بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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A comparative study of fractional CO_2 laser combined with topical methotrexate versus fractional CO_2 laser combined with topical [calcipotriol + betamethasone] in the treatment of nail psoriasis

Thesis

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List of Abbreviations

Abb.	Full term

DiP ..... Distal interphalangeal

FDA..... Food and drug administration

Mm..... Milimeter

MVD ..... Microvessel density

NF-AT..... Nuclear factor of activated T-cell

NM ..... Nano meter

PSA ..... Psariatic arthritis

TNFα ..... Tumor necrosis α

UVB ..... Ultraviolet B

VEGF..... Vascular endothelial growth factor

Introduction

Psoriasis is a chronic immune-mediated disease that results from a genetic predisposition combined with environmental triggers characterized by sharply demarcated erythematous scaly plaques. There are different clinical types including pustular, guttate, inverse, erythrodermic and psoriasis vulgaris ***(Schlager et al., 2016).***

Psoriatic involvement of the nail affects up to 50% of psoriatic patients during their lifetime. It can occur in both children and adults and is strongly associated with psoriatic arthritis. Nail psoriasis exhibits different types of lesion depending on the affected part of the nail unit. Nail bed psoriasis presents as "oil drop" discoloration, splinter hemorrhages, subungual hyperkeratosis, and onycholysis; whereas, nail matrix psoriasis usually presents as pitting, leukonychia, erythema of the lunula, and crumbling ***(Maranda et al., 2016).***

Such disfigurments are considered to be a significant cosmetic handicap and the impact on quality of life is very high. Nail psoriasis is often refractory to traditional treatments and it is difficult to find an effective agent with absent or minimal systemic side effects. It is frustrating for both doctors and patients ***(Lorizzo, 2015).***

Carbon dioxide (CO_2) laser is one of the most widely used lasers in the dermatology field. With its wavelength in the mid-infrared at 10,600 nm, CO_2 laser energy is well-absorbed in water. As skin contains a very high water percentage, this makes the CO_2 laser ideal for precise, safe ablation with good hemostasis ***(Omi and Numano, 2014).***

Methotrexate (MTX) therapy for psoriasis has been revised several times since 1972 and has been approved by the FDA. MTX inhibits dihydrofolate-reductase competitively, reducing metabolism of dihydrofolic acid to tetrahydrofolic acid which results in suppression of the intracellular synthesis of various folic acid derivatives that play an important role as a cosubstrate in the transport of C_1 units, as a consequence, synthesis of purin, thymin and DNA is disturbed and epithelial hyperplasia is limited ***(Haustein and Rytter, 2008).***

Despite the marked impact of nail psoriasis on quality of life, few studies have explored the efficacy of individual therapeutic options. Injectable therapies including triamcinolone acetonide and methotrexate have been reported to be effective in limited reports. Patients were treated with an injection of methotrexate (0.1 mL of a 25 mg/Ml solution) into the nail bed ***(Grover et al., 2017).***

Trans-ungual methotrexate delivery was enhanced by the fractional laser ablation ***(Nguyen and Banga, 2018).***