

Treatment of Onychomycosis with a Long-Pulsed Nd:YAG Laser

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SUMMARY

Onychomycosis is common nail disease, especially in the elderly. Currently, there are various options to treat onychomycosis; however, most have limitations that include high failure rates, time-consuming and expensive treatments, and high risks of drug interactions. Previous studies about the treatment of dermatophyte onychomycosis with long-pulsed 1064 nm Nd:YAG lasers have demonstrated excellent outcomes, without severe side effects [1,2].

To further evaluate the mycological results and side effects of onychomycosis treatments with a long-pulsed 1064 nm Nd:YAG laser, we are conducting a study which will examine 92 onychomycotic nails. All nails will be treated with a long-pulsed 1064 nm Nd:YAG laser (Dualis SP; Fotona, Slovenia) for four sessions at a one-week interval. Treatment parameters will be set with fluences in the range of 35-45 J/cm², a spot size of 4 mm diameter, pulse duration of 30-35 ms, and frequency of 1 Hz. Mycological results (potassium hydroxide examination and fungal culture) will be taken every week during the course of treatment.

Until now, the study has not yet been completed. 25 nails from 14 patients were enrolled and received four laser treatments. Most nails had distal and lateral subungual onychomycosis. The percentage of positive fungal culture tended to decline in the following visits as there were 85%, 56%, and 44% of positive fungal culture at the 2nd, 3rd, and 4th weeks, respectively. In addition, 48% of nails demonstrated mycological clearance at 1-month follow up (Figure 1).

In conclusion, long-pulsed 1064 nm Nd:YAG laser therapy is safe and effective in the treatment of onychomycosis. However, a larger sample size and longer follow-up term are needed.

REFERENCES

1. Kozarev J, Vizintin Z. Novel Laser Therapy in the Treatment of Onychomycosis. *J Laser Health Academy*, 2010; 1:1-8
2. Hochman LG. Laser Treatment of Onychomycosis using a Novel 0.65-millisecond Pulsed Nd:YAG 1064-nm Laser. *J Cosmetic Laser Therapy*, 2011; 13(1):2-5.



(a) before treatment (b) 1 Month Follow-up after last treatment

Fig. 1: Onychomycotic nail treated with long-pulsed 1064 nm Nd:YAG laser (a) before, and (b) 1 month follow-up after laser treatments.