Synopsis of Original Research Paper

Water-barrir function and lipid composition of stratum corneum in acne vulgaris

Ayako Yamamoto

Department of Dermatology, Niigata University School of Medicine

In acne vulgaris, abnormal follicular keratinization is important for comedo formation, yet no precise mechanisms of comedogenesis is known. The present study examined the interrelationship between sebum secretion rate (SSR), and lipid content and water-barrier function (WBF) of stratum corneum (SC) in 36 acne patients and 29 control subjects. All major SC lipid classes were separated and quantitated by thin-layer chromatogrphy/photodensitometry. WBF was evaluated by measuring transepidermal water loss (TEWL), and hygroscopic property and water-holding capacity of SC. SSR for 3h was significantly larger in patients with moderate acne than in control subjects, but no significant difference was noticed between patients with mild acne and control subjects. Significant differences between acne patients both moderate and mild and control subjects were noted in the amount of sphingolipids (ceramides and free sphingosine), but not for any other lipid classes. Furthermore in acne patients, lower amount of sphingolipids were observed corresponding to diminished WBF. These results suggest that impaired WBF caused by decreased ceramides may be responsible for comedo formation, since barrier dysfunction is accompanied by hyperkeratosis of follicular epithelium.