The Efficacy of Combining Fractional Carbon Dioxide Laser With Verapamil Hydrochloride or 5-Fluorouracil in the Treatment of Hypertrophic Scars and Keloids: A Clinical and Immunohistochemical Study

Hanan H. Sabry, MD,* Sherine H. Abdel Rahman, MD,* Mohamed S. Hussein, MD,* Rana R. Sanad, MBBch,* and Taghreed A. Abd El Azez, MD†


Abstract

BACKGROUND: Ablative fractional laser-assisted therapy is increasingly used to facilitate drug delivery and intensify clinical efficacy of topically applied drugs.

OBJECTIVE: To evaluate the effectiveness of combined ablative fractional CO2 laser and topically applied 5-fluorouracil (5-FU) or verapamil hydrochloride in the treatment of hypertrophic scars (HTSs) and keloids and to examine their possible effects on TGF-b1 expression.

PATIENTS AND METHODS: Thirty patients with HTSs and keloids were randomly treated with combined CO2 laser followed by topical verapamil or 5-FU application or CO2 laser monotherapy. All patients received 4 treatments at 1-month intervals. Subjective and objective assessment was obtained using the Vancouver Scar Scale (VSS). Histological changes and immunohistochemical staining for TGF-b1 were performed.

RESULTS: Compared with baseline, there was a significant reduction in the VSS 1 month after the last treatment session in all groups (p < .05). Laser-assisted 5-FU delivery tended to show a higher extent of improvement in scar characteristics than laser-assisted verapamil hydrochloride delivery, without significance. No significant side effects were reported in all patient groups. TGF-b1 expression was significantly decreased after laser sessions.

CONCLUSION: Combined fractional CO2 laser and topical 5-FU or verapamil hydrochloride offer a safe therapy for HTSs and keloids.