

Efficacy of Intense Regulated Pulsed Light Therapy in Meibomian Gland Dysfunction-related Dry Eye in a French Cohort

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Conflicts of interest : none

Background

Intense pulsed light therapy is mainly used in dermatology for the treatment of pigmented or vascular lesions, including rosacea. Toyos *et al* have developed the use of IPL for dry eye patients with meibomian gland dysfunction (MGD) since 2002¹. Recently, E-Swin, a French company, has developed a new machine using intense regulated pulsed light (IRPL) for MGD patients. Its xenon flash lamp emits pulses of light with a broad range of frequencies, from 580 to 1200 nm.

Purpose of the study

To report the efficacy of IRPL therapy in French patients with MGD-related dry eye.

Methods

Design : Non controlled prospective single center study

Patients:

Patients with MGD related dry eye refractory to lid hygiene were included.

Inclusion criteria were :

- Global symptoms score estimated by a visual analog scale (VAS) > 30 mm
- Fluorescein break up time (FBUT) < 10 sec
- MGD

Methods:

IRPL was applied to the inferior and temporal peri ocular area of both eyes with the E>Eye® machine (E-Swin, France). 5 pulses of 13J/cm² per eye were performed at day 0, 15, 45. Eyes were protected with opaque goggles. Evaluation was performed at each visit and also at day 75 :

- Global symptom score on a visual analog scale (VAS)
- Standard Patient Evaluation of Eye Dryness (SPEED) questionnaire
- FBUT
- Fluorescein corneal staining Oxford score
- Lid margin redness 0-4)
- Number of permeable meibomian glands among 15 tested with the meibomian gland evaluator at the inferior lid
- Meibum quality (0-4)

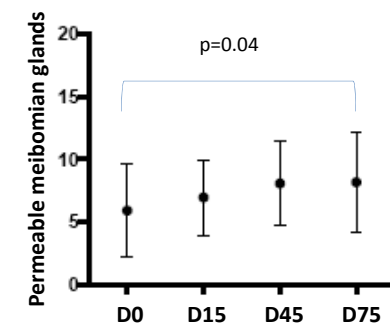
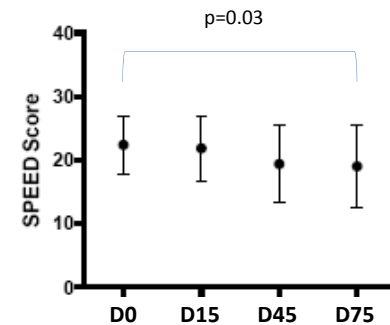
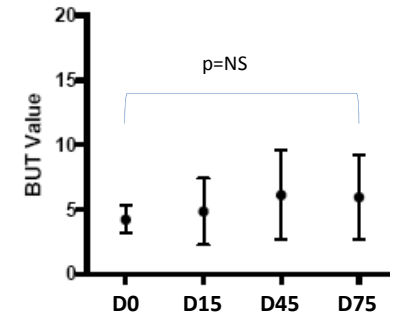
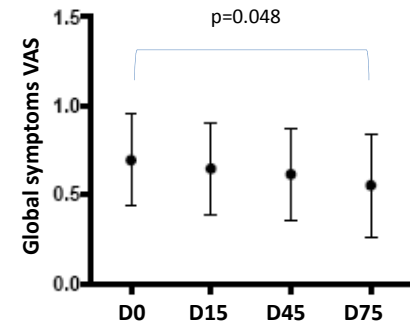
Statistical analysis compared D0 to D75 parameters, using 2-ways Friedman or ANOVA testings.

Results

- 20 patients (20 eyes, evaluation of worst eye) (5 males, 15 females), mean age, 47 ± 15 years (range 24 to 74 years) were included.
- 70% of cases showed an improvement of symptoms more than 20% decrease of VAS or SPEED.
- Symptoms were significantly decreased at D75, as well as inferior lid margin redness; number of permeable meibomian glands increased.
- BUT tended to increase
- No change in meibum quality was noted



	D0	D75	p
Global symptoms VAS (mm)	69 ± 25	55 ± 29	0.048
SPEED score	22.4 ± 4.6	19.0 ± 6.5	0.03
BUT (sec)	4.2 ± 1.1	5.9 ± 0.7	NS
Permeable meibomian glands (out of 15)	5.9 ± 3.7	8.1 ± 4.0	0.04
Corneal staining	0.3 ± 0.6	0.3 ± 0.4	NS
Lid margin redness (n= 6)	1.4 ± 0.9	0.6 ± 0.8	NS



Discussion

The mechanism of action of IRPL is not clear : thermal effect is unlikely. Neuronal, vascular and anti-infectious effects could be discussed.

Similar results have been reported with the E>Eye® machine in New Zealand by Craig J *et al*² and China by Jiang X *et al*³, with a greater effect on BUT, meibum quality and lipid layer thickness.

Conclusions

IRPL is a promising treatment of MGD . Large scale controlled studies are needed.

References

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