

## **WHAT WERE THE DIFFERENCES IN TEAR FILM AND MEIBOMIAN GLAND-RELATED PARAMETERS ASSOCIATED WITH THE EFFECTIVENESS OF IPL**

**TREATMENT? A RETROSPECTIVE STUDY.** Reiko Arita,<sup>1,2</sup> Mansaku Takano,<sup>2</sup> Shima Fukuoka,<sup>2,3</sup> Itoh clinic,<sup>1</sup> Saitama, Japan, Lid and meibomian gland working group,<sup>2</sup> Saitama, Japan, Omiya Hamada Eye Clinic,<sup>3</sup> Saitama, Japan

**Purpose.** Intense Pulsed Light (IPL) is an effective treatment for meibomian gland dysfunction (MGD). We retrospectively examined the differences in tear film and meibomian gland-related parameters before IPL between the effective and ineffective patients.

**Methods.** MGD patients who received four or more IPL treatments at four-week intervals at Itoh Clinic between January 2022 and December 2023, had complete data for all tear film and meibomian gland-related parameters, and were followed up for more than three months were included in the study. Subjective symptoms (SPEED), quality of lipid layer by interferometry, eyelid margin findings (plugging, vascularity), meibum grade (upper), fluorescein tear break-up time (FBUT), corneal and conjunctival epithelial damage by a slit-lamp, meiboscore (upper and lower), morphological changes in the meibomian glands by non-contact meibography, and Schirmer value were investigated. The IPL was considered effective when both the SPEED score improved by 5 or more and the meibum grade improved by 1 or more.

**Results.** Out of the 872 MGD patients treated with IPL, 73 patients included in the study had an average age of  $52.5 \pm 14.7$  years, with 47 males and 26 females. There were 58 patients in the effective IPL group and 15 in the ineffective IPL group. There were no significant differences in age, sex, average number of IPL treatments, or symptoms between the two groups. Plugging and vascularity grades were significantly lower in the ineffective group compared to the effective group ( $P = 0.008, < 0.001$ ). The upper meibum grade and upper meiboscore were significantly higher in the ineffective group ( $P = 0.010, 0.011$ ). In meibography findings, the ineffective group showed significant dropout in the upper temporal and nasal as well as in the lower central eyelids ( $P = 0.008, < 0.001, 0.007$ ). Additionally, patients with thinner meibomian glands in the upper eyelids and thin ducts around the orifices in the upper and lower eyelids were significantly more common in the ineffective group ( $P = 0.018, 0.041, < 0.001$ ).

**Conclusions.** Patients with dropout, thinner upper meibomian gland ducts, and poor quality of upper meibum showed resistance to IPL treatment even if they had fewer eyelid margin findings. Meibography was necessary in evaluating the prognosis of IPL treatment. [We had no grant or commercial support.]