Thermal pillow: an unusual causative agent of erythema ab igne

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Erythema ab igne (EAI), also known as "toasted skin syndrome" or "heat-induced circumscribed dermal melanosis", presents with pigmented reticular skin lesions with telangiectasias due to prolonged thermal radiation exposure. This article describes a 16-year-old male patient with EAI due to the use of a thermal pillow, and discusses a potential causative agent of EAI. The potential hazards of misusing new technological equipment and the importance of consumer education are also discussed.

Key words: erythema ab igne, thermal pillow, reticulate hyperpigmentation, facial.

Erythema ab igne (EAI) is a reticular, macular dermatosis that develops secondary to prolonged and repeated skin exposure to mild heat in the range of 43–47°C, insufficient to produce a burn[1,2]. EAI appears generally on the shins and inner thighs after exposure to heat from a space heater, stove or fireplace in close proximity. The condition can appear in chefs and bakers as an occupational disease[3]. EAI can even arise in the lumbar region due to exposure to heating pads or hot water bottles in patients with chronic backache. Although patients are generally asymptomatic, complaints of burning and itching are sometimes reported. In certain patients, the symptoms are associated with an underlying systemic disease. Although the associated lesions are benign, chronic heat exposure may result in dysplasia and, rarely, squamous cell carcinoma[4,5].

Reticulate discolorations are also typical in patients with EAI. For this reason, clinical conditions that manifest in similar ways, such as thrombosis, vascular spasm and vasculitis, should be excluded[6]. In such cases, EAI can be diagnosed after obtaining the history of heat exposure through a detailed questioning. Here, the case of a male patient with EAI on the neck region is presented.

Case Report

A 16-year-old male patient presented to our clinic complaining of a red-brown rash in the neck region. His history revealed that these symptoms had been present for the last month and had spread with time. The dermatological examination revealed red-brown macular lesions in a reticular pattern extending from the left side of the neck to the cheek (Fig. 1). The dermatologic examination revealed a red-brown reticular pigmentation localized to the left neck and cheek (Fig. 1). The physical examination was otherwise unremarkable. There was evidence of peripheral telangiectasias without epidermal changes. The patient claimed that he had no close contact with a heating appliance; however, closer questioning revealed that he had been using a thermal pillow while sleeping at night for the last two months. Notably, the patient typically sleeps on his left side. The skin alterations first appeared four weeks after the patient had begun to use the pillow.

Dermoscopic examination of the lesion revealed homogeneous red-brown pigmentation and erythema around the macules. The results from laboratory examinations, liver/kidney function tests and complete blood count and levels of C-reactive protein were within normal limits. The erythrocyte sedimentation rate was 20 mm/hour, and the patient tested negative for syphilis. Histological examination of a biopsy taken from the lesion showed ortho-

hyperkeratosis and mild acanthosis with basal vacuolization; the dermis showed dilatation of postcapillary venules and a perivascular infiltrate of moderate intensity consisting of lymphocytes, plasma cells, histiocytes, and a few melanophages (Fig. 2).

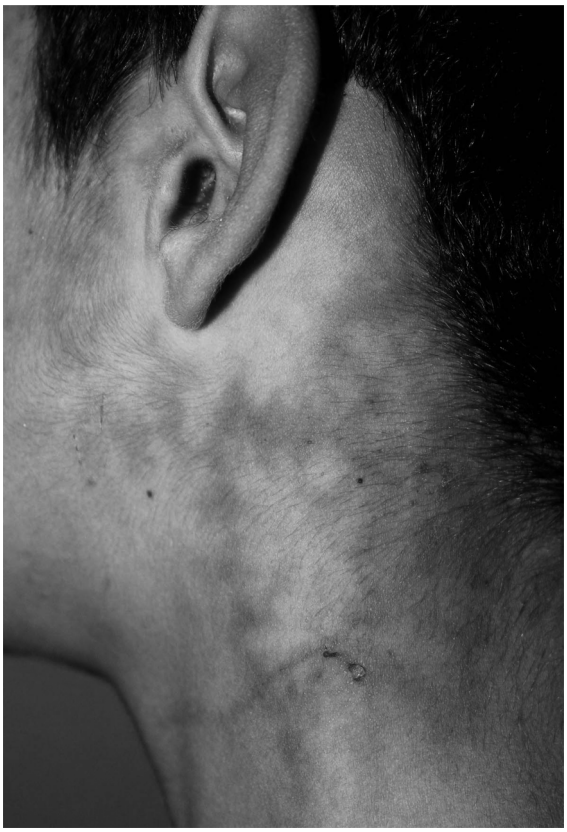

Fig. 1. Reticulate erythematous red-brown pigmentation with peripheral telangiectasia on the left neck and cheek is seen.

