



An Unusual Case of Erythema Ab Igne from a Tropical Country

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Abstract

Erythema ab igne is typically a rash seen in the cold countries during the winter months due to prolonged, direct contact with heat. In recent years, direct exposures to heat source like laptops have been reported. In the Asian countries, usage of medicated skin preparation is a traditional method for pain management for generations. The medicated skin preparations contain chemicals which have been reported to cause skin burns. In this unusual case of erythema ab igne seen in an elderly lady, the usage of medicated balm for chronic constipation was the cause of the rash.

Keywords: Erythema ab igne; Skin burn; Medicated balms; Physical pain management; Chronic constipation colic

Introduction

In Singapore, 15.2% of the population is aged above 65 according to the 2020 Statista report [1]. Data showed that 25% to 85% of the older adults over the age of 65 live with chronic pain [2]. Most seniors would have accumulated a few chronic diseases from midlife onwards and by the age of 65, the seniors generally have multiple comorbidities accompanied by polypharmacy [3,4]. Together with comorbidities, degenerative diseases occur as part of ageing causing pain and stiffness which may require medications in order to be functional [5]. Commonly used analgesia, such as NSAIDs and opioids carry risks which may potentially cause morbidity and mortality due to reduced organ reserves [6].

Physical method of pain management is an attractive option as this method avoids adverse events due to medications. Methods of physical approaches to pain control include hot/cold application; physiotherapists' intervention such as manual manipulations, exercise and Transcutaneous Electrical Nerve Stimulation (TENS) for specific modalities of pain [7]. A popular method of pain management among the Asian population is the application of essential oils or balm to the area of pain, which has been a tradition for many generations. The medicated oils and balms generally contain one or more of methyl salicylate, menthol, camphor and peppermint. These oils and balms come in the forms of cream, ointment or inhalant and are available in general shops and pharmacy. In Singapore, the Health Science Authority has strict requirements for licensing and prohibits the addition of steroids and limits the presence of toxic heavy metals in these products [8].

Erythema Ab Igne (EAI) is an uncommon dermatosis that can be easily missed or taken lightly. There is a rare association with risk of malignancy [9]. The most common cause for EAI is the application of direct heat (heating pads), skin contact with heat producing substances such as laptops [10], or occupational exposure to infra-red light [11,12]. Application of heat to soothe aching body parts, [13] such as hot water bottle for menstruation cramps [14] or heat packs for sports injuries have also been associated with EAI [15].

This case report involved an elderly lady with EAI resulting from application of medicated oil.

Case Presentation

Madam L was a 95 years old Chinese lady, who presented with fever and shortness of breath complicated by Type 2 MI, AKI, and DKA as well as thrombocytopenia. Her past medical history included chronic constipation, hypertension, hyperlipidemia, DM, IHD, Alzheimer's disease, and recurrent falls.

On physical examination, she was otherwise well, with stable parameters and no significant physical findings. However, the consultant noted that she had a reticular, pigmented rash over her abdominal area [Figure 1]. The rash measured 7 cm × 8 cm in size over her left iliac fossa, and 5 cm × 3 cm over the right iliac fossa. There were no associated symptoms like pain or itch. Neither the

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Figure 1: Erythema ab igne over the patient's lower abdomen.

patient nor her family was certain of the duration of the rash.

On further history taking from her caregiver, Madam L showed signs of lower abdominal discomfort and frequently asked for application of medicated balms. The caregiver confirmed that she had applied medicated balm at the lower abdomen, especially the left iliac fossa for long standing colicky abdominal pain due to chronic constipation. There were no reported uses of heat pad or direct contact with any heat producing substance.

As the patient had chronic constipation with no other red flags, there were no invasive works up requested to exclude sinister causes. An ultrasound scan of her abdomen showed no abnormal masses with normal hepatobiliary and renal tracts. Basic blood work up showed no medical causes of constipation and her symptoms improved with prescription of laxatives and suppositories. During her stay in the hospital, she did not have access to her usual balm; the rash was noted to have faded towards the end of her stay in the hospital.

Discussion

Erythema Ab Igne (EAI) is a heat-related cutaneous rash with a reticular pattern of erythema and hyperpigmentation and is usually benign although there is a small associated risk of cutaneous malignancy like squamous or Merkel cell carcinoma [11,12]. EAI is linked closely to direct heat injury to the skin. Historically, EAI has been linked with direct contact with open fire (infra-red radiation) or electric heaters use in cold countries. In recent years, reports of EAI are re-emerging with reports related to occupational hazards such as prolonged placement of laptops on thighs, direct and prolonged heat exposure among silversmiths and cooks [10]. Additionally, there are case reports from prolonged close contact with Kotatsu, which is a table with a heat source underneath the table top, used during the winter months in Japan [16].

Histological finding of EAI shows hyperpigmented focally regressive keratinocytes in the epidermis and infiltration of melanophages and elastic fibers in the dermis [17].

Differential diagnoses include the following -

- Livedo reticularis [18] - transient or persistent reddish blue net-like pattern of rash, often involving the legs, associated with antiphospholipid syndrome, endocrine (pseudohypoparathyroidism /Cushing's disease) and less commonly nutritional disorders such as pellagra. Madam L's rash was similar in appearance to livedo reticularis but it was localized and there was no clinical evidence to suggest the presence of autoimmune disease like SLE.

- Contact dermatitis [19] - triggered by an irritant or allergic reaction. Among chronic cases, hyperpigmentation may occur.

- Cullen's sign of pancreatitis [20] which is similar to bruises

in color and nature. The rash is distributed over the para-umbilical region, during an episode of acute pancreatitis.

- Cutis marmorata - in the newborn (congenital telangiectatic type) and certain cases with decompression sickness in adults [21].

The rashes mentioned above are similar appearance, but clinical features and distribution of the rash differ.

In the local culture, management of pain frequently involve self-prescribed over the counter ointments/oils or balms as these products provide soothing effect locally. The medicated balm which the patient applied contained more than 5% menthol and 15% methyl-salicylate. The US-FDA issued a warning in September 2012 following cases reports associated with severe cutaneous burns from topical application containing greater than 3% menthol and 10% methyl-salicylate [22]. Among the case reports for burns associated with topical medicated preparations, skin burns ranged from first degree to third degree burns and occurred within 24 h of the first application of the topical medication. The relationship between dosages of exposure leading to risk of burns is unknown. The case reported was using the medicated balm on a daily basis.

Management of EAI includes withdrawal of the offending cause. In cases where there is presence of atypia of cells, topical 5-FU (Fluorouracil), topical retinoids, and laser treatment can be considered [23].

Conclusion

In conclusion, EAI although rare in the tropics, due to year-round hot weather, may still be present. Its presence suggests a less common cause of prolonged contact with heat, resulting in skin changes. The use of heat producing substance in the tropics is more commonly a method to relieve pain, stiffness or discomfort. Among the elderly, pain is a symptom which is not commonly made known to the physicians for the fear of an underlying sinister cause or fear of disease progression. Therefore, an active search for pain with appropriate investigations for the underlying causes and management is essential.

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