
ABSTRACT

Erythema *ab igne* (EAI) or “*toasted skin syndrome*”, is a skin reaction manifested by a reticulate hypermelanosis on body areas submitted to prolonged exposure to infrared radiation (IRR) in the form of moderate heat insufficient to produce a skin burn. This reaction is probably as old as civilization and accompanies the use of fire for heating icy environments or the body directly. Currently, several cases due to bodily contact with laptops have been reported and **makings** EAI an old condition new again.

Here, we present a case of a male patient with continuous use of a laptop computer placed on **the** abdominal area in a reclining position and the consequent formation of EAI on **the** exposed site.

Keywords: *Erythema-ab-igne, Hot temperature; Hyperpigmentation; Infrared rays*

1. INTRODUCTION

EAI is probably as ancient as civilization, **dating** from the time when sitting close to a fire was the only way to withstand icy environments. A variety of heat sources have been reported as causative factors dependent on existing habits and thermal equipment used at each epoch. IRR damages superficial skin vessels leading to vasodilatation and leakage of blood, resulting in hemosiderin deposition presenting in a net mode[1]. **Transient** reticular erythema comes first and the absence of symptoms allows continued exposure to the infrared heat source. After some weeks, an eruption displaying reticulate hyperpigmentation, and erythema **present** in a poikiloderma-like picture.

2. Presentation of Case

An otherwise healthy 27 years old Russian male, an **information technologist**, presented for the evaluation of dusky hyperpigmentation **in** the abdominal area. Upon further questioning, he reported that due to the COVID-19 pandemic, he had been isolating **himself** and doing remote work for at least 10 hours a day. He did this by lying down with a laptop on his abdomen (**Fig. 1**). In the last three months, he noticed a persistent “dark spot” gradually increasing in size **corresponding** to the area where he placed his laptop. The patient was otherwise healthy and was not taking any medications. On physical examination, we observed a reticulated pattern of erythema and brownish hyperpigmentation over the abdomen (**Fig. 2**) and he was diagnosed with erythema-ab-igne due to his habit of placing the laptop on his abdomen in the reclining position.



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Figure 1: patient's body position on home-office work during the pandemic.



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Figure 2. erythema ab igne in patients abdomen **more prominent on the left side.**

3. Discussion

Erythema ab igne (meaning: redness from fire) [2] was once common in Europe at a time when the only option to keep the body warm **on the** coldest days was to stand very close to a fire, but it has become rather uncommon since the introduction of central heating. [3] Anyway, it is still seen in rural areas and, historically, it has been reported among elderly residents who sit near fireplaces, coal stoves, or after long repeated application of hot water bottles, use of infrared lamps or heated pads for chronic low back pain. More susceptible body surfaces **are the** lower limbs, lower back, and abdomen. [4, 5]

50 The age of information technology has brought the use of portable computers as an
51 unexpected source of cutaneous contact with radiant heat. Laptops have several
52 energy-generating components: the battery and the ventilation-fan exhaust, optical
53 drives, and the central processing units. Occlusion of the cooling vents by
54 positioning it on body areas allows direct exposure to the heating elements of the
55 notebook. The lesion typically corresponds to the left side of the body, as it is the
56 side where the warm parts of portable computers are located. The reaching
57 temperatures can range between 43 °C and 47 °C. [6]

58 EAI predisposes to skin cancers, providing that exposure to heat persists.
59 Thermally-induced cancers, especially squamous cell carcinoma [7] (the most
60 common thermally induced cancer), have been reported concerning previous skin
61 areas of EAI. Besides, Merkel cell carcinoma [8] may rarely arise. A histological
62 pattern showing squamous atypia similar to actinic keratoses may arise after long
63 latent periods. In remote communities of Asian countries, ancient and traditional
64 customs linked to the use of heat persist and EAI progresses, giving rise to rare
65 forms of skin cancers. These include the Kang cancer from Tibet and Northern
66 China, which is a squamous-cell carcinoma, due to the high cost of sleeping in beds
67 with heated bricks; the Kangri cancer, affecting the lower abdomen and inner thighs
68 found in Kashmir, induced by the use of pots with hot coals; and finally, the Kairo
69 cancer from Japan, as a result of charging braziers with burning benzene.

70 **4. Conclusion**

71 EAI is usually a benign reaction with an excellent prognosis, improving readily with
72 topical corticosteroids and especially avoidance of radiant heat. Our patient was
73 advised to avoid the habit of placing the laptop on his abdomen and his reticulate
74 hyperpigmentation gradually disappeared over the next four months with only a
75 topical corticosteroid prescription.

76 Diagnostic recognition in the case of our patient was essentially clinical, which
77 resulted in exams or biopsies being unnecessary. We must keep in mind that, in
78 some cases, EAI arises due to the application of heat to treat chronic pain, which
79 may indicate an underlying malignancy [9,10] or a sign of chronic pancreatic pain.
80 [11]

81 Frankly speaking, this case may broaden our horizons and will undoubtedly help the
82 readers to get familiar with such conditions. Patients with EAI do not require any
83 thorough additional work-up and correct diagnosis may help to reduce the number
84 of needless procedures.

85 **COMPETING INTERESTS**

86 Authors have declared that no competing interests exist

87 **AUTHORS' CONTRIBUTIONS**

88 Cesar Bimbi wrote the first draft of the manuscript. Alidzhan Khabbus diagnosed the
89 condition examined and the proposed the treatment of the patient. All authors read and
90 approved the final manuscript.”

91 **CONSENT**

92 All authors declare that ‘written informed consent was obtained from the patient.

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94 **Ethical Approval:**

95 As per international standard or university standard written ethical approval has been
96 collected and preserved by the author(s).

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