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532 nm laser treatment of molluscum contagiosum

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Immunodeficiency;
Treatment;
Coagulation

Summary

Objective: This retrospective study was undertaken to examine the efficiency of a 532 nm laser device in the treatment of molluscum contagiosum.

Material and methods: The medical records were analyzed of 32 patients with molluscum contagiosum who had been treated in our clinic with a 532 nm laser (IDAS; Quantel Derma GmbH) in the time period 09/2005 to 04/2011.

Results: Of all the patients treated, a total of 84% required only one treatment, 13% required two and only one patient (3%) needed three laser sessions. The treatment was well-tolerated and only a few of the patients developed side effects, such as hypopigmentation and atrophic skin texture changes.

Conclusion: The efficiency of the 532 nm laser is comparable with the dye laser, but the 532 nm laser is lower in price and more commonly available than the dye laser. We recommend further prospective studies about the 532 nm laser in the treatment of molluscum contagiosum.

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Introduction

Molluscum contagiosum (MC) is a benign and common infection of the skin, caused by a pox virus (molluscum contagiosum). The infection is usually resolved within months; however children and patients with atopic dermatitis or compromised immune system, such as diabetes, HIV infection, organ transplantation or wasting diseases, can develop a widespread and persistent skin infection which requires treatment.

In the past a number of different interventions have been introduced for the treatment of MC, such as topical antiviral agents, curettage, cryosurgery and laser treatment. In a Cochrane review from 2009, no single intervention was shown to be “convincingly effective or superior” [1]. In this review, 11 randomized controlled trials were investigated whereby studies involving the use of lasers were not included.

In the mid 1980s, the carbon dioxide (CO₂) laser was introduced as a treatment method for MC [2]. The laser treatment was expected to be easier, faster and less uncomfortable than the traditionally used curettage. But after a report was published about the development of severe keloid scars in connection with CO₂ laser treatment, the use of this type of laser for the treatment of MC was questioned [3]. Although in the years that followed some studies were published about the combined use of CO₂ laser with pulsed

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dye laser and topical agents, the CO₂ laser was no longer accepted as the first-line laser treatment for MC [4,5].

At the end of the 1990s, the pulsed dye laser was introduced as a new treatment option for MC [6]. In recent years, some studies involving up to 76 patients have shown that the pulsed dye laser with a wavelength of 585 nm is a safe, quick, efficient and well-tolerated treatment modality, mostly requiring only one session to heal the patients. Only mild transient hypopigmentation and erythema were observed in a few cases. In a recent study, Binder et al. [7] report that in a group of 19 children, in 84.3% of the cases just one treatment led to a total remission and in only 10.5% of the cases were two treatments necessary. Chatproedprai et al. [8] report about a group of 20 children with a healing rate of 70.5% after the first, and 10.6% after the second intervention. Michel [9] reports a success rate of 96.3% after the first treatment and 3.7% after the second one.

One case report from 2006 introduced the potassium titanyl phosphate (KTP) laser treatment (532 nm) as a novel treatment option [10]. In this publication an immunocompromised 38 year-old patient with several hundred lesions was treated successfully without pigmentary disturbance. Ten years before this publication, the use of the argon laser (488 and 514 nm), which in terms of the wavelength range and biological effect is similar to the frequency-doubled Nd:YAG laser (532 nm), was presented on a small group of patients and it was reported to have a good treatment effect [11].

In the present paper, a retrospective study was undertaken to examine the efficiency of a 532 nm laser device used in the treatment of MC.

Material and methods

Since 2005 we have been using a 532 nm laser (IDAS; Quantel Derma GmbH) in our clinic for the treatment of MC. The primary laser wavelength (1064 nm) of the neodymium-doped yttrium orthovanadate (Nd:YVO₄) laser is frequency-doubled by a lithium triborate (LBO) crystal to 532 nm. The maximum power output is 8 W; different handpieces with spots sizes between 0.2 and 2 mm are available. For the treatment a 1 mm handpiece was used with repeated exposures of 0.06–0.2 s and a power of 4–8 W depending on the size of lesions (Fig. 1). The smaller the lesion, the lower the total



Figure 1 Treatment with the 532 nm laser.



