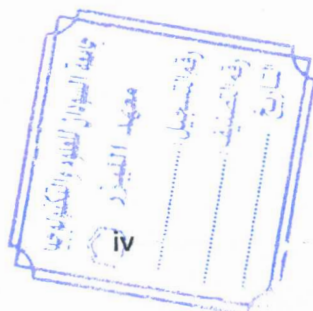
In spite of the fact that Cutaneous Leishmaniasis is ancient disease. Still the treatment is challenging. Recently CO₂ laser open new dimension for cure.

objective: The study aim to determine the efficacy and safety of carbon dioxide laser in treatment of Cutaneous Leishmaniasis.

Methodology: This is prospective study ,carried out in Sudan University for Science and Technology from February to September 2014. The diagnosis of Cutaneous Leishmaniasis was done by clinical examination confirmed by smear. Then lesions were anesthetized by local anesthesia and treated by fractional CO₂ laser (between 10-15 watt, fractional wave duty time 500, idle time 0.005s, space 0.2mm, graphic circle and diameter depend on the lesion size). and the lesion covered by topical antibiotic.

Result: There were 10 patients with 13 lesions, all treated with one session of CO₂ laser. Three lesions were 2 cm² or less healed within 4 weeks with primary intension. Two lesions were 2-5 cm² healed with scar with reduction in their original size (ulcer). Eight lesions of 5 cm² and more healed with scar with post inflammatory hyper pigmentation. At 12 week there was no evidence of recurrence .There was mild pain, and no major side effect. All patients felt it was satisfactory result.

Conclusion: Carbon Dioxide laser is effective treatment for Cutaneous Leishmaniasis. Safe and simple.



الخلاصة:

الليشمانيا من الامراض المزمنة سميت ليشمانيا بعد ان اكتشفها و. ب. ليشمان الذي اكتشفها عندما اخذ عينة من طحال مريض توفي كان مصابا بحمي الدمدم سنة 1901م. الليشمانيا الجلدية تعادل 50-75% من جملة مرض الليشمانيا . معظم الحالات يلتئم الجرح تلقانيا دون علاج في حوالي سنة الى سنة ونصف وقد تطول المده . يتنوع العلاج ويختلف في الاستجابة من حالة لآخري . مؤخرا أصبح العلاج بليزر ثاني أكسيد الكربون باب جديد لعلاج المرض.

الهدف من هذه الدراسة معرفة الفعالية والأمان في استعمال ليزر ثاني أكسيد الكربون لعلاج الليشمانيا الجلدية ، هذه الدراسة أجريت في جامعة السودان للعلوم والتكنولوجيا, فى الفترة من فبراير الى سبتمبر 2014 وهي دراسة مستقبلية تم تشخيص المرض إكلينيكيًا ومعمليًا بأخذ عينة من الجرح .

تم علاج الجرح بموجات جزئية من ليزر ثاني أكسيد الكربون بقوة 10-15 واط المسافة بين النقاط 0,2مم وقطر الشكل الدائري يعتمد علي حجم الجرح .

وتمت الدراسة في عشرة مرضي وعدد الجروح 13 جرح جميعهم تم علاجهم بجلسة واحدة . حيث كانت هنالك ثلاث جروح حجمها اقل من 2سم² التئمت في الأسبوع الرابع و جرحين حجمهما من 2-5 سم² التئما بئدب اصغر من مساحة الجرح و وثمانية جروح اكبر من 5 سم² التئمت بئدب وزيادة تصبغ. في الأسبوع 12 لا توجد علامات لمعاودة المرض ولا توجد مضاعفات كبيرة وشعر جميع المرضي بالرضاء التام بعد العلاج.

نستنتج من هذه الدراسة أن ليزر ثاني أكسيد الكربون فعال لعلاج الليشمانيا الجلدية كما انه امن وسهل.

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