Asteatotic eczema (eczema craquelé, xerotic eczema) is typically associated with cutaneous loss of lipids, resulting in xerosis of the skin secondary to transepidermal water loss, most commonly seen during the winter months. The classic description is that of polygonal erythematous fissures separating plates of dry scaly skin, sometimes described as “cracked porcelain,” “crazy pavement,” or a “dry riverbed” appearance.

Asteatotic eczema is more common in older individuals, possibly because of an age-dependent decrease in sebaceous and sweat gland activity and deficient formation of membrane-coating granules, which lead to the disappearance of the lipid film that surrounds the cells in the stratum corneum. The intercorneocyte lipid is formed by expulsion of ceramides from the lamellar bodies in the granular layer to form broad sheets in the intercorneocyte space that help form the water barrier. Analysis of sebum-derived lipids present in the stratum corneum revealed a significant decline in free fatty acids and triglycerides in asteatotic eczema.

Although asteatotic eczema has been observed in denervated skin, it is an underrecognized condition when presenting in younger patients and in unusual locations. We describe 5 cases in which the condition was limited to scars or on hypoesthetic skin.

**Case Report/Case Series**

**Asteatotic Eczema in Hypoesthetic Skin**

**A Case Series**

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**IMPORTANCE** Asteatotic eczema (eczema craquelé, xerotic eczema) occurs most frequently in areas of dehydrated skin, most often during the winter months when decreased humidity results in increased water loss from the stratum corneum. We present 5 cases in which asteatotic eczema was found outside of its normal distribution, within desensitized skin and scars.

**OBSERVATIONS** Five patients with a history of trauma and scar formation presented with erythematous, dry plaques with fine cracking involving hypoesthetic skin. Each of the 5 patients had classic astetaotic eczema skin findings, the only commonality being hypoesthesia. Borders of the hypoesthetic skin were identified using light touch and compared with the regions affected by asteatotic eczema. In all cases, the skin affected by asteatotic eczema was within the hypoesthetic areas.

**CONCLUSIONS AND RELEVANCE** Asteatotic eczema developing on skin with altered sensation is an underreported condition. Prompt recognition and treatment may lead to a more efficient patient encounter and alleviate unnecessary patient stress.


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A male wounded military member in his 30s presented with a new dermatitis on his left shin. Approximately 5 months prior, he had sustained several gunshot wounds, resulting in compartment syndrome of his left lower leg. He underwent emergency fasciotomy of his left lower leg, and has had resultant well-demarcated decreased sensation in his anterior left shin since that time. On presentation, the area of hypoesthesia on his anterior shin to his sock line had a plaque of erythematous polygonal fissures with serous exudate and yellow crust. A bacterial culture was positive only for normal skin flora. Resolution of the dermatitis was achieved rapidly with topical corticosteroids and treatment was transitioned to emollients for maintenance.

**Case 2**

Another male wounded military member in his 30s presented with a chronic dermatitis on a large area of his left hip. Approximately 2 years earlier, he had experienced a traumatic left hemipelvectomy, in addition to soft-tissue injuries to his right forearm and back. He had developed a plaque of erythematous polygonal fissures limited to the areas of skin with decreased and absent sensation. On his left residual pelvis and hip, the plaque was well demarcated and encompassed nearly all areas of decreased sensation (Figure 1). On his forearm and back, a similar-appearing plaque of erythematous fissures was limited to all of his well-healed scars.

**Case 3**

A wounded military member in his 20s presented with a mildly pruritic waxing and waning dermatitis of traumatic and surgical scars, as well as a skin graft site. He had a history of traumatic left below-the-knee amputation and extensive right lower ex....
Asteatotic eczema in hypoesthetic skin

Case 1
A 30-year-old man with a history of a right inguinal lymph node dissection 9 months earlier presented with a well-circumscribed 5-cm plaque of erythematous polygonal fissures, which responded rapidly to topical corticosteroids.

Case 2
A woman in her 70s with a history of a right inguinal lymph node dissection 9 months earlier presented with a well-circumscribed 5-cm plaque of erythematous polygonal fissures, which responded rapidly to topical corticosteroids.

