Unilateral reticulated patch localized to the anterior thigh

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A 76-year-old white man presented with a 2-month history of an asymptomatic, hyperpigmented, telangiectatic, reticulated patch localized to the left anterior thigh (Fig 1). He denied a history of similar skin changes. He also denied recent changes in medications, trauma to the involved area, or other notable exposures. He reported use of a laptop computer for up to 10 hours per day (Fig 2). Diagnosis was made based on clinical appearance. No biopsy was performed.

Question 1: What is the most likely diagnosis?

A. Livedo reticularis
B. Cutaneous polyarteritis nodosa
C. Erythema ab igne
D. Reticular erythematous mucinosis
E. Retiform parapsoriasis

Answers:

A. Livedo reticularis – Incorrect. Livedo reticularis is characterized by reddish-blue to hyperpigmented patches in a netlike vascular pattern. It is associated with a physiologic vasospastic response to cold. The affected area is more generalized than this patient’s single lesion and is typically present symmetrically and bilaterally.

B. Cutaneous polyarteritis nodosa – Incorrect. Cutaneous polyarteritis nodosa, a necrotizing vasculitis affecting the arteries within the dermis and subcutaneous fat, may present with reticulated lesions. It is typically characterized by tender subcutaneous nodules and ulcerations. These were absent in this patient.

C. Erythema ab igne – Correct. Erythema ab igne is caused by long-term exposure to heat below the threshold for thermal burn. The precise mechanism of lesion formation is unknown, but the pigmentary pattern corresponds with the dermal venous plexus. Histologic features include dilation of dermal blood...
vessels, pigment deposition of melanin and hemosiderin, and epidermal atrophy with possible squamous atypia. This patient’s exposure to heat came from use of his laptop computer that had a left-sided fan, expelling hot air onto his left anterior thigh.

D. Reticular erythematous mucinosis — Incorrect. Typically lesions of reticular erythematous mucinosis are papules or plaques and are localized to the back or chest. The lesions are photosensitive, and histopathology findings show dermal deposits of mucin and a perivascular T-cell infiltrate.

E. Retiform parapsoriasis — Incorrect. Retiform parapsoriasis is a variant of large plaque parapsoriasis that is caused by superficial cutaneous lymphoid infiltrates composed of CD4 T cells. Typically, these lesions are plaques present at multiple locations.

Question 2: This lesion has the potential to progress into which of the following?

A. Mycosis fungoides
B. Squamous cell carcinoma
C. Basal cell carcinoma
D. Expansion to involve the lower leg
E. Sneddon syndrome

Answers:

A. Mycosis fungoides — Incorrect. Retiform parapsoriasis is a variant of large plaque parapsoriasis that is caused by superficial cutaneous lymphoid infiltrates and may progress to overt mycosis fungoides.

B. Squamous cell carcinoma — Correct. Patients suffering from erythema ab igne are at risk for the development of cutaneous malignancies within the lesion, most commonly squamous cell carcinoma. The risk has been reported to be highest with hydrocarbon heat exposures such as from coal or peat fires. The latent period may be decades. Squamous cell atypia arising within erythema ab igne has been called thermal keratosis because of its strong histopathologic similarity to actinic keratoses.

C. Basal cell carcinoma — Incorrect. Erythema ab igne has been associated with a variety of cutaneous malignancies but most commonly with squamous cell carcinoma. Merkel cell carcinoma and rarely cutaneous marginal zone lymphoma have also been reported.

D. Expansion to involve the lower leg — Incorrect. The shape and size of erythema ab igne closely approximates the heat source causing it. Erythema ab igne has classically presented with lesions on the lower legs from exposure to fires and stoves. However, this patient’s exposure to heat was from a fan on his laptop computer resting on his thigh. Involvement of the lower leg would not occur without heat directed to that area.

E. Sneddon syndrome — Incorrect. Sneddon syndrome consists of widespread livedo reticularis and cerebrovascular symptoms such as transient ischemic attacks, strokes, or dementia. It is not associated with erythema ab igne.

Question 3: What is the best first step in management?

A. Observation only
B. Topical retinoids
C. Topical 5-fluorouracil
D. Laser therapy
E. Modification of laptop computer use

Answers:

A. Observation only — Incorrect. Without intervention, the patient will continue to use his laptop computer in the same way, causing further heat exposure and damage. The most effective way to prevent the progression of erythema ab igne is removal of the responsible heat source.

B. Topical retinoids — Incorrect. This patient’s early-stage lesion will likely resolve over months after the discontinuation of heat exposure. Treatment with tretinoin may be appropriate in more advanced cases of erythema ab igne.

C. Topical 5-fluorouracil — Incorrect. Topical 5-fluorouracil cream may be used to treat the thermal keratoses associated with erythema ab igne, which are typically present in more advanced disease. The most important intervention at early stages is the removal of the offending heat source.

D. Laser therapy — Incorrect. Laser therapy may be indicated for patients with erythema ab igne who desire improved cosmesis or faster lesion resolution. It is most important to stop progression of the lesion first by removing the heat source, then cosmetic concerns may be addressed.

E. Modification of laptop computer use — Correct. The best first step in the treatment of erythema ab
igne is removal of the responsible heat source. A practical solution for this patient is the use of a lap desk, which is a thin portable board with padding underneath. The lap desk serves as a barrier between the laptop computer and the thighs. This allows the patient to continue to use the laptop computer while eliminating direct exposure to heat.

REFERENCES
1. Miller K, Hunt R, Chu J, Meehan S, Stein J. Erythema ab igne. Dermatol Online J. 2011;17(10):28.
2. Peterkin G. Malignant change in erythema ab igne. Br Med J. 1955;2(4956):1599-1602.
3. Arrington J, Lockman D. Thermal keratoses and squamous cell carcinoma in situ associated with erythema ab igne. Arch Dermatol. 1979;115(10):1226-1228.
4. Wharton J, Roffwarg D, Miller J, Sheehan D. Cutaneous marginal zone lymphoma arising in the setting of erythema ab igne. J Am Acad Dermatol. 2010;62(6):1080-1081.
5. Cho S, Jung J, Lee J. Erythema ab igne successfully treated using 1,064-nm Q-switched neodymium-doped yttrium aluminum garnet laser with low fluence. Dermatol Surg. 2011;37(4):551-553.