Treating MGD and evaporative dry eye

Evaluation of a new system

By *OTEurope*

Reviewed by Dr Cati Albou-Ganem

Evaporative dry eye is caused by the loss of tear fluid through evaporation. It is known that this evaporation occurs as a result of insufficient oil in the hybrid layer coating the surface of the cornea. The meibomian glands, located in the eyelids, contribute to the oils in this hybrid layer and any obstructions or lack of function of these glands will affect the composition of the tear film and hence the rate of evaporation. Therefore, their functionality plays an important role in evaporative dry eye.

In a recent study,[1] Dr Cati Albou-Ganem (Centre National d'Ophthalmologie des Quinze-Vingts, Paris, France) and Dr R. Amar evaluated a new system (LipiFlow, TearScience, Morrisville, North Carolina, USA) to treat patients with meibomian gland dysfunction (MGD) and evaporative dry eye. "I was very interested by the performance of the diagnostic platform and thought that our dry eye patients desperately needed a solution for their problem," she said.

Evaluating a new system

To evaluate this new system, 16 eyes of 12 patients were studied. These patients had been diagnosed with MGD based on the results of a symptom questionnaire, quantification of the lipid layer thickness and standardized meibomian gland expression.

"We selected patients using the SPEED (Standard Patient Evaluation of Eye Dryness) questionnaire," explained Dr Albou-Ganem. "This questionnaire allows the patient to describe their symptoms easily." All patients studied were suffering dry eye without any surgical impact and any patient that had a score higher than 6 (out of 28) from the questionnaire were selected to have the lipid layer of their eyes analysed.

"First, the LipiView (TearScience) exam allowed us to measure the lipid layer thickness," continued Dr Albou-Ganem. It has been demonstrated that a thin lipid layer (below 70 nm) is correlated to the symptoms of dry eye, she noted.

"When the lipid layer was below 70 we analysed the functionality of the meibomian glands using the Meibomian Gland Evaluator (MGE)," she said. "The MGE allows us to apply a constant force to the lid, mimicking the force of a deliberate blink. Therefore, we can observe the secretions expressed at each blink. For the first time, we were able to reproducibly look at secretions."

If the number of meibomian glands capable of secreting clear and liquid lipids was below 5 (out of 15 that were observed), Dr Albou-Ganem and Dr Amar confirmed diagnosis that the patient was experiencing evaporative dry eye as a result of MGD. A direct correlation between the number of functioning glands and the symptoms of dry eye has also been previously demonstrated **[QA: Is this based on a previous paper? If so, please could you provide the reference?]**

LipiFlow treatment

Once the patient had been confirmed as having evaporative dry eye as a result of MGD, the team used the LipiFlow treatment, which has been designed to unblock the meibomian glands and restore their function. "This system applies a constant heat to the posterior face of the lids during 12 minutes and a series of pulsations on the outer face of the lids in order to massage them," added Dr Albou-Ganem.

"By applying the right temperature and a moderate pressure, it is not painful for the patients and very efficient," she continued. "We could observe a significant improvement in the gland function."

Application of a constant temperature is also important, she explained as a temperature of 42.5 ^{o}C is necessary to liquefy the secretions that block the glands. "It is important to note that this temperature is not only applied to the lid margin but to the whole surface of the posterior lids, unblocking the glands in their depth," Dr Albou-Ganem asserted.

Decrease in symptoms

It was found that through the use of this system all patients experienced a decrease in symptoms at 12–18 months post-treatment. "Symptoms decreased at 1 month for most of the patients," revealed Dr Albou-Ganem. "What was very astonishing, was that we observed symptomatic control at 12–18 months."

These results are inline with the multicentric randomized study that had been conducted in the US to gain FDA approval for the treatment and Dr Albou-Ganem noted that further results from a study by Dr Greiner (published at the AAO last year) has also demonstrated similar outcomes after 3 years **[QA: Please could you provide the references for these studies?]**. "This is very encouraging and creates a lot of hope for the patients and the ophthalmologists using this technology," she said.

A great improvement

"This new system is a great improvement in the way we can treat MGD patients," stressed Dr Albou-Ganem. "For the first time, we can propose something to them that will free them from their daily warm compress therapy and symptoms."

The system also provides an effective and, importantly, a quick treatment for patients. "When you see a patient who has been suffering from dry eye for several months and who tells you after 1 month 'I don't feel my eyes anymore', as an ophthalmologist, you feel very grateful," she said.

"The TearScience system is revolutionizing our approach of dry eye because it creates satisfaction for patients and practitioners," Dr Albou-Ganem concluded. "We now know that 86% of dry eye patients are suffering from MGD related dry eye. I am very confident that this system will become the standard of care for evaporative dry eye in the near future."

References

1. C. Albou-Ganem and R. Amar, *A novel system for the treatment of meibomian gland dysfunction and evaporative dry eye with a 12 to 18 month follow-up*, Poster presentation, ESCRS 2012, Milan, Italy.

Special contributor
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