

## Case Report and Brief Review: A Case of Erythema Ab Igne Due to a Space Heater

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### ABSTRACT

A 35-year-old male presented to the Emergency Department (ED) with a rash of his left lateral lower leg of a two months duration. The patient had been using an electric space heater and the affected area was the closest part of his body to the heater. A diagnosis of erythema ab igne was made. Here we discuss erythema ab igne in reference to the medical history of the diagnosis, pathophysiology, modern causative heat sources such as laptop computers and treatment.

**Keywords:** Erythema Ab Igne, Cutaneous Rash.

### CASE PRESENTATION

A 35-year-old male presented to the Emergency Department (ED) with a rash of his left lateral lower leg of 2 months duration. The rash had worsened in the last three weeks prior to presentation, prompting his wife to insist that he be evaluated. The patient had no other complaints. He stated that the rash was not pruritic in nature and that he had no fever or chills. He denied trauma to the affected area. He had not significant past medical history and was not taking any medications. He had no known allergies. On physical exam, the patient looked well with normal vital signs. The patient was noted to have a reticulated rash with a slightly purple discoloration, in the area of his posterior and lateral left lower leg. There was no tenderness to the area. His physical examination was otherwise unremarkable. Iterative questioning led to the additional fact that the patient had begun a new job as a security guard approximately one month prior to the appearance of the rash. His security area felt uncomfortably cold to the patient prompting him to purchase a portable electric space heater. The heater was placed on the floor in the left corner of his security booth, which is consistent with the hypothesis that the heater was the cause of the rash. The physical appearance of the rash was consistent with erythema ab igne. The patient stated that he had been looking for an indoor security position and that he was due to start his new position in two weeks and that he would immediately stop using the space heater. He was referred to dermatology. At telephone follow-up at two weeks post discharge, the patient noted that his rash was resolving. At six-week telephone follow up, he noted that dermatology confirmed

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the diagnosis of erythema ab igne and that no biopsy was indicated. The rash at that time had almost completely resolved.

## DISCUSSION

Erythema ab igne is a reticulated rash that is related to repeated exposure to sub-thermal heat exposure.

The term translates from the latin as “redness from fire” and relates to the fact that the first reported cases of erythema ab igne date from an era of the predominant use of wood-burning fireplaces for indoor heating. The diagnosis had become less common and appears to have re-emerged with more modern sources of localized heat [1].

In the modern era, sources of heat leading to erythema ab igne have moved from wood burning fireplaces to electric space heaters and laptop computers [1].

Erythema ab igne has also been called “toasted skin syndrome.” This term underscores the fact that the heat source in this erythema ab igne is below the level of temperature that creates a discreet burn [2]. It was first described in the medical literature in the early 1900s in association with peat stoves in Ireland and England [3]. The rash is reticulated and hyperpigmented. Helm et al present the case of erythema ab igne from heated car seats [4].

Miller et al note that erythema ab igne has been described in association of the use of hot water bottles, heating pads and laptop computers [3]. A case of erythema ab igne in association with a space heater was described by Haleem [5].

Laptop computers can generate a temperature of 44 °C when placed on a leg, especially when the fan exhaust is blocked and have been associated with erythema ab igne. Such presentations tend to be on the anterior surface of one of the upper thighs [6]. Erythema ab igne has been described on the arms of bakers [6].

Histologically, the condition is like an actinic keratosis but may show some squamous cell atypia. Repeated elevations of skin temperature to the 43 to 47 °C range can cause keratinocyte and small blood vessel damage, leading to increased deposition of hemosiderin and melanin [7]. The reticulated pattern is hypothesized to be caused by the involvement of small blood vessels in the superficial subcutaneous plexus, found in the dermis, which results in the web-like pattern. If exposure to the heat source continues, there is the risk of conversion of the rash to

squamous cell carcinoma. This conversion may take as long as 30 years [7]. The phenomenon of thermally induced squamous cell carcinoma was observed in ancient times according to Arnold. “Kang cancer in China and Tibet is a result of large brick-heated platforms called Kangs.” He also notes that Kangri cancer of Kashmir is caused by wearing a Kangri, which is a pot of coals surrounded by a wicker basket that was traditionally carried inside garments for portable warmth in winter [6,8].

Conversion to Merkel-cell carcinoma has been reported [7]. Hyperpigmentation can be treated with tretinoin. 5-fluorouracil has been used. [7] Prolonged and continuous heat source exposure can lead to significant skin atrophy. Patients with prolonged erythema ab igne may require and skin biopsy and skin surveillance by dermatology [7].

## CONCLUSIONS

A 35-year-old male presented to the Emergency Department (ED) with a rash of his left lateral lower leg of 2 months duration. The patient had been using an electric space heater and the affected area was the closest part of his body to the heater. A diagnosis of erythema ab igne was made. Here we discuss erythema ab igne in reference to the medical history of the diagnosis, pathophysiology, modern causative heat sources such as laptop computers and treatment.

## CONFLICT OF INTEREST

There was no funding related to this case report. The authors declare that they have no conflicts of interest.

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