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SAFETY PROFILE OF ND:YAG LASER VERSUS ORAL ISOTRETINOIN IN SEVERE ACNE VULGARIS

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Introduction

Severe acne vulgaris is a chronic inflammatory dermatological condition associated with a high risk of physical scarring, psychological distress, and significant impairment of quality of life. Systemic isotretinoin has long been considered the gold standard therapy for severe acne; however, its use is frequently limited by a wide range of systemic adverse effects, strict monitoring requirements, and contraindications. In recent years, laser-based technologies have gained increasing attention as alternative or adjunctive treatment options for inflammatory acne. Long-pulsed neodymium-doped yttrium aluminum garnet (Nd:YAG, 1064 nm) laser therapy has demonstrated anti-inflammatory, antibacterial, and sebosuppressive effects, making it a promising non-systemic approach for acne management. Despite growing evidence regarding the clinical efficacy of Nd:YAG laser therapy, safety and tolerability remain critical factors when comparing device-based interventions with systemic pharmacological treatments. Direct comparative data focusing specifically on adverse event profiles are still limited, particularly in patients with severe acne vulgaris.

Aim

The aim of this study was to compare the safety and tolerability profiles of long-pulsed Nd:YAG (1064 nm) laser therapy and oral isotretinoin in patients with severe acne vulgaris by analyzing the incidence and nature of treatment-related adverse events.

Materials and Methods

This study was conducted as part of a prospective randomized clinical cohort involving patients diagnosed with severe acne vulgaris. Participants were allocated into two treatment groups: Nd:YAG laser therapy group, receiving long-pulsed Nd:YAG (1064 nm) laser treatment according to a standardized protocol. Oral isotretinoin group, receiving systemic isotretinoin therapy in accordance with established clinical guidelines. All patients were monitored throughout the treatment period for the occurrence of adverse events. Safety assessment included documentation of both local and systemic side effects, their severity, duration, and need for additional medical intervention. Local adverse reactions in the laser group included erythema, edema, discomfort, and post-procedural skin sensitivity. Systemic adverse effects in the isotretinoin group included mucocutaneous symptoms, laboratory abnormalities, and

general systemic complaints. Adverse events were recorded at each follow-up visit and classified as mild, moderate, or severe based on clinical relevance and patient-reported outcomes.

Results

No serious or life-threatening adverse events were observed in either treatment group during the study period. In the oral isotretinoin group, systemic side effects were reported more frequently. The most common adverse events included dryness of the skin and mucous membranes, cheilitis, transient elevations in liver enzymes, and lipid profile alterations. These effects required regular laboratory monitoring and, in some cases, dose adjustments. In contrast, patients treated with Nd:YAG laser therapy experienced predominantly mild and transient local reactions. These included short-term erythema, mild edema, and procedural discomfort, all of which resolved spontaneously within a short period without the need for additional treatment. No patients in the laser therapy group discontinued treatment due to adverse events. Overall tolerability was rated higher in the Nd:YAG laser group compared to the systemic therapy group.

Discussion

The findings of this study highlight important differences in the safety profiles of long-pulsed Nd:YAG laser therapy and oral isotretinoin in the management of severe acne vulgaris. While isotretinoin remains an effective systemic treatment, its adverse event profile necessitates careful patient selection, continuous monitoring, and strict adherence to safety protocols. In contrast, Nd:YAG laser therapy demonstrated a favorable tolerability profile, with adverse effects limited to mild and temporary local reactions. The absence of systemic side effects associated with laser therapy represents a significant advantage, particularly for patients with contraindications to systemic retinoids or those unwilling to undergo long-term pharmacological treatment. These results support the growing role of laser-based technologies as safe non-systemic alternatives or adjunctive options in comprehensive acne management strategies.

Conclusion

Long-pulsed Nd:YAG (1064 nm) laser therapy demonstrated a favorable safety and tolerability profile compared to oral isotretinoin in patients with severe acne vulgaris. The predominance of mild and transient local adverse effects, along with the absence of systemic complications, supports the use of Nd:YAG laser therapy as a safe alternative or complementary treatment modality in severe acne management.

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ОСОБЛИВОСТІ ЗМІН ВЕГЕТАТИВНОЇ РЕГУЛЯЦІЇ КРОВООБІГУ ТА ФОРМУВАННЯ НІКОТИНОВОЇ ЗАЛЕЖНОСТІ В ОСІБ, ЩО ВИКОРИСТОВУЮТЬ СУЧАСНІ POD-СИСТЕМИ ПОРІВНЯНО З ТРАДИЦІЙНИМ ТЮТЮНОПАЛІННЯМ

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Вступ. Тютюнопаління залишається провідним модифікованим фактором ризику розвитку серцево-судинних захворювань, що асоціюється з ендотеліальною дисфункцією та стійкою артеріальною гіпертензією [1]. Протягом останнього десятиліття структура споживання нікотину зазнала кардинальних змін: спостерігається стрімке заміщення традиційних тютюнових виробів електронними системами доставки нікотину (ENDS — Electronic Nicotine Delivery Systems). Особливу популярність серед молоді здобули так звані POD-системи (POD – Portable On Demand), що використовують рідини на основі сольового нікотину[3]. Виробники активно позиціонують ці пристрої як «безпечнішу альтернативу» через відсутність продуктів горіння та смол. Проте хімічна модифікація нікотину шляхом додавання органічних кислот (бензойної,