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(CASE REPORT)

A rare occurrence of acne fulminans and erythema nodosum complicating isotretinoin therapy successfully treated with oral dapsone and light-emitting diode

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Abstract

Isotretinoin has revolutionized the treatment of acne. Paradoxically, it can induce acne fulminans, a severe variant of inflammatory acne. We report a rare case of acne fulminans and erythema nodosum both complicating isotretinoin therapy, successfully managed with oral dapsone and light-emitting diode as a therapeutic alternative to isotretinoin.

Keywords: Acne fulminans; Erythema Nodosum; Isotretinoin; Dapsone; Light emitting diode

1. Introduction

Acne fulminans is a rare condition. It is the most severe form of the entire clinical spectrum of acne. It is characterized by severe ulcerating cystic lesions, with hemorrhagic crusts. Although isotretinoin has revolutionized the treatment of severe acne, it paradoxically leads, in some cases to an exacerbation of skin reactions, even to the development of acne fulminans. We describe a case of a 18-year-old boy presenting acne fulminans and erythema nodosum both occuring during isotretinoin therapy.

2. Case presentation

A 18-year-old boy had facial acne from the age of 16 which has recently worsened becoming nodulocystic. He was treated with isotretinoin 0, 5 mg/kg /d associated to oral steroids 0,5 mg/kg / d. Two weeks later, he was admitted to dermatology department with fever, arthralgias, crusted and ulcerating lesions on his face(Fig. 1 a,b). Physical examination also reveals tender and slightly elevated red nodes on both legs (Fig. 2a,b). Skin biopsy from his leg shows a septal panniculitis with no vasculitis, confirming erythema nodosum. Full blood count showed a leucocytosis of 11520 /µL, erythrocyte sedimentation rate was 23 mm/hour (0-20 range) and C-reative protein was 51 mg/L (0-5 range). Chest X-ray was normal. Isotretinoin therapy was discontinued. Then, the patient was treated with ciprofloxacin (1g/day), dapsone 100 mg/day and light-emitting diode therapy (LED). The erythema nodosum and systemic symptoms then started to improve within 2–3 days, the convalescent full blood count and ESR returning steadily to normal. The acne improved (Fig 3a,b), leaving only few scarring after 1 month of dapsone therapy associated with LED.

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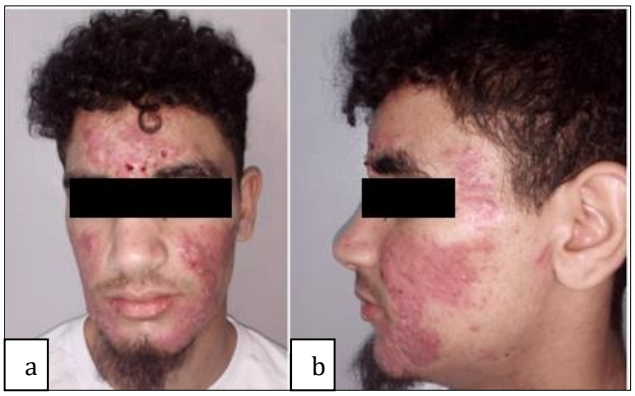

Figure 1 (a,b) : Nodulocystic and ulcerating lesions with hemorrhagic crusts on the face

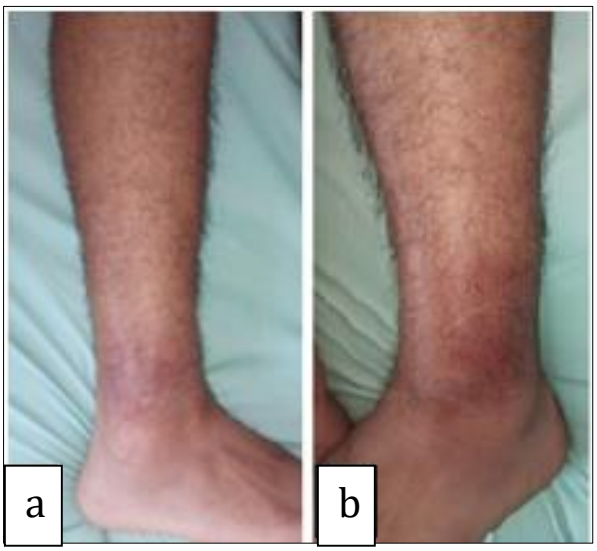

Figure 2 (a,b): Tender red nodes on legs (erythema nodosum)

