Laptop Computer–Induced Erythema Ab Igne: A Case Report

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Erythema ab igne is a condition characterized by reticulated telangiectasia and hyperpigmentation caused by repeated long-term exposure to infrared radiation insufficient to produce a burn. We report a case of laptop computer–induced erythema ab igne.

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Case Report

A 26-year-old South Asian American woman presented with a 2-month history of a large asymptomatic patch of reticulated hyperpigmentation on her right anterior thigh (Figure). She had not noticed any changes in the patch in the past 2 months. After being questioned about possible heat exposure, she reported placing her laptop computer on her thighs and using the computer an average of 6 h/d.

We examined her laptop computer and found that the dimensions of the patch and the computer were similar. At a subsequent visit, the computer was turned on for approximately 30 minutes after which the surface temperature of the computer's underside was measured using an infrared thermometer (Meterman IR610). The right side (where the central processing unit was located) was found to be 125°F, while the left side was only 95°F, thereby explaining the confinement of the hyperpigmentation to the right thigh. This one-sided distribution also was seen in a previously reported case of laptop computer–induced erythema ab igne.[1] The patient now prevents further heat exposure by placing the laptop computer on a desk.

Comment

Erythema ab igne occurs after repeated or prolonged exposure to infrared radiation. Initially, only mild and transient erythema develops. After repeated exposure, a lesion develops that is clinically characterized by reticulated telangiectasia and hyperpigmentation.

Reticulated hyperpigmentation localized to the right anterior thigh.

Historically, erythema ab igne was found on the anterior shins of individuals who sat too close to fires or wood-burning stoves.[2] Since the introduction of central heating, the incidence of erythema ab igne has decreased dramatically. Hypothyroidism and poor microcirculation are underlying conditions to consider when erythema ab igne occurs because of space heater use, especially in elderly women.[2] Erythema ab igne also may be found in individuals who use hot water bottles or heating pads for lower back pain or other chronic pain.[3] When erythema ab igne is located at T12-L2, pancreatic pathology should be considered because patients often will apply heat to relieve the pain.[4] Gastric carcinoma, renal carcinoma, and bony metastases also have presented with erythema ab igne, overlying the source of the pain.[5] Other unusual causes of erythema ab igne include therapeutic recliners that emit heat, a heated bag of popcorn kernels, a car heater, and now laptop computers.[1,6-8]

Histologically, there is diffuse hyperkeratosis, superficial epidermal atrophy, and basal vacuolization. Also, subepidermal bulla formation rarely may occur.[9] Dermal changes include basophilic

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degeneration of collagen and an accumulation of elastic tissue. Epithelial atypia similar to the changes seen in actinic keratosis also may be seen; these lesions sometimes are referred to as thermal keratoses.[10]

Though rare, the transformation of erythema ab igne to squamous cell carcinoma and Merkel cell carcinoma has been reported.[11] Most thermally induced cancers are squamous cell carcinomas and may occur after a latent period of as many as 30 years.[12] The history of thermally induced squamous cell carcinoma includes cancers caused by customs dating back to ancient times. Kang cancer, reported in China and Tibet, results from heat emitted from kangs, large heated brick platforms used during the cold season for sleeping, eating meals, and doing leisure activities.[13] Kangri cancer of Kashmir, India, is caused by wearing a kangri, a pot of hot coals surrounded by a wicker basket, which is used as a portable heater during the winter months.[14] Turf cancer in Irish women in the 1800s and early 1900s was associated with standing close to peat fires for long periods of time.[15] With the introduction of modern heating methods, these customs and their respective cancers have declined in prevalence.

Treatment of erythema ab igne requires discontinuing exposure to the heat source. If exposure is discontinued early enough, the erythema ab igne should resolve. In dark-skinned individuals, such as our patient, residual pigmentation abnormalities may remain for months to years. Topical tretinoin or hydroquinone creams may be used to hasten resolution of hyperpigmentation.[16] Since there is a small risk for malignant transformation, patients with a history of long-standing erythema ab igne should be clinically observed and a biopsy should be performed on any suspicious area. If present, epithelial atypia can be successfully treated with 5-fluorouracil cream.[17]

Conclusion

This case demonstrates the importance of taking a thorough patient history and being open to new causes of disease when evaluating a patient. Physicians should be aware that laptop computer–induced erythema ab igne is becoming more common, and their patients should be informed of the hazards of repeated heat exposure. The general public would do well not to take the term "laptop" computer quite so literally.

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