

Long-Pulsed Nd:YAG 1064 nm Laser Treatment of Onychomycosis

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SUMMARY

Onychomycosis is a fungal infection of the toenails or fingernails, which in almost 90% of cases is caused by anthropophilic dermatophytes such as *Trichophyton rubrum* or *Trichophyton mentagrophytes*. It can also be caused by yeasts (*Candida*) or non-dermatophyte molds like *Aspergillus niger*. The prevalence of onychomycosis is 2-10% and constantly rising. Until recently antifungal treatment was based on use of topical or systemically active antifungal drugs [1]. Since antifungal drugs are generally ineffective against fungal infections and usually accompanied by different side effects, novel therapies have been investigated. Recently a novel laser treatment was described for onychomycosis using long-pulsed Ng:YAG laser [2].

The method is widely used in our clinic since 2011. Fifty patients age between 4 to 84 years were included in a prospective study. Treatment was performed according to a procedure described by Kozarev in 2010, with a fluence range of 30 to 40 J/cm², 35 ms pulse duration, 1Hz frequency and 4 mm spot size [2]. Three passes were performed in one treatment and four treatments with a 1 week interval between each session were needed.

Patients were evaluated for clearance of fungal infection 3, 6, 9 and 12 months after the treatment. Although the nails grow slowly and the clearance of the nail plate could be observed only after a longer period, patients were reporting improvement in quality of life already after the first or second treatment. The first visible results were observed at the first follow-up at 3 months after the treatment.

Nd:YAG laser treatment presents a safe and efficacious method for the treatment of different types of onychomycosis. Since the treatment is simple, quick, no analgesics are needed, and no post-op pain and no side effects are observed, it offers a great solution for patients. It is especially beneficial for young and elderly, compromised and hepatopathic patients.

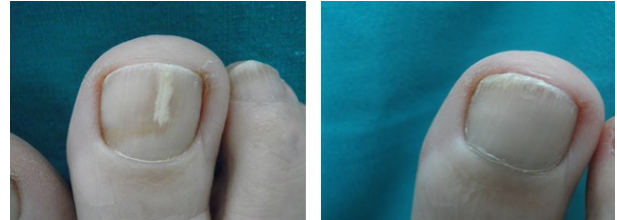


Fig1: Onychomycosis treated with long-pulsed Ng:YAG: before and after the treatment.

REFERENCES:

1. Elewski BE (1998) Onychomycosis: Pathogenesis, Diagnosis, and Management. *Clin Microbiol Rev* 11: 415–429.
2. Jasmina Kozarev ZV (2010) Novel Laser Therapy in Treatment of Onychomycosis. *LA&HA - Journal of the Laser and Health Academy* 1: 1–8.

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