

Erythema Ab Igne

Erythema ab igne (EAI) is a relatively uncommon skin condition characterized by a reticulated or fishnet-like pattern of hyperpigmentation, resulting from chronic exposure to low levels of heat or infrared radiation. The term "ab igne" is derived from Latin, meaning "from fire," reflecting the historical association of the condition with frequent exposure to heat sources. EAI is typically asymptomatic but may occasionally cause discomfort such as pain, burning, or itching. In the past, individuals working in environments with persistent heat exposure, such as bakers, metalworkers, and fireplace attendants, were at higher risk. However, with the advent of modern central heating systems, the condition has become less prevalent in developed countries. More recently, new sources of heat exposure, including space heaters, laptop computers, heating pads, and heated car seats, have been identified as emerging causes of EAI.

Pathophysiology and Etiology

Erythema ab igne results from chronic, low-level thermal injury to the skin, which damages the superficial vascular networks and the epidermis. The condition develops after repeated exposure to heat or infrared radiation that causes vascular dilation, leading to hyperpigmentation. Initially, the affected area presents as mottled or pinkish patches that progress to the characteristic reddish, violaceous, or brownish reticulated patterns. These changes are due to repeated thermal injury over time, which induces mild cellular atypia and increased elastic tissue deposition in the dermis, resembling the effects of chronic sun exposure. This vascular and dermal remodeling is a response to prolonged heat exposure, causing the vascular and elastic fibers to become more prominent, contributing to the appearance of the characteristic patterns of the condition.

While erythema ab igne is typically benign, there have been reports of malignant transformation into squamous cell carcinoma or basal cell carcinoma, particularly in long standing cases. This highlights the importance of careful monitoring and diagnosis, especially for persistent or severe lesions.

Clinical Presentation

Erythema ab igne typically begins as mildly pink, mottled patches that, over time, develop into more prominent reticulated patterns with reddish, violaceous, or brownish hues. Multiple stages of lesions are often observed simultaneously, with some areas still exhibiting the early stages of mottling while others have progressed to full pigmentation. This condition commonly affects areas of the skin that are frequently exposed to heat, such as the abdomen, thighs, lower legs, and upper back. The mottled appearance results from vascular dilation and blood pooling in superficial capillaries, leading to the characteristic lace-like pattern.

The condition may present without symptoms but can sometimes cause burning, itching, or pain in the affected areas. It is essential to distinguish EAI from similar vascular conditions such as livedo reticularis, which may be indicative of underlying systemic conditions like systemic lupus erythematosus. Thus, careful diagnosis by a dermatologist is essential to ensure accurate identification and exclude other potential underlying causes.

Diagnosis

Erythema ab igne is primarily diagnosed based on its clinical appearance. The characteristic reticulated hyperpigmentation in response to heat exposure is usually sufficient for a diagnosis. However, given its clinical resemblance to other vascular conditions, such as livedo reticularis, a dermatologic evaluation is crucial to confirm the diagnosis and rule out other potential underlying conditions. In cases where there is concern for potential malignant transformation, skin biopsy may be recommended, particularly if the lesion persists for years or demonstrates changes in appearance. Additional tests may be needed to exclude systemic diseases in cases where livedo reticularis is suspected.

Treatment and Management

The cornerstone of treatment for erythema ab igne is the removal of the heat source responsible for the skin changes. Once the triggering heat exposure is stopped, mild cases of EAI may resolve gradually over the course of months to years. However, advanced cases may persist or become permanent, especially if the heat source is not removed.

Treatment options include:

- **Topical Therapies:** In cases where the lesions are visually disturbing, several treatments can help improve the appearance of the skin:
 - *5-fluorouracil (5-FU):* This topical chemotherapeutic agent has been used to treat keratotic lesions associated with EAI and can promote skin healing by targeting abnormal cells.
 - *Tretinoin (retinoid):* Topical retinoids can improve skin texture, reduce hyperpigmentation, and stimulate collagen remodeling in the dermis.
 - *Laser therapy:* Pulsed dye laser and fractional CO2 laser can be effective for reducing pigmentation and improving skin texture by targeting abnormal vessels and promoting collagen remodeling.
- **Monitoring for Malignancy:** Due to the potential for malignant transformation, particularly in longstanding lesions, regular dermatologic monitoring is recommended for individuals with persistent erythema ab igne. A biopsy may be warranted for lesions that exhibit suspicious changes or persist over time.
- **Prevention:** Preventing erythema ab igne involves minimizing chronic heat exposure, particularly for individuals who may be exposed to heat sources such as space heaters, laptop computers, heating pads, or car seats. Wearing protective clothing and ensuring that heated surfaces are used in moderation can reduce the risk of developing the condition.

Conclusion

Erythema ab igne is a relatively rare skin condition caused by chronic low-level heat exposure, presenting as reticulated hyperpigmentation. While often benign, it can lead to complications, including malignant transformation in long standing cases. Early identification and removal of the heat source are essential to halting the progression of the disease, and topical treatments can be used to improve the appearance of the affected skin. Patients with persistent or severe cases should seek regular dermatologic follow-up to monitor for complications.

References

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