

Recent advances in meibomian gland dysfunction

Reiko Arita

Meibomian gland secretes lipids (meibum) into the tear film and prevent excessive evaporation from the tearfilm. We developed “Non-invasive Meibography”, which enables us to observe meibomian gland without any invasive manner and discomfort sensation. The meibography system comprises a slit lamp (BG-4M and DC-4, Topcon) equipped with an infrared transmitting filter and an infrared charge-coupled device video camera. In addition to that, a mobile pen-shaped meibography system comprises an LED as a light source, a highly sensitive CMOS video camera for acquisition of clear images (Meibom pen, Japan Focus Corporation). Based on the obtained images of meibomian glands, the lost area of the meibomian gland was semi-quantitatively evaluated as meibo-score. Partial or complete loss of meibomian glands was scored for each eyelids from grade 0 (no loss of meibomian gland) through grade 3 (the lost area was more than two-thirds of total meibomian gland area). Since we established the observation method of meibomian gland and the evaluation method, we investigated the alternation of the meibomian gland by aging, meibomian gland dysfunction, aqueous deficient dry eye, contact lens wear, allergic conjunctivitis or anti-glaucomatous eye drops use. Especially, we found that the decreased temperature of tarsal conjunctiva in patients with meibomian gland dysfunction was detected, where the area was coincided to the lesion of lost area of meibomian glands by meibography. In addition to the semi-quantitative evaluation for meibomian gland, we developed the automatic quantification program of meibomian gland area. This method enabled us to evaluate the efficacy of the treatment for meibomian gland dysfunction. In this talk, I am going to review the series of investigations in non-invasive meibography, and present the latest studies about meibomian gland dysfunction.