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A Case of Nodular Cystic Acne Treated with Systemic Dapsone

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ABSTRACT

Dapsone is an aniline derivative from synthetic sulfones. The mechanism of action of dapsone is obscure in inflammatory diseases; however, it is suggested to inhibit neutrophil chemotaxis and lysosomal enzymes. Acne vulgaris (AV) is a chronic inflammatory disorder of the pilo-sebaceous unit.

Herein we report a pediatric patient who was started systemic isotretionin due to severe nodular cystic AV but could not continue due to elevated liver enzymes and well response to systemic dapsone treatment. We consider that per-oral dapsone treatment may be a well-tolerated and effective treatment option in patients with moderate/severe, frequently recurring AV which is irresponsive to conventional therapies and may a good alternative to isotretionin particularly in pediatric cases.

Keywords: Dapsone, isotretinoin, nodulocytic acne

INTRODUCTION

Dapsone (4,4'-diamino diphenyl sulfone) is an aniline derivative from synthetic sulfones, which has both anti-bacterial and anti-inflammatory effects. It was first used for the treatment of leprosy in 1940 and for the treatment of dermatitis herpetiformis and non-infectious inflammatory dermatoses thereafter (1).

Acne vulgaris (AV) is a chronic inflammatory disorder of the pilo-sebaceous unit, which is characterized by open and closed comedones, inflammatory papules, pustulae, nodules and cysts, which may lead to scar formation and altered pigmentation (2). Abnormal follicular keratinization, increased sebum production, Propionibacterium acnes colonization and inflammation are accused for the pathogenesis of AV (2).

Herein we report a pediatric patient who was started systemic isotretionin due to severe nodular cystic AV but could not continue due to elevated liver enzymes and well response to systemic dapsone treatment.

CASE PRESENTATION

A 14-year-old male patient was admitted to Dermatology Clinic due to widespread nodular cystic acne. Dermatologic examination revealed widespread nodular cystic acne lesions on the face, shoulders, and anterior side of the trunk (Figure 1). It was learned that he did not respond to systemic and local antibiotic therapies given due to nodular cystic AV.

He was planned to commence isotretionin 20 mg daily and increase gradually; however, the dose was decreased to 10 mg daily due to elevated liver enzymes at the first month of therapy. Isotretonin was discontinued at the control two weeks later due to the detection of aspartate aminotransferase 192 U/L, alanine aminotransferase 406 U/L and gastro-enterology consultation was made. Viral panel results and auto-antibody test results (anti-nuclear antibodies, anti-mitochondrial antibodies, anti-smooth muscle antibodies) were negative. Elevated liver enzymes were suggested to be associated with isotretionin and turned to normal after the cessation of the drug.

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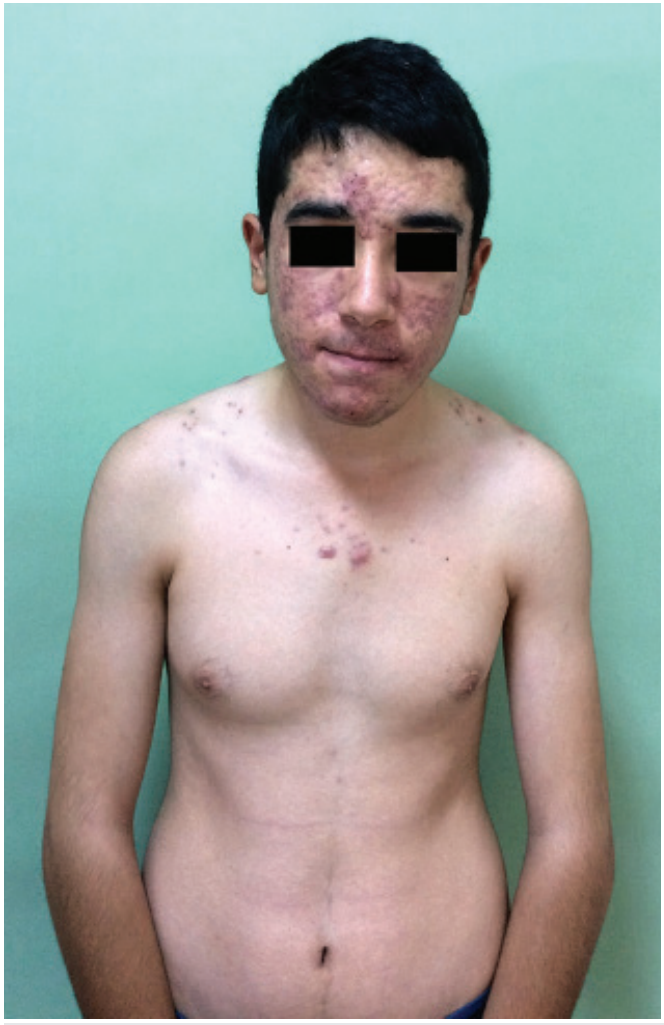

Figure 1. Widespread nodular cystic acne lesions on the face, shoulders, anterior side of the trunk