Figure 2 Multiple molluscum contagiosum. Lesion before treatment (left front) and whitish lesion after treatment with the 532 nm laser (right back).

energy required, and therefore, the shorter the exposure time. The aim of the treatment is to coagulate the lesions. Thus the clinical endpoint of the treatment for the physician is that the lesions appear blanched, as indicated in Fig. 2. The surface of the MC should remain closed. In this way spreading of the virus to the neighboring skin is prevented, thereby reducing the risk of relapse.

In general, and especially in the treatment of children, an anesthetic ointment (EMLA[®] cream, a mixture of prilocaine and lidocaine) can be used to minimize the pain sensation. Additionally, for larger lesions, the surface of the skin should be cooled with an ice cube (Fig. 3). This has two



Figure 3 Ice cube cooling during treatment of lesions on the back of the left thigh. The cooling reduces pain and skin damage.

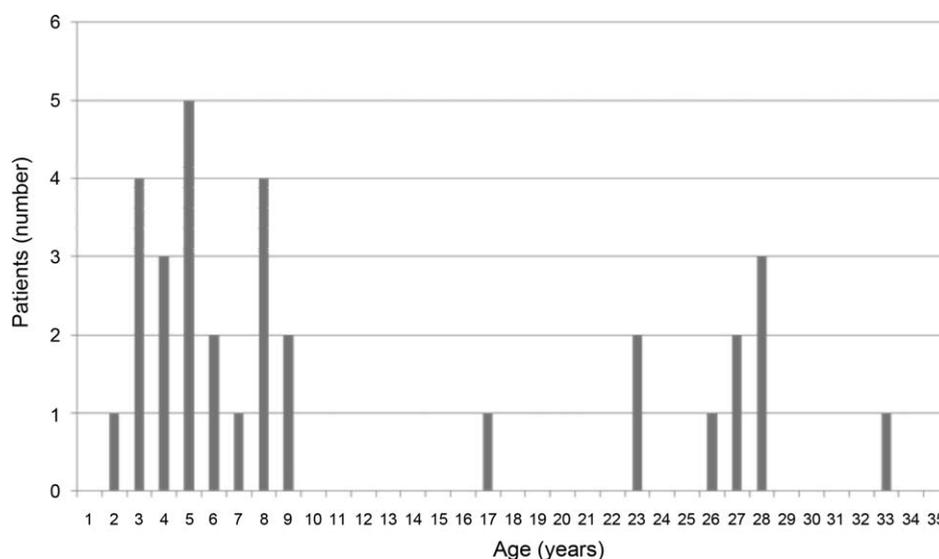


Figure 4 Age distribution of patients treated in our department with molluscum contagiosum.

functions. First of all the pain is reduced and secondly, if repeated exposures are necessary, the surrounding skin will be protected from the generated heat. In the rare case of unwanted smoke development, which can be prevented by cooling with ice cubes, the plume must be evacuated with a laser plume suction device. Post-operative use of PV-iodine ointment is indicated.

For quantification of the treatment results with the 532 nm laser, we conducted a retrospective cohort study of patients who had been treated in our hospital in the period 09/2005–04/2011 for recalcitrant MC, which were recurrent after treatment with non-laser options (e.g. chemical treatment or curettage). We examined the medical files for treatment parameters and the outcome results. We observed the age distribution of the disease and the number of treatments necessary to cure MC.

Results

In the study, 32 patients with MC were included who had undergone laser treatment in our department within the period 09/2005–04/2011. The age distribution showed two peaks, the first between 1 and 9 years, the second between 26 and 28 years (Fig. 4). Interestingly, and against all expectations, the patients in the second age group did not suffer from any wasting diseases or immunosuppression. However the number of the patients in this group is too small to draw any conclusions from this observation.

