

# Erythema Ab Igne Caused By Laptop Computer

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## Abstract

Erythema ab igne (EAI) represents the stereotype of a modern technology induced disease. Originally produced by repeated exposure of the skin to a heat source, more often because of habits related to the job or personal activities, this condition now tends to occur more frequently, being associated with a variety of modern instruments. The aim of our report is to discuss this strange medical condition with a focus on clinical features, possible confounding differential diagnoses and recommendations for prevention.

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## Introduction

Erythema ab igne (EAI) represents the stereotype of a modern technology induced disease.

Originally produced by repeated exposure of the skin to temperatures close to the burn threshold (43-47°C) [1], and being unchanged in its pathogenesis – based on the superficial injury on the dermal vascular plexus – the occurrence of EAI has been associated with a wide variety of ‘new’ warming sources, thus also involving a wider range of age of affected patients [2, 3]. In fact, due to its infrequency, EAI still constitutes a clinical conundrum, diagnostically misinterpreted and hard to be solved in the absence of suspected anamnestic data.

The aim of our report is to discuss this strange medical condition with a focus on clinical features, possible confounding differential diagnoses and recommendations for prevention.

## Case report

A 32-year-old Caucasian woman, who was a secretary in a legal office, presented with skin changes of the left thigh. The lesion had appeared at some undetermined moment and got worse progressively in the last three months, always being only mildly pruritic.

Physical examination disclosed a well-defined erythematous-violaceous, reticulated macular rash limited to the anterior part of the medium third of the left thigh (Fig. 1).

The patient was referred to our department by a rheumatologist with the suspect of vasculitis. Thus she had just received a diagnostic laboratory work-up, including tests for ANA and ANCA, all resulting within normal limits.



Figure 1: Erythematous, violaceous, reticulated rash on the left thigh

On repeated anamnesis, the patient reported that she had been assigned to its actual job exactly four months before; in particular, due to her role of barrister assistant, she was used to having laptop on thighs during most of her work time. Checking patient's laptop, we noted that the lesional area was exactly in contact with the ventilation fan (fig.2).



Figure 2: Lesional area was localised in correspondence of the ventilation fan of patient's laptop

Since the history of persistent skin exposure

to the localised heat source, a diagnosis of erythema ab igne was made and proposed the use of a protective lap pad to create an efficient barrier between the user and the personal computer together with a favourable work surface.

Given the absence of significant symptoms, no pharmacological therapy was prescribed.

## Discussion

Erythema ab igne is an initially transient, and then chronic cutaneous condition, caused by direct exposure of the skin to a heat source, more often because of habits related to the job or personal activities [4].

Originally also known as "hot water bottle rash", typical of the pretibial area in subjects used to expose to space heaters [1], this condition now tends to occur more frequently, being associated with a variety of modern instruments including heating pillows [5], space heaters [6], electric blankets [7], heated car seats and backs [8], portable personal computers [9] and smartphones [2, 10].

Pathogenesis has not been fully understood. Long term and/or repeated heat exposure can determine, in general, superficial damage to the vascular structures, with vasodilatation and deposition of hemosiderin [1, 2]; other changes include changes in dermal elastic fibres, epidermal atrophy and melanin accumulation in the dermis [2, 11].

Depending on the frequency, temperature and time of exposure, we expect different degrees and onset of the condition [12].

Typical manifestations consist of transient-to-persistent, reticulated, initially erythematous or, later hyper-/hypopigmented patches, sometimes characterised by superficial changes (atrophy, xerosis, telangiectasia, bullae). The eruption is mainly asymptomatic, although warming in the acute phase and itch chronically have been anecdotally reported [1, 10, 13].

Diagnosis is based on the supportive history and the clinical picture, whereas histologic changes are non-specific [14], thus skin biopsy has to be considered only in limited cases. Differential diagnosis of EAI should include livedo vasculitis (the idiopathic as well as the symptomatic form in collagenosis) [4], panniculitis [15, 16], and side effects of some drugs (amantadine and memantine) [4]. As suggested by some authors, EAI may also mimic infectious diseases when anamnesis is not clear as well as original culture practices and conditions of the exotic patients [17].

Early awareness [1, 5, 12] of the disease and

preventive measures [18] usually lead to a favourable prognosis. Chronic cases have been treated with topical retinoids and 5-fluorouracil, Nd-YAG, ruby and alexandrite lasers [2, 5, 19] plus antihistamines and/or FANS symptomatically. Monitoring of long-standing EAI is mandatory, whereas hyperkeratosis and ulceration have to be considered as a sign of premalignant changes at the epithelial level [20].

Finally, chronic pain and persistent systemic symptoms in EAI have to be carefully checked as a possible sign of occult internal malignancies. A total of 11 cases have been reviewed in a recent paper by Bunick and Ibrahim [21], with gastrointestinal (colorectal, pancreatic, gastric) cancer being the most represented tumour; lung, renal breast and hematologic malignancies have also been reported thus underlines the importance of complete assessment of this otherwise benign condition [21, 22].

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