Harmful effects of synthetic surface-active detergents against atopic dermatitis

Two cases of intractable atopic dermatitis were successfully treated by simply avoiding the contact with surface active detergents in the daily life and living. The detergents were closely related to the exacerbation and remission of the disease. Steroid ointment was no longer used. The removal of horny layer lipids by surface-active detergents may accelerate the transepidermal water loss and disturb the barrier function of the epidermis, and thus is intimately involved in the pathogenesis of atopic dermatitis.

Late Dr. Yoshinari Isobe at Isobe Clinic, Anjo, Aichi, Japan was a unique, veteran specialist for treating atopic dermatitis without steroid ointment. He successfully treated the severe atopic dermatitis by the simple avoidance of the contact with surface active detergents in the daily life and living.

Ref: Deguchi H, et al. Harmful effects of synthetic surface-active detergents against atopic dermatitis. Case Rep Dermatol Med 2015; Article ID 898262 (5 pages). doi: 10.1155/2015/898262

Case 1: 50 y-o male patient

After a 10-month history of chronic prurigo treated with steroid ointment, he visited Isobe Clinic in Anjo, Aichi, Japan, in November, 2010. He complained of itchiness all over his body, resulting in difficulty in sleeping. Based on the chronic and repetitive rash with itchy sensation, the diagnosis of atopic dermatitis was made (Figure 1a). With the radioimmunosorbent assay for allergens in January, 2011, no specific antiallergens were identified in the serum. The serum IgE level was not significantly high, 189 IU/mL (normal range: ~170 IU/mL). Bacterial culture tests were performed four times during November, 2010, through April, 2013, and any specific pathogens were detected. The biopsy performed from his right abdominal skin (Figure 1) revealed reactive downward acanthosis with lymphocytic exocytosis and spongiotic reaction focally resulting in small vesicle formation. An eosinophilic microabscess was formed in the parakeratotic horny layer. The granular keratinocytes have disappeared. Superficial perivascular infiltration of lymphocytes and eosinophils was associated.

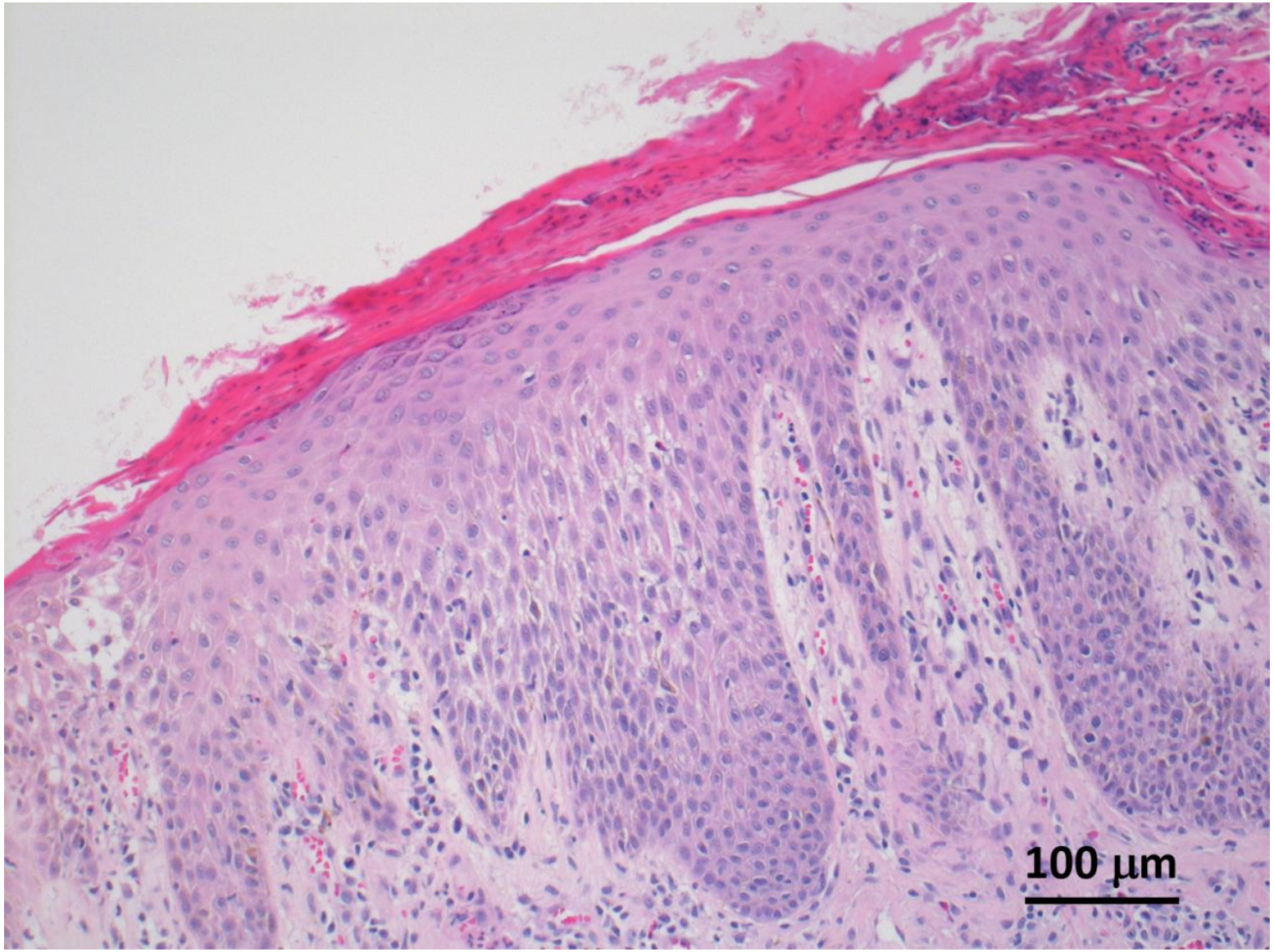

Figure 1. Microscopic features of the biopsied abdominal skin in case 1 (a 50 y-o male patient) (H&E). The involved epidermis reveals reactive downward acanthosis with lymphocytic exocytosis and spongiotic reaction focally resulting in small vesicle formation. An eosinophilic microabscess is formed in the parakeratotic horny layer. The granular keratinocytes have disappeared. Superficial perivascular infiltration of lymphocytes and eosinophils is associated.

