Open Access Maced J Med Sci **electronic publication ahead of print,**
published on July 18, 2017 as https://doi.org/10.3889/oamjms.2017.123

ID Design 2012/DOOEL Skopje, Republic of Macedonia
Open Access Macedonian Journal of Medical Sciences.
Special Issue: Global Dermatology
https://doi.org/10.3889/oamjms.2017.123
eISSN: 1857-9655
Case Report

Erythema Ab Igne Successfully Treated With Mesoglycan and Bioflavonoids: A Case-Report

Claudio Gianfaldoni[1*], Roberto Gianfaldoni[1], Georgi Tchernev[2], Jacopo Lotti[3], Uwe Wollina[4], Torello Lotti[5]

[1]University G. Marconi of Rome, Dermatology and Venereology, Rome 00192, Italy; [2]Medical Institute of the Ministry of Interior, Dermatology, Venereology and Dermatologic Surgery; Onkoderma, Private Clinic for Dermatologic Surgery, Dermatology and Surgery, Sofia 1407, Bulgaria; [3]G. Marconi University, Department of Nuclear Physics, Subnuclear and Radiation, Rome, Italy; [4]Krankenhaus Dresden-Friedrichstadt, Department of Dermatology and Venereology, Dresden, Sachsen, Germany; [5]Universitario di Ruolo, Dipartimento di Scienze Dermatologiche, Università degli Studi di Firenze, Facoltà di Medicina e Chirurgia, Dermatology, Via Vittoria Colonna 11, Rome 00186, Italy

Citation: Gianfaldoni S, Gianfaldoni R, Tchernev G, Lotti J, Wollina U, Lotti T. Erythema Ab Igne Successfully Treated With Mesoglycan and Bioflavonoids: A Case-Report. Open Access Maced J Med Sci. https://doi.org/10.3889/oamjms.2017.123

Keywords: erythema ab igne; heat exposure; malignant transformation; mesoglycan; bioflavonoids.

***Correspondence:** Serena Gianfaldoni. University G. Marconi of Rome, Dermatology and Venereology, Rome 00192, Italy. E-mail: serena.gianfaldoni@gmail.com

Received: 02-Apr-2017; Revised: 13-May-2017; Accepted: 14-May-2017; Online first: 18-Jul-2017

Funding: This research did not receive any financial support.

Competing Interests: The authors have declared that no competing interests exist.

Abstract

Erythema ab igne is a localised, cutaneous condition consisting of reticulate hyperpigmentation, epidermal atrophy, and telangiectasias. It is caused by repetitive and prolonged exposure to moderate heat that is insufficient for producing burns. Currently, erythema ab igne is most commonly observed following repeated use of hot water bottles, infrared lamps and heating pads. If not properly treated, erythema ab igne can become chronic and even malignant. We report a case of erythema ab igne, successfully treated with systemic mesoglycan-based therapy, and local therapy with bioflavonoids.

Introduction

"Erythema ab igne" (EAI) or "erythema caloric" is a dermatosis supported by a reactive vascular impairment that develops after repeated and long-term exposure to heat [1]. The intensity of the infrared radiation responsible for this event is not sufficient for producing burns.

Erythema ab igne is a reticular, pigmented and telangiectatic dermatosis. Typically the lesions are localised in skin areas directly exposed to the heat source.

Although rare, a bullous form of erythema ab igne has been described, characterised by bullae and crusts within a localised area of reticular, brown and macular pigmentation [2]. Erythema ab igne is usually asymptomatic, but patients may report a burning sensation and pruritus.

The histopathological alterations [4] include epidermal atrophy, hyperkeratosis and parakeratosis, and aspects of lichenification. The dermis shows abundant melanophages and occasional elastic fibre alterations similar to actinic elastosis. There is also melanin and hemosiderin deposition and formation of telangiectasis, together with perivascular infiltration of polymorphonuclear cells.

Erythema ab igne is usually a chronic disease. The most significant long term risk is the malignant transformation of erythema ab igne into cutaneous squamous cell carcinomas or Merkel cell carcinomas [5-6].

The diagnosis is mainly clinical and supported by a medical history. On rare occasions, histology may be necessary.

At present, there are no effective medical therapies available.

The paramount goal of therapy is to eliminate the cause. According to some studies, treatment with topical 5-fluorouracil [8] or imiquimod may be useful in reducing or eliminating dysplasia of the keratinocytes.

A case report describes the successful of photodynamic therapy [9].

Case report

An otherwise healthy, 25-year-old female subject affected by erythema ab igne (Fig. 1), came to our Clinic with a brown reticular lesion on her legs.

Figure 1: Woman, 25 years old, affected by erythema ab igne

The dermatosis, similar to reticular livedo, was lightly pigmented, asymptomatic, and did not change significantly with digital pressure. Otherwise, the patient did not report any subjective symptoms and enjoyed apparent good health.

Figure 2: The lesions observed with a digital zoom

The lesions had a peculiar distribution as they were limited to the proximal right side of both legs. We studied her anamnestic history in order to understand her habits and lifestyle and clarify the nature of the lesions.

