

# Reticular Hyperpigmentation on the Lower Legs

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A 13-year-old otherwise healthy adolescent girl presented to the pediatric dermatology clinic for evaluation of a rash on the legs. The patient noticed the rash 1 month prior to presentation. The rash initially involved the left shin and gradually spread to involve the shins bilaterally. The rash was asymptomatic with no pain, pruritus, or muscular asymmetry of the legs. She denied recent fevers, chills, or travel. The patient reported using a space heater daily that was directed at the legs, approximately 0.5 m away. Physical examination revealed a well-nourished adolescent girl in no acute distress with reticular hyperpigmentation of the lower extremities located on the left anterior shin and knee, with mild involvement of the right

shin. The reticulated hyperpigmented areas were arranged in a rectangular distribution. Lower extremity musculoskeletal examination was symmetric.

## What's the diagnosis?

- a. cutis marmorata
- b. erythema ab igne
- c. livedo reticularis
- d. livedoid vasculopathy
- e. phytophotodermatitis

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## The Diagnosis: Erythema Ab Igne

Given the patient's reticulated hyperpigmented lesions in the setting of recent space heater use with heater closer to the more affected leg, erythema ab igne was diagnosed. Patient education was provided and moving the heater away from the lower extremities was advised.

Erythema ab igne first was described by German dermatologist Abraham Buschke as *hitze melanose*, meaning melanosis induced by heat. The classic skin findings were first observed on the lower legs of patients who worked in front of open fires or coal stoves.<sup>1</sup> Over the years, new causes of erythema ab igne secondary to prolonged thermal radiation exposure have been reported.<sup>1</sup> In the elderly, hospitalized, and chronic pain patients, erythema ab igne has been observed in areas treated with heating pads and blankets.<sup>2</sup> Other triggers such as frequent hot bathing, furniture, steam radiators, space heaters, and laptops also have been reported.<sup>3-6</sup> Laptop-induced erythema ab igne is a diagnosis that has been reported in the last decade and its incidence likely will increase in the future.<sup>6</sup>

The clinical manifestations of erythema ab igne correlate with the frequency and duration of heat exposure. Acutely, a mild and transient erythema develops in the affected area. With chronic heat exposure, these areas subsequently develop a permanent reticulated hyperpigmented pattern and may eventually become atrophic.<sup>2,6</sup> All body surfaces are at risk, but erythema ab igne classically involves the legs, lower back, and/or abdomen. Lesions typically are asymptomatic; however, burning and pruritus can be present.<sup>2,6</sup> Bullous erythema ab igne, though rare, has been reported,<sup>7</sup> suggesting a potential transition from erythema ab igne to burns.<sup>6</sup>

Biopsy is not recommended for diagnosis; however, the histopathologic changes of erythema ab igne include hyperkeratosis, interface dermatitis, epidermal atrophy with apoptotic keratinocytes, and melanin incontinence. Although this condition typically is benign, histologic findings could resemble actinic keratosis, suggesting that chronic changes induced by infrared thermal radiation may lead to squamous cell carcinoma or rarely Merkel cell carcinoma. The latency for developing carcinoma appears to extend 30 years, with a 30% tendency for recurrence or metastasis. Given the possibility of an increase in erythema ab igne in the pediatric population in the upcoming years, as displayed by our patient, and increasing laptop and electronic use in children and adolescents, it is important to be aware of this skin condition and the potential complications of it going undiagnosed.<sup>2,6</sup>

No specific therapy for erythema ab igne exists. Treatment is centered on eliminating exposure to the heat source. With appropriate removal, the reticulated hyperpigmented lesions will resolve, sometimes taking several months.

Differential diagnosis includes livedo reticularis, livedoid vasculopathy, and cutis marmorata. The reticulated purpuric lesions of livedo reticularis involving the extremities often mimic erythema ab igne's cutaneous morphology; however, livedo reticularis frequently is associated with conditions such as drug reactions, infections, thrombosis, and vasculitides,<sup>2</sup> as opposed to erythema ab igne, which frequently is associated with conditions causing pain or decreased body temperature, thus necessitating use of heating devices, as seen in our patient. Livedoid vasculopathy is characterized by purpuric macules involving the lower legs and feet that progress to recurrent leg ulcers. Our patient's asymptomatic lesions and absence of ulcers excluded this diagnosis.<sup>8</sup> Lastly, cutis marmorata, a congenital condition, is characterized by blue-violet vascular networks that often display ulceration and atrophy of the involved skin as well as hypertrophy or atrophy of the involved limb<sup>9</sup>; these clinical findings were not present in our patient and this diagnosis would not explain the relationship between the cutaneous lesions and heat exposure.

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