Case 3
A woman in her 80s with a history of breast cancer presented with plaques of erythematous polygonal fissures along scars on both breasts. She had undergone breast surgery 2 decades ago and had resulting decreased sensation across the anterior portion of both breasts. The fissures were limited to well-healed scars on bilateral anterior breasts (Figure 3).

Discussion
Asteatotic eczema can be localized or generalized. The localized form is thought to be due to cutaneous loss of lipids, which then leads to transepidermal water loss. The water loss increases skin sensitivity to environmental insults including soap, decreased humidity, and decreased temperature. There are many references in the literature to asteatotic eczema in neurologic disorders, but nearly all refer to one case report in 1975 of a presentation in skin with decreased sensation. We report a series of 5 patients who similarly presented with asteatotic eczema in the setting of altered skin sensation to draw attention to a condition that is underreported but may be highly prevalent.

The skin of all 5 patients was tested using light touch. The borders of the hypoesthetic skin were defined, and all asteatotic eczema was confined within these areas, although not all hypoesthetic skin was involved. None of the patients reported a history of atopic dermatitis or the use of special cleansers, ointments, or dressings in the affected areas. Allergic and irritant contact dermatitis were initially considered, but were less likely given the lack of special treatment.

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Asteatotic Eczema in Hypoesthetic Skin

Figure 1. Area of Outlined Sensation Tested Using Light Touch

Nearly the entire area of hypoesthetic skin on the patient’s left residual pelvis and hip had skin findings of asteatotic eczema.

Figure 2. Asteatotic Eczema Within Scars and Skin Graft Site on the Right Thigh

All involved sites were hypoesthetic.

Figure 3. Anterior Left Breast With Decreased Sensation

A faint, well-healed scar is visible laterally across the surface, in the background of asteatotic eczema.

A faint, well-healed scar is visible laterally across the surface, in the background of asteatotic eczema.
Hypotheses for why asteatotic eczema occurs within hypoesthetic skin are limited. A contributing factor to asteatotic eczema is lipid loss, leading to transepidermal water loss. The common factor in all 5 patients was decreased sensation to light touch. Murray and Forsey described areas of decreased sensation as having decreased sweating and hypothesized that eccrine glands have a contributory role in the development of eczema. Eccrine glands are innervated by the sympathetic nervous system, specifically through cholinergic and adrenergic fibers. When the sympathetic nervous system is activated, there is an increase in the secretion of sweat. A similar outcome is seen with the stimulation of the autonomic nervous system. If this system is dysfunctional, sebaceous glands will not release sebum-derived lipids and the skin will lose water and become dry, predisposing to the development of eczema. Generally, asteatotic eczema is caused by low humidity and the incidence increases during the winter months, but the body may be able to simulate these circumstances with decreased eccrine innervation.

Another explanation why asteatotic eczema occurs within hypoesthetic skin may be a dysfunction in the intercorneocyte lipid formation. If there is a problem with the release of ceramides from the lamellar bodies, the water barrier will be unable to form properly. The scar tissue seen in these 5 patients may affect the function of the granular layer and the transportation capabilities of the skin. The main function of the stratum granulosum is lubrication and protection of keratin. One study described an increase in keratinocytes in the stratum granulosum and reepithelialization after an inflicted wound in mice. This hyperkeratinization may impair the ability of the skin to produce this intercorneocyte lipid film.

Conclusions

Asteatotic eczema in hypoesthetic skin, both scarred and not scarred, is underrepresented in the literature. Basic science research on asteatotic eczema is also limited, leading to much conjecture about the development of this condition. Although the treatment remains the same as the standard of care, the importance of diagnosis and reassurance cannot be understated. In our patient population of wounded members of the military services, some of whom have undergone unusual and life-threatening complications, the eruption of a mysterious undiagnosed dermatitis is an added stressor. For both dermatologists and primary care physicians caring for these patients, rapid diagnosis and treatment may save unnecessary additional concern and stress, as well as hasten a plan to improve the skin barrier, resulting in lower infection risk. The goal of this article is to increase awareness, especially in the setting of increased numbers of wounded military members returning to their home communities.