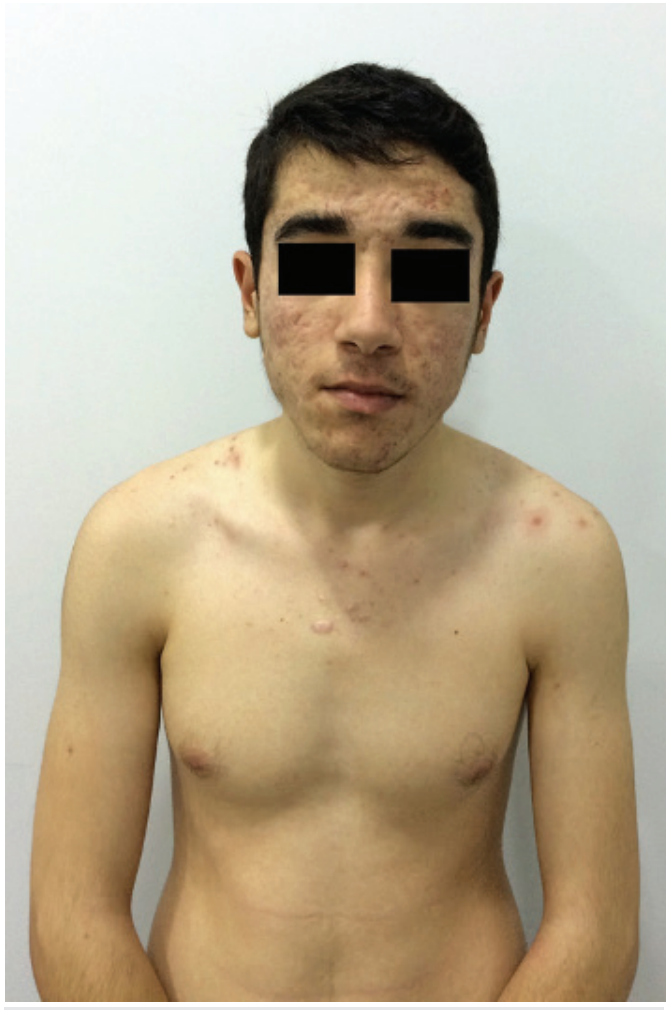

Figure 2. Active nodular cystic lesions dramatically regressed at the 6th month of treatment and atrophic scars developed

Dapsone treatment via per-oral route was planned as the patient could not tolerate isotretionin and was negatively affected from nodular cystic AV. Glucose-6-phosphate dehydrogenase enzyme level was normal. Lesions were detected to regress after using dapsone in the dose of 50 mg daily so the dose was increased to 100 mg daily. Lesions were dramatically regressed after using dapsone 100 mg daily for 4 months and 50 mg daily for 2 months. Whole blood count and routine biochemistry tests were found to be normal during the treatment. Active nodular cystic lesions dramatically regressed at the 6th month of the treatment and atrophic scars developed (Figure 2). Informed consent was obtained from the patient and his mother for the publication of this case report and images.

DISCUSSION

AV is a chronic inflammatory disorder of the pilo-sebaceous unit which affects approximately 80% of adolescents and young adults (3). While topical treatment is sufficient in mild forms of AV, systemic treatment is required in moderate and severe forms. Isotretionin used via per-oral route is the most effective therapeutic agent used for the treatment of moderate/severe acne for longer than 30 years and it influences all factors in the pathogenesis of acne and provides long term remission (4). Isotretionin used via per-oral route which has tolerable muco-cutaneous and systemic side effects keeps its place in the treatment of acne due to its effectiveness and safety (5).

No consensus is available about an effective treatment option when isotretionin cannot be used due to toxicity. In literature, Didona et al. (6) have reported the use of dapsone in a 14-year-old patient whose acne progressed under isotreatinine treatment, and Wakabayashi et al. (7) reported a dramatic response with dapsone treatment in 5 Japanese patients. We planned to use dapsone in our patient who could not use systemic isotretionine due to elevated liver enzymes.

The mechanism of action of dapsone is obscure in inflammatory diseases; however, it is suggested to inhibit neutrophil chemotaxis and lysosomal enzymes (8). Dapsone is among the treatment options in diseases like bullous pemphigoid, eosinophilic folliculitis, Sweet syndrome, erythema elevatum diutinum, leukocytoclastic vasculitis, pyoderma gangrenosum, bullous form

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of lupus erythematosus, relapsing poly-chondritis and rheumatic fever besides dermatitis herpetiformis, sub-corneal pustular dermatosis, erythema elevatum dutinum in which it is used as the first choice of treatment (8). Dapsone was suggested to be able to be effective in the treatment of acne due to having anti-bacterial and anti-inflammatory effect (9).

Studies have been reported about the effectiveness of topical dapsone treatment in AV (9). The use of per-oral dapsone was reported in acne fulminans (10). However, limited data are available about systemic dapsone use in AV. Didona et al. (6) have reported a case report about the effectiveness of dapsone in nodular cystic acne. Wakabayashi et al. (7) have also reported good outcomes about the use of per-oral dapsone in persistent acne. We could obtain satisfactory response with per-oral dapsone treatment.

CONCLUSION

We consider that per-oral dapsone treatment may be a well-tolerated and effective treatment option in patients with moderate/severe, frequently recurring AV which is irresponsive to conventional therapies and dapson can be used for AV in patients who improve severe side effects.

We believe that further prospective clinical studies that will be conducted with more patients and will investigate the effectiveness of dapsone in AV are required.

Informed Consent: Informed consent was obtained from the patient and his mother for the publication of this case report and images.

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