In general, a conservative treatment with different ointments was primarily used. We used laser treatment where there was widespread infection or if the conservative treatment had failed after several months. After the use of 532 nm laser, as in the case of MC treatment, a crust normally forms over the treated area. The crust disappeared in our patients within about 1 week, usually without any permanent skin damage. The pain during the treatment was generally well-tolerated. A total of 84% ($n=27$) of the laser-treated patients required only one treatment, 13% ($n=4$) required two sessions and one patient (3%) required three

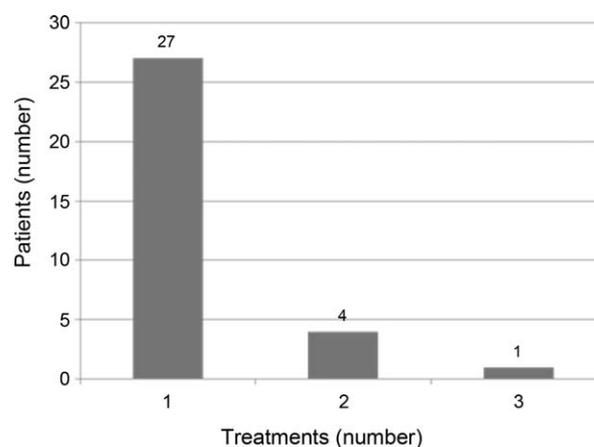


Figure 5 The number of treatments necessary to remove long-term molluscum contagiosum.

sessions (Fig. 5). After the last control visit, the patients were discharged with the advice that in the event of a relapse, they should contact the outpatients department as soon as possible.

Unwanted side effects were reported, such as hypopigmentation in patients with skin type III, an increased transient redness of the treated area and one case of atrophic texture changes of the skin.

Conclusion

We conducted, to our knowledge, the first retrospective study on a group of patients to determine the efficacy of a 532 nm laser in the treatment of MC. In this study it was shown that the 532 nm laser treatment is usually successful after the first intervention and is completely safe. The results are comparable with the dye laser. The 532 nm laser is a low-priced and a broadly available laser system comparable to the dye laser. We recommend further prospective

studies to give a general recommendation for the treatment of MC with 532 nm laser devices.

Zusammenfassung

532 nm-Laser-Behandlung von Dellwarzen (Molluscum contagiosum)

Ziel: In dieser retrospektiven Studie wurde die Effektivität eines 532 nm-Lasers (IDAS; Quantel Derma GmbH) in der Behandlung von Dellwarzen (Molluscum contagiosum) untersucht.

Material und Methoden: Es wurden die Behandlungsdokumentationen von 32 Patienten, die in unserer Klinik zwischen 09/2005 und 04/2011 wegen Molluscum contagiosum behandelt wurden, retrospektiv analysiert.

Ergebnisse: 84% der Patienten benötigte eine Behandlung, 13% zwei und ein Patient (3%) drei Behandlungen. Die Behandlung wurde gut toleriert, die Komplikationsrate war gering. Die Komplikationen bestanden in Hypopigmentierungen und atrophischen Hautveränderungen.

Schlussfolgerung: Die Effektivität des 532 nm-Lasers ist vergleichbar mit der des Farbstofflasers. Der 532 nm-Laser ist weiter verbreitet und preiswerter als der Farbstofflaser. Wir empfehlen weitere prospektive Studien zur Beurteilung des Stellenwertes des 532 nm-Lasers bei der Behandlung von Molluscum contagiosum.

Schlüsselwörter: Frequenzverdoppelter Nd:YAG-Laser; KTP-Laser; LBO-Laser; 532 nm-Laser; Virusinfektion der Haut; Dellwarze; Molluscum contagiosum; Immunsuppression; Koagulation

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