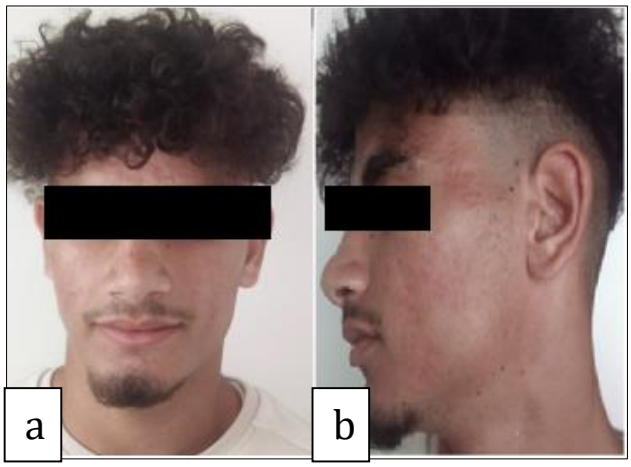

Figure 3 (a,b) : Clinical improvement after 1 month of dapsone associated with light-emitting diode therapy (LED)

3. Discussion

Acne fulminans (AF) is a rare complication of severe acne. Our patient developed the condition after starting treatment with isotretinoin [1].The etiopathogenesis of AF is not fully elucidated. Inflammatory and immunologic mechanisms, mainly represented by delayed cellular hypersensitivity reactions to Propionibacterium acnes (P.acnes), seem to be involved. AF can also be induced by isotretinoin.The doses and the intervals between the medication and the acute manifestations vary [2]. Isotretinoin fragilize the pilosebaceous duct epithelium allowing a massive contact of P.acnes antigens and/or P. acnes chemoattractants with the immune system[3]. Recently, four clinical variants have been proposed: acne fulminans with systemic symptoms (AF-SS), acne fulminans without systemic symptoms (AF-WOSS), isotretinoin-induced acne fulminans with systemic symptoms (IIAF-SS), isotretinoin-induced acne fulminans without systemic symptoms (IIAF-WOSS) [4].The commun associated systemic symptoms are fever, weight loss and arthralgia. Other documented features include microscopic haematuria, protinuria, an increased erythrocyte sedimentation rate and white cell count, anaemia and myalgia [5].Erythema nodosum (EN) during isotretinoin-induced acne fulminans with systemic symptoms (IIAF-SS) is rarely reported in the literature. As acne itself can trigger EN, it is difficult to prove the imputability of isotretinoines in the occurrence of this delayed hypersensitivity reaction. In 2020, Pasmatzi et al. reported the first case of EN during treatment of condylomata acuminata with oral isotretinoin in a patient without acne, vigorously suggesting that the pathogenesis of EN may be directly related to isotretinoin [6]. Dapsone, which has an antimicrobial action against Propionibacterium acnes and an anti-inflammatory, chemotactic-inhibiting effect, can be indicated in acne fulminans [7].Diode-emitting light therapy, particularly blue light, stimulates the immune system, helping to reduce the number of Propionibacterium acnes in acne-prone skin, and has an anti-inflammatory and biomodulatory effect by stimulating cytokine production by keratinocytes [8].

4. Conclusion

Isotretinoin-induced acne fulminans with systemic symptoms(IIAF-SS) is a rare condition. Erythema nodosum is exceptionally reported as a systemic symptom in IIAF-SS. Oral dapsone combined to light-emitting diode therapy can be an efficient therapeutic alternative to oral isotretinoin in cases of IIAF-SS. However, more studies are needed to support this alternative use.

Compliance with ethical standards

Acknowledgments

The researchers acknowledge and appreciate the patient included in this case report.

Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from the patient included in the case report.

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