Figure 3: The lesions observed with a digital zoom

She told us she was a doughnut cook in a kiosk on the city streets. To keep warm in winter, she used a small electric heater on the floor on the right-hand side of the kiosk. After about two months of exposure to the heater, she noticed a brown, reticular dermatosis on her legs which had become increasingly darker over time. This helped us correlate the lesions with the heat source as they were visible on the right side of both legs, in the skin region directly exposed to the heater. A physical examination did not reveal any clinical signs of abnormal collagen. Routine blood tests for were negative for autoimmune diseases (ANA and antiphospholipid antibodies), diabetes, viral hepatitis or any other systemic diseases.

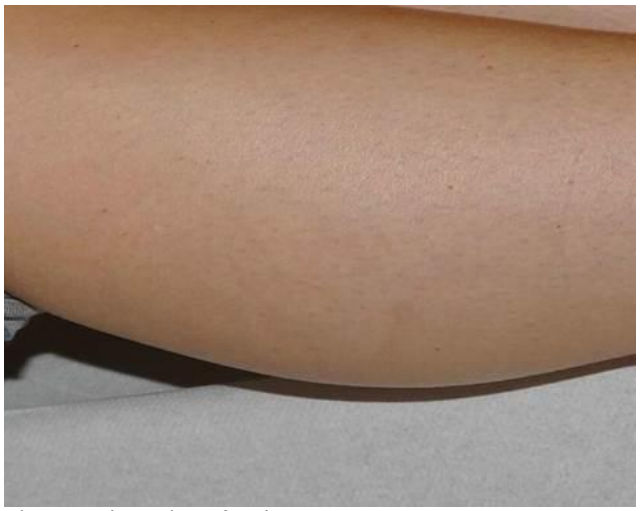

Figure 4: The patient after the treatment

We advised the patient to stop using the heater and prescribed oral mesoglycan 50 mg twice

daily and a topical gel (glycosaminoglycan, flavonoids, antioxidants, saponins, etc.) with a vascular action to be applied twice daily.

Figure 5: The patient after the treatment

At the one-month follow-up there was a partial regression of the lesion, so we reduced the dosage of mesoglycan to 50 mg/day for two months.

At the end of this period the lesions had completely healed (Fig. 4-5).

Discussion

Erythema ab igne (EAI), also known as “toasted skin syndrome” and “fire stains”, is a localised, cutaneous condition, consisting of reticulate hyperpigmentation, dusky erythema, epidermal atrophy, and telangiectasias.

Historically, it was often seen on the inner thighs and legs of women who sat in front of a stove or open fire. Nowadays erythema ab igne is a rare disease due to the general availability of central heating.

However, cases of erythema ab igne are still reported, although less frequently.

Occupational exposure to heat (such as bakers, blacksmiths, foundry workers, etc.) [10] may cause erythema ab igne. More rarely, the skin disorder has also been described on the legs of people exposed to a car heater for long periods.

In less privileged social classes we continue to observe cases deriving from repeated use of heaters, electric blankets or heated cushions.

Even exposure to infrared lamps may cause erythema ab igne, often characterised by the simultaneous damage to ocular structures (e.g. cataracts).

Some patients develop erythema ab igne using a heat source (e.g. heating pad, heated blanket or hot water bottle [11]) to relieve chronic pain. This typically occurs in patients with chronic pancreatitis [12-13] or cancer. Erythema ab igne has also been described following the use of sauna belts for abdominal obesity, and in patients using heated recliners to relieve chronic lower back pain.

One case report describes erythema ab igne following the use of a heating/cooling blanket in the intensive care unit [14].

Moreover, erythema ab igne could be associated with numerous physiotherapeutic treatments [7], which uses ultrasound and short wave diathermy to promote a rapid tissue vibration in order to generate heat and provide pain relief.

Finally, there is the “laptop dermatitis” [15-17]. Some laptops may generate significant heat when placed on the legs for long periods resulting in erythema ab igne.

The main pathogenetic aspects seem to be represented by a degeneration of the elastic fibres, by the degeneration of basal cells with release of melanin pigment, and by vascular changes. Confirming this is the higher incidence of this disease in patients with predisposing lesions, such as acrocyanosis, acrorigosis, and telangiectasias, etc.

The first sign is a transient macular erythema in a broad, reticulated pattern that blanches easily. At this stage, Erythema ab igne is very similar to reticular livedo but not limited to digital pressure or heat. Furthermore, erythema ab igne lesions are more circumscribed than livedo reticularis and have a precise local history.

With prolonged and repeated exposure, areas of reticular erythema persist and become livid and hyperpigmented. Epidermal atrophy may overlie the reticulated pigmentation. Typically, the lesions are localized in skin areas directly exposed to the heat source.

Although rare, a bullous form of erythema ab igne has also been described [3].

The histopathological alterations include epidermal atrophy, hyperkeratosis and parakeratosis, collagen fragmentation, melanin and hemosiderin deposition, the formation of telangiectasias, with perivascular infiltration of polymorphonuclear cells. The dermis shows abundant melanophages and occasional elastic fiber alterations similar to actinic elastosis (“thermal keratosis”).