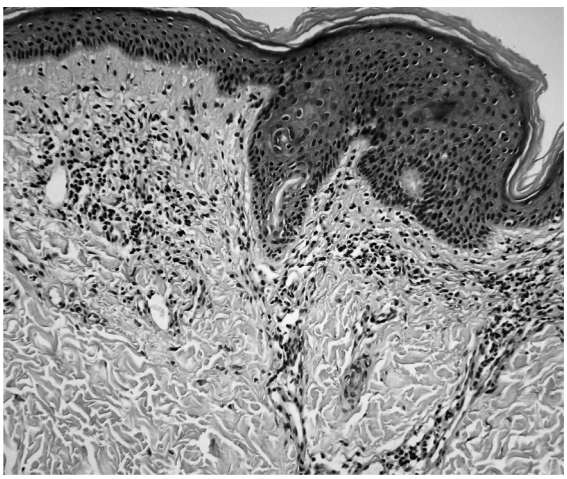

Fig. 2. Histopathology showing ortho-hyperkeratosis and mild acanthosis with basal vacuolization. The dermis shows dilatation of postcapillary venules and a perivascular infiltrate of moderate intensity consisting of lymphocytes, plasma cells, histiocytes, and a few melanophages [hematoxylin and eosin stain (H&E); original magnification X100].

Discussion

Erythema ab igne (EAI) is a localized, cutaneous condition, and presents with localized, net-like, erythematous, and hyperpigmented skin lesions, all the result of repeated exposure to thermal radiation[3,7,8]. EAI occurs particularly during the winter months in individuals who frequently use hot compresses or hot water bottles to get warm or who prefer warm environments. The lesions are usually found in women, on the legs, but can also be seen on the buttocks and thighs[3,8]. The patients should be examined for hypothyroidism, which causes hypothermia.

The disease is characterized by reticular erythema, brownish hyperpigmentation, scaling, and telangiectasia on the affected skin. Although it may be seen on any part of the body, the condition typically occurs on the legs, lower back, or abdomen. While the condition manifests as erythema in the acute phase, marked redness, brown reticular macules, and superficial epidermal atrophy appear with repeated heat exposure. Continued exposure may result in poikiloderma with erythema, pigmentary changes, telangiectasia, atrophy, and hyperkeratosis. Subepidermal bullae formation, although rare, has also been reported. While patients are usually asymptomatic, some may report sensations of burning and itching[3,9].

Depending on the intensity of the heat and the duration of contact, EAI may develop over a period of time ranging from two weeks to a few months[8,10]. In this case, the characteristic EAI lesions developed in three weeks. The lesions were thought to have resulted from the high temperature of the heat source (thermal pillow) and its direct contract with the skin.

Numerous heat sources have been reported as causative agents of EAI. When considered from the historical view, EAI generally appears within a localized area that has been warmed within close proximity to a fireplace, wood-burning stove, brazier, space heater, or steam radiator[8-10]. While the number of traditional EAI cases has decreased with the development of central heating systems, new technological devices can also cause EAI. The thermal pillow should be added to this list of devices. The lesions incurred by use of a thermal pillow

in this case affected cosmetically sensitive areas such as the face, neck and cheek. The lesions are precancerous and may develop into malignant neoplasms such as squamous cell carcinoma or Merkel cell carcinoma[4,11,12]. In our case, an early diagnosis was possible because the lesions were in a region that was easily visible.

This case demonstrates that products designed to improve quality of life may be hazardous when used by careless consumers. The manufacturers must inform consumers about the potential hazards of the products, including EAI. EAI is a benign dermatitis and gradually disappears after the cessation of heat exposure. Because of the possibility that squamous cell carcinoma or Merkel cell carcinoma can develop on EAI lesions, which are considered to be precancerous, clinicians should be alert to the rare complications in cases with a delayed diagnosis. In the treatment of patients with EAI, the patient should be informed about the disease and should be advised to avoid the heat source. In order to resolve the discoloration in the area surrounding the lesion, topical retinoids can be used alone or in combination with topical steroids[2].

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