The patient was asked to avoid using synthetic surface active detergent-containing material such as cleansing soap, household synthetic detergents, shampoo and conditioner, and cosmetic cream and lotion. The use of natural soap was also avoided. When bathing, the hair and body were washed only with warm or tepid water. The skin was cared with an ointment consisting of a mixture of vaseline and urea (urea concentration: 0.12%). When necessary, Amikacin (aminoglycoside antibiotics) was intramuscularly injected. The antibiotics were administered because of the clinical suspicion of coinfection of anaerobic bacteria. His skin condition was not significantly improved soon, and the rash was exacerbated in January, 2011. Figure 1c demonstrates the worst state of his erythematous rash on the back, photographed 10 days after Figure 1b.

One of the reasons for the exacerbation was considered to be linked to the fact that the cosmetic companies recently increased the concentration of synthetic surface-active agents in their products, including shampoo, hair conditioner, and synthetic cleaning soap. The patient was again advised to avoid strictly contacting with the detergent-containing material and using soap without detergents “Bajan” (soap prepared by electrolysis of sodium bicarbonate water, Kenbi, Iwate, Japan) for washing clothes. Two months later, the skin rash was improved with much less itchy sensation (Figure 1d). Thereafter, the avoidance strategy effectively alleviated the condition of his skin. One and half years later, the skin rash was controlled completely (Figure 1e), and his symptoms including itchy sensation disappeared and he became able to sleep well. In March, 2014, itchy skin rash recurred, because his wife started to use the detergent-containing synthetic cleansing soap, which is widely used in Japan. On inspection, small-sized rash accompanied by itchy sensation was observed on his back (Figure 1f). For the symptom less two-year period, he and his wife believed that his atopic dermatitis has been cured completely. Reeducation of the patient and his wife was necessary to improve his skin condition. In March, 2014, his serum IgE level remains low as 59 IU/mL.

Figure 2. Clinical features of skin rash on the back in case 1 (a 50-year-old male patient). (a) December 4, 2010 (the first medical inspection), (b) January 12, 2011 (exacerbation), (c) January 26, 2011 (the worst state with erythematous reaction), (d) March 16, 2011 (alleviation), (e) July 17, 2012 (remission), and (f) March 11, 2014 (recurrence). Strict avoidance of the detergent-containing material and usage of cleansing soap without detergents were quite effective to control atopic dermatitis.

Case 2: 48 y-o female patient

In this middle-aged housewife, the diagnosis of atopic dermatitis was made when she was a junior high school girl. In order to control the skin rash, steroid ointment was administered for some 40 years. The control status was not excellent, and she occasionally complained of itchiness all over the body. In June, 2007, she met Dr. Isobe who gave a lecture on how to treat and control atopic dermatitis. Dr. Isobe personally delivered an ointment containing dibucaine and hydrophilic vaseline, which significantly relieved her itchy sensation. When her skin rash was under control by the topical use of steroid subscribed from a university hospital, she happened to use shampoo and body soap equipped in a hotel. Thereafter, her face became markedly swollen by severe and itchy rash with secondary infection and scratch injury (Figure 3a).

She thought that this event occurred as a rebound phenomenon of steroid therapy. Finally, the patient visited Isobe Clinic in October, 2007, and she was advised to avoid using synthetic surface-active detergent-containing material such as cleansing soap, household synthetic detergents, shampoo and conditioner, and cosmetic cream and lotion, and the skin was coated with an ointment containing a mixture of vaseline and urea. The use of natural soap was also avoided. Concurrently, antihistamine, Chloromycetin and Ofloxacin (antibiotics), vitamin compounds, and antianxiety drug were administered. Anti-inflammation drugs were also used when necessary.

By the end of November, 2007, her skin condition improved dramatically (Figure 3b). Thereafter, she continued to avoid thoroughly using the detergent and soap. In July, 2014, the condition of her skin was kept well without steroid therapy any longer.

Figure 3. Clinical features of facial skin rash in case 2 (a 48-year-old female patient). (a) October, 2007 (severe rash), (b) June, 2014 (complete remission). After the patient happened to use shampoo and body soap equipped in a hotel, her face became markedly swollen by severe and itchy rash with secondary infection and scratch injury. Complete avoidance of the detergents and cleansing soap led to long-lasting complete remission without using steroid ointment. The patient allowed us to present her whole face.

Conclusions:

We report herein two representative adult patients who showed exacerbation of atopic dermatitis after the contact with surface-active detergents and the disuse led to the remission. We propose that the removal of horny layer lipids by surface-active detergents is intimately involved in the pathogenesis of atopic dermatitis, as late Dr. Yoshinari Isobe published Japanese-written books for promoting the general public and dermatitis patients to avoid using soap and detergents.

Ref.-1: Isobe Y, Atopic Dermatitis. You Can Cure without Steroid Therapy, Waseda Publishing, Tokyo, Japan, 2001 (in Japanese).
Ref.-2: Isobe Y. No Washing and No Atopic Dermatitis, Kodansha Publishing, Tokyo, Japan, 2011 (in Japanese).