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Low-Level Light Therapy in the Treatment of Meibomian Gland Dysfunction

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Abstract

Purpose : Low-level light therapy (LLLT) is a growing modality used in various fields of medicine. This study observed the effect of LLLT on the tear film and lower eye lids in meibomian gland dysfunction (MGD) patients.

Methods : The visual acuity (VA), lipid layer interference pattern (LP), non-invasive tear break up time (NIBUT), the lower eye lid-margins, MG expression and MG morphology, observed by non-contact infra-red meibography, as well as dry eye symptoms were evaluated before and after treatment in patients suffering from MGD (n=15, female=9; mean age=57years ±12 Standard Deviation). Lower Lids MGD degree and telangiectasia was classified using a 5-grade scale. Subjective dry eye severity was evaluated using the Ocular Disease Index-6 (OSDI-6) (at enrolment visit, only). Over-all dry eye symptom (DES) was classified using a 0 to 10 scale (0= very poor). Patients were treated by LLLT (My Mask®, Espansione Group, Bologna, IT). The treatment consisted of 4 consecutive applications of LLLT. Each application lasted 15min. The sessions were separated by a 48h to 72h break. Warming effect of the LLLT My Mask was measured by thermography after the first session. VA, tear film, lower lids, MG, meibography and DES were observed again 2-4 days after completion of all 4 treatment sessions.

Results : MGD was diagnosed in all, based on lids, tear film and OSDI-6 (11.6 ±4.31). LP (before: grade 1.0 ±0.00; after: grade 2.50 ±1.13) and NIBUT (4.8sec ±1.14; 12.1sec ±5.98) and DES (4.6 ±0.51; 6.6 ±1.06) significantly improved after treatment ($p<0.002$). No significant differences ($p>0.317$) were found between lower lids` MGD scores as well as telangiectasia scores, MG expression or meibography grades or VA. The mean eye lids temperatures were - before LLLT was applied - 36.2°C ±0.65/ 35.9°C ±0.69 (upper and

lower eye lid) and directly after application 41.8°C ±0.65/ 40.4°C ±0.58, 2 min after application 40.7°C ±0.67/ 39.6°C ±0.60, 5 min after application 37.5°C ±0.69/ 37.1°C ±0.72, 15 minutes after application 37.5°C ±0.67/ 36.5°C ±0.63 and 25min after application 36.1°C ±0.70/ 35.3°C ±0.72

Conclusions : LLLT treatment significantly improved dry eye symptoms and tear film. Appearance and morphology of the lower eye lids were unchanged after treatment. The warming effect of the device was larger at the upper than the lower eye lid.

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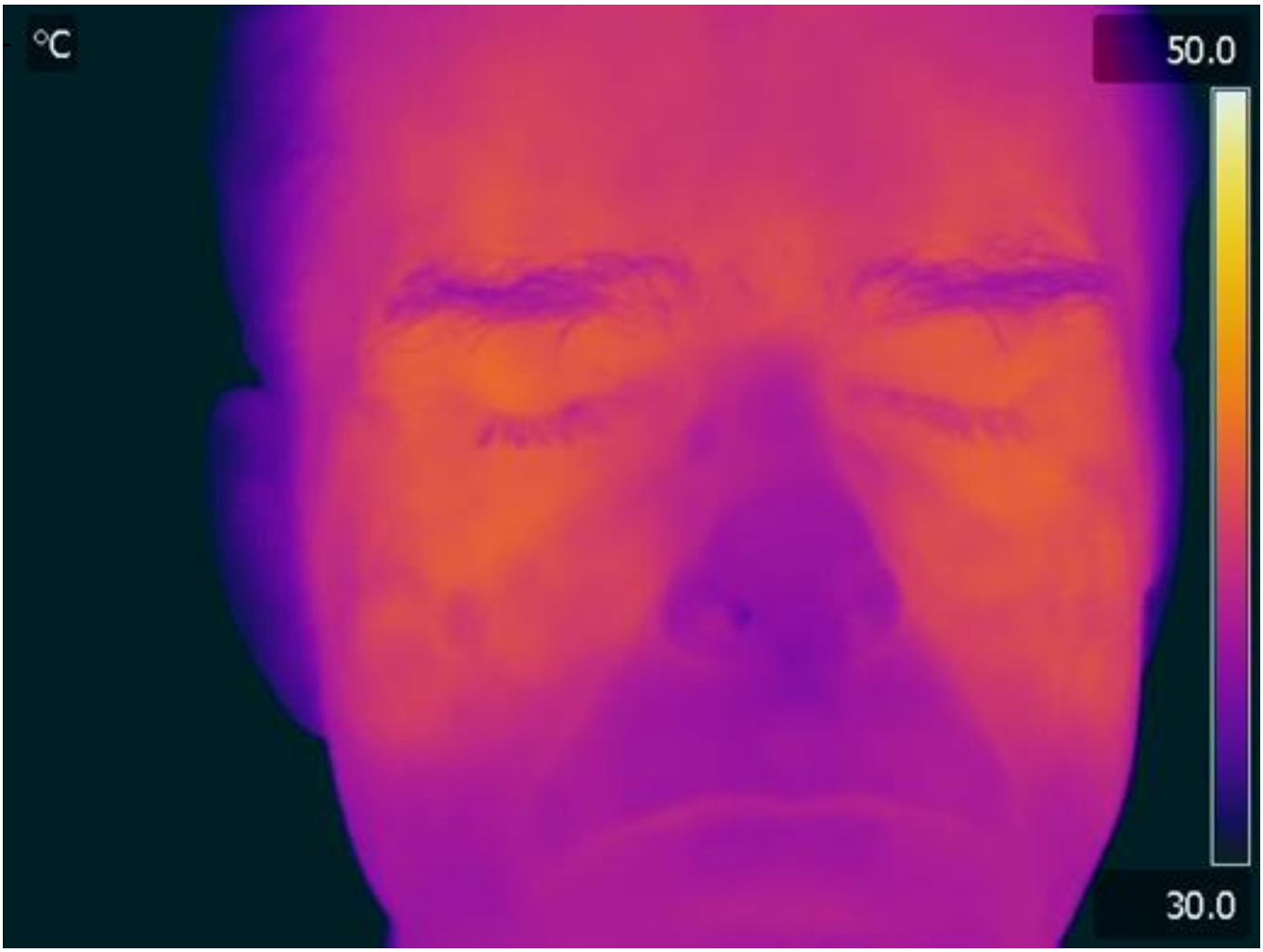

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