If not properly treated, Erythema ab igne has an insidious course and tends to become chronic.

It also represents a precancerous lesion, which may evolve into squamous cell carcinomas [7] or Merkel cell carcinomas.

Is very important to make a correct and early diagnosis of this dermatosis and promptly implement appropriate treatment. Unfortunately, at present, there are no effective medical therapies available.

Treatment with topical fluorouracil or imiquimod may be useful in reducing or eliminating keratinocyte dysplasia [8].

In conclusion, the Authors report a case of erythema ab igne, in which they achieved healing of the lesions via removal of the patient from the heat source and early drug therapy. Oral mesoglycan is an antithrombotic and pro-fibrinolytic drug, which has been shown to be effective in the treatment of different vascular disorders, such as atherosclerosis, venous thrombosis, inflammatory vasculitis and others. Flavonoids are a class of plant metabolites, with important antioxidant and antiinflammatory properties.

The anticoagulant action of oral mesoglycan and the vascular action of local flavonoids reduced the inflammation and luminal obliteration processes, which are the basis of erythema ab igne.

References

1. Kligman LH. Intensification of ultraviolet-induced dermal damage by infrared radiation. Arch Dermatol Res. 1982;272(3-4):229-38. https://doi.org/10.1007/BF00509050 PMid:7165330

2. Kokturk A, Kaya TI, Baz K, Yazici AC, Apa DD, Ikizoglu G. Bullous erythema ab igne. Dermatol Online J. 2003;9(3):18. PMid:12952765

3. Hirohata A, Hanafusa T, Igawa K, Inoue-Nishimoto T, Mabuchi-Kiyohara E, Nakai C, Kasugai T, Yokozeki H, Ikegami R. Bullous erythema ab igne with cutaneous reactive angiomatosis.Eur J Dermatol. 2016;26(2):191-2. PMid:27226050

4. Cavallari V, Cicciarello R, Torre V, Gagliardi ME, Albiero F, Palazzo R, Siragusa M, Schipis C. Chronic heat-induced skin lesions (erythema ab Igne): ultrastructural studies. Ultrastruct Pathol. 2001;25(2):93-7. https://doi.org/10.1080/01913120117614 PMid:11407533

5. LoPiccolo M, Crestanello J, Yoo SS, Sciubba J, Fernández C, Tausk FA. Facial erythema ab igne of rapid onset. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2008;105(5):e38-40. https://doi.org/10.1016/j.tripleo.2008.01.008 PMid:18442733

6. Rudolph CM, Soyer HP, Wolf P, Kerl H. Squamous epithelial carcinoma in erythema ab igne. Hautarzt. 2000 Apr;51(4):260-3. https://doi.org/10.1007/s001050051031 PMid:10810662

7. Wollina U, Helm C, Hansel G, Köstler E, Schönlebe J. Two cases of erythema ab igne, one with a squamous cell carcinoma. Giornale Italiano di Dermatologia e Venereologia. 2007;142(4):415-8.

8. Sahl W, Taira JW. Erythema ab igne: treatment with 5-fluorouracil cream. J Am Acad Dermatol. 1992; 27: 109-10. https://doi.org/10.1016/S0190-9622(08)80818-3

9. Kochs C, Hanneken S, Schulte KW, Reifenberger J. Treatment of carcinoma in situ of erythema ab igne with photodynamic therapy. Hautarzt. 2008;59(10):777-9. https://doi.org/10.1007/s00105-008-1634-8 PMid:18773179

10. Elsner P, Schliemann S. Erythema ab igne as an occupational skin disease. J Dtsch Dermatol Ges. 2014;12(7):621-2. PMid:24684647

11. Fischer J, Rein K, Erfurt-Berge C, de Zwaan M. Three cases of erythma ab igne (EAI) in patients with eating disorders. Neuropsychiatr. 2010;24(2):141-3. PMid:20605010

12. Mucklow ES, Freeman NV. Pancreatic ascites in childhood. Br J Clin Pract. 1990;44(6):248-51. PMid:2144996

13. Butler ML. Erythema ab igne, a sign of pancreatic disease. Am J Gastroenterol. 1977;67(1):77-9. PMid:851110

14. Dellavalle RP, Gillum P. Erythema ab igne following heating/cooling blanket use in the intensive care unit. Cutis. 2000;66(2):136-8. PMid:10955195

15. Arnold AW, Itin PH. Laptop computer-induced erythema ab igne in a child and review of the literature. Pediatrics. 2010;126(5):e1227-30. https://doi.org/10.1542/peds.2010-1390 PMid:20921068

16. Levinbook WS, Mallett J, Grant-Kels JM. Laptop computer--associated erythema ab igne. Cutis. 2007;80(4):319-20. PMid:18038695

17. Manoharan D. Erythema ab igne: Usual site, unusual cause. J Pharm Bioallied Sci. 2015; 7(Suppl 1): S74–S75. https://doi.org/10.4103/0975-7406.155811 PMid:26015756 PMCid:PMC4439716