# COMPREHENSIVE OCULAR SURFACE WORKUP IN PATIENTS WITH MEIBOMIAN GLAND DYSFUNCTION TREATED WITH INTENSE REGULATED PULSED LIGHT

#### FRANCESCO CARONES, MD

0

MEDICAL DIRECTOR AND PHYSICIAN CEO CARONES OPHTHALMOLOGY CENTER, MILAN - ITALY

#### FINANCIAL DISCLOSURES

Francesco Carones, MD has financial interests with the following companies:

- Johnson & Johnson Vision (not relevant to this presentation)
- Alcon Laboratories (not relevant to this presentation)
- Slack Inc (not relevant to this presentation)
- WaveLight GMBH (not relevant to this presentation)
- CSO (not relevant to this presentation)
- Vivior Ltd (not relevant to this presentation)

90

### MEIBOMIAN GLAND DYSFUNCTION AND DRY EYE DISEASE

- Meibomian Gland Dysfunction (MGD) is the most common cause of Dry Eye Disease (DED)
- Patients suffering from MGD are significantly increasing, illness of the century
  - Multi-factorial disease: hormones, climate, pollution, food, etc.
- Subjective symptoms, vision fluctuation, visible signs as to be a social impairment in some cases

### MEIBOMIAN GLAND DYSFUNCTION AND DRY EYE DISEASE

- Traditional therapy for MGD:
  - Eyedrops: artificial tears, corticosteroids, antibiotics
  - Physical: warm patches, eyelids hygiene
  - Mechanical: Meibomian glands expression
- Need compliance, costs, perseverance, frustration
- Results are not always there  $\rightarrow$  unhappy patients

## INTENSE REGULATED PULSE LIGHT (IRPL) THERAPY

#### Novel approach for MGD therapy

- Mechanism of action is neurological
- Infrared nerve stimulation induces a return to normal activity of the Meibomian glands





90

### **IRPL PROTOCOL**

The full success of treatment depends on the compliance with 3 sessions as follows:

- Day 0
- Day 15
- Day 45
- (Day 75 optional)
- SIMPLE AND FAST
- Eye mask are adjusted on patients eyes
- The gel is applied on the cheekbone and the temporal areas
- A series of 5 flashes are applied under each eye



56 eyes, 28 patients with clinical signs and symptoms of MGD, assessed before ant 30 days after last IRPL treatment

- Subjective improvement questionnaire (0 to 4)
- Non Invasive Tear Break Up Time (NIBUT), SBM Systems, Italy
- Lipid Layer Thickness (LLT), SBM Systems, Italy
- Meibography, SBM Systems, Italy
- Tear Film Osmolarity, TearLab Corp, USA

90

### TREATMENT PROCEDURE

- Source: Xenon Flash Lamp
- Wavelength: 580-1200 nm
- Surface area treated: 7,5 cm<sup>2</sup>
- Energy: 8-13 J/cm<sup>2</sup>
- 5 pulses of the inferior eyelid
- 3 treatments, day 0, day 15 and day 45



- Pre Rx: 7.7±10.4 sec
- Post Rx: 10.4±3.6 sec p<0.001</li>
- Improvement in 44/56 eyes 78.6%







90

### **RESULTS – OSMOLARITY**

D 320

Tear Osmolarity (mOsm/L)

315

305

300

295

290

285 280 275

PRE

p=0.002

- Pre Rx: 305.6±10.2 mOsm/L
- Post Rx: 300.7±9.5 mOsm/L p=0.002
- Improvement in 37/56 eyes
  66%



- 26/28 patients (93%) showed improvement in symptoms
- Mean value 2.25/4



POST

### **IRPL TREATMENT – CONCLUSIONS**

IRPL may be a good alternative for patients affected by MGD

- Reduces DED symptoms
- Improves break up time
- Improves tear-film lipid layer thickness
- Reduces tear-film osmolarity

Good alternative for patients who do not respond to therapy or have compliance issues

Ocular Surface Workup With Automated Noninvasive Measurements for the Diagnosis of Meibomian Gland Dysfunction

> https://www.acc.uve.abit.com/figur.abits/abits/abits/abits/ linders/abits/abits/abits/abit/function/fabits/abits/ linders/abits/abits/abits/abits/fabits/abits/abits/abits/ linders/abits/abits/abits/abits/abits/abits/abits/abits/ linders/abits/abits/abits/abits/abits/abits/abits/abits/ linders/abits/abits/abits/abits/abits/abits/abits/ linders/abits/abits/abits/abits/abits/abits/abits/ linders/abits/abits/abits/abits/abits/abits/ linders/abits/abits/abits/ linders/abits/abits/ linders/abits/abits/ linders/abits/ linders/abits/ linders/ linders/

Pergen Turnel or Appoint performent of an order order order Cost is submitted internet internetiation for Significant contention (SES).

Where the distribution is the state behavior of particle transmission of the state of the state

And Readers: This increment feature new create control working or expension, a could harmonic field for the impact of VADL As and preserving of tables behavior askes 100 T or moderated patient or, otherapper spatialities checked table check the patiented in discuss a couplet, alongware, and news presses characterization couple).

Dy yes discuss on eccels which is a much down of the second second particle statement of the object discuss of the second particle statement for the object discussion of the second sec

90

g since of requestions for (core, for more, conservations) of equipments of a (c)  $c_{\rm eff}$  , which is characterised in a spectrum of the spectrum of the

Here is summity in garnet common significations of the sense wave more fluctually, and any significant single based on all stars starsmith, which is finally and the sense of the sense stars and the stars and the sense stars and the sense stars are starting fluctual that is for the sense stars are starting fluctual that is a starting of the starting starting fluctual that is a starting starting starting starting starting starting starting starting starting fluctual that is a starting starting starting starting the probability of the starting s

-----

nice of the order is preferred.