

<シンポジウム I しわを科学する>

しわの形態評価 — しわ量の深さ別分布の加齢変化 —

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Evaluation of Wrinkle Appearances — Age related changes in the amount of wrinkles at different depth levels —

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Summary

To evaluate the appearances of wrinkles precisely, we developed a method for measuring the amount of wrinkles at different depth levels and measured the age related changes of wrinkles at the corner of the eye.

In the present method, we used a replica photographing system and image analysis, and could measure the depth of wrinkles and the ratio of wrinkled area (RWA: ratio of the total area in the depth direction caused by wrinkles in the measured area, showing the amount of wrinkles). Then, we classified all wrinkles observed in the measured area into 9 groups by depth, and measured the RWA for each depth group.

From the results of measurement of wrinkles in the corner of the eyes of 120 Japanese women, aged from 20 to 77, we thought the process of wrinkle formation could be divided into 2 stages. The RWA showed a significant increase in the latter half of the 20s to the 30s, due to many fine grooves 0.1 mm or less in depth. This phenomenon seemed to be the first stage in the formation of wrinkles. Then, in the second stage, the depth of the wrinkles increased significantly in the 40s or older. This acceleration in the increase of wrinkle depth seemed to be caused by a vicious circle, where the greater the partial difference in solar elastosis, the greater the differences in sunlight exposure to the skin surface.

From the results of measuring the age related changes in the RWA for each depth group, it became clear that deep wrinkles increased with aging, but small wrinkles decreased on the other hand. That is, the RWA of wrinkles less than 0.1 mm in depth increased in the 30s, but tended to decrease in the 40s and over. The RWA of wrinkles with a depth from 0.1 mm to 0.15 mm showed a maximum value in the 40s, and the RWA with a depth from 0.15 mm to 0.2 mm showed a maximum value in the 50s. The RWA of wrinkles over 0.2 mm in depth showed a simple increase with aging.

Using this method, we could measure both the depth and the amount of wrinkles at the same time, so it is useful to study the changes in the amount of wrinkles for each depth group by various factors.

Key words: wrinkle, aging, image analysis, solar elastosis