

# The xerotic nephrologist

Ralph Douglas Wilkinson

In the early Montreal autumn, Dr. N (a nephrologist) approached me about a persistent itchy area on his leg. I was prodded for a diagnosis and an explanation, which resulted in a series of short and pithy interactions. He appeared to be in good health as he approached mid-life, and he exercised regularly at a gym.

The diagnosis was asteatotic (delipidized) dermatitis, not a fungal infection, scabies or contact dermatosis. The lesion had been aggravated and perpetuated by some scratching and repeated contacts with warm soapy water after workouts. It was located on the shin, an area where hair follicles and sebum are scant.

Climate was an important factor. The lesion became itchier as the season progressed, because of lower humidity indoors and outdoors.

Age played a role as well. After birth, sebum disappears for years, popping back with a vengeance at puberty and peaking in the late teens. Levels decline with advancing age, in step with decreasing androgen levels.

Dr. N's bathing habits were discussed. Practised with vigour during adolescence and young adulthood (when sebum was aplenty), his showers would have to be toned down to maintain the skin's wax coat. Sebum melts at 30°C, and hot water washes away the protective barrier, especially on the shoulders, upper arms and back, where the impact of the shower jet is strongest.

Physical exercise may have provided an additional source of irritation. Vigorous exercise increases eccrine sweating during the ensuing hours, and a salt residue collects on the skin. Without a wax barrier, this deposit can be irritating. Teleologically, sebum evolved long before eccrine sweat. Most mammals have sebum, only a few have eccrine sweat. When eccrine glands evolved, their secretions were kept off the epidermis by the waxy barrier. However, with modern-day hygiene, hot, soapy water has changed Nature's plan by removing both the sweat and the barrier; sweat can return in seconds, but sebum requires hours. This "sebaceous hiatus" lengthens with age.

The xerotic nephrologist accepted the following advice: for one epidermal cycle (a month), he was instructed to use water no hotter than 27°C (the temperature of the back of

the hand), to avoid all soap except for hand-washing and to avoid shampoos and lipid solvents for general bathing. To keep the experiment simple, exogenous lipids and topical medications were also to be avoided. In follow-up he informed me that, although compliance was not perfect, the lesion cleared up quickly. He was surprised at the speed of the response, without topical applications, and without complaints from colleagues.



*Homo erectus* existed for over a million years using the cool-water, no-soap system. The earth's general fauna still use this system, which removes sweat without disturbing the waxy barrier. Housing and clothing have afforded us much protection, and our lipid layer has become somewhat expendable. A duck, however, would sink without its waxed feathers. For older people, preteens and people with very dry skin, emollients in the form of oils, lotions or creams may offer some help. If necessary, lotions without potential irritants such as perfumes, dispersants and preservatives can be used.

Human sebum has a tendency to oxidize to a brownish hue, much like earwax. It is the "ring around the collar." Sebum has a sunblock action estimated to be about SPF 6-8. Its removal may lead to cleaner collars, but it leaves the skin at higher risk for sun damage.

The sun can cause skin damage on bald spots, which are sebum poor. The incidence of skin cancer on the head and face is high in North America. So is the use of soap and shampoo. Are they causally related? Sun damage in the child may be more severe than in the adult. Is this due in part to the absence of sebum in the preadolescent?

My advice: wash with cool water, minimize or eliminate the use of soap, and wear a hat!

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