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DERMATOLOGIC THERAPY WILEY

LETTER

Successful treatment of eruptive pyogenic granuloma with propranolol

Dear Editor

Pyogenic granuloma (PG) is a vascular proliferation of skin and mucous membranes.[1] PG usually presents as a solitary, red, rapidly growing papule or nodule, with a subtle collarette of scale. The pathogenesis is still unproved; it can appear spontaneously or triggered by injuries and pharmacological therapies.[2] Different therapeutic approaches have been investigated including curettage, electrocautery, excision, laser surgery and cryotherapy, but even after complete remission, recurrences were still reported.[1] We report the first case of disseminated eruptive PG in an adult patient successfully treated with oral propranolol. A 40-year-old woman referred at our department showing multiple erythematous papules and nodules on her chest, abdomen, legs and arms that had appeared abruptly over the past 30 days (Figure 1(A,B)). Blood examinations revealed iron-deficiency anemia, elevated inflammatory markers (erythrocyte sedimentation rate 52 mm), elevated immunoglobulin E (IgE: 21.1 KU/L) and the positivity of centromere antibody (34.5 UA/mL). Other tests, such as tumor markers, hormone levels, antithyroid autoantibodies, antinuclear antibodies, antineutrophil cytoplasmic antibodies, anticardiolipin antibodies, anti-Ro/SSA and anti-La/SSB antigen-antibody, anti-RNP antibodies, anti-Sm antibodies, anti-Scl70 antibodies, anti-Jo1 antibodies, anti-β2-glycoprotein I antibodies and lupus anticoagulant and serum vascular endothelial growth factor (VEGF) were within normal range. No infection was detected from serological analysis (HBV, HIV, HCV, CMV, HSV, HZV, measles, mumps, rubella). Microbiological and radiological examinations did not reveal any alterations, except for head magnetic resonance imaging that revealed an empty sella. A skin biopsy revealed a vascular lesion mainly characterized by small vessels, lined with hyperplastic endothelium and a lobular attitude, and a smaller proportion of thin-walled, dilated and congested vessels. The presence of increased mitotic activity was found and immunohistochemical investigation showed widespread positivity for CD31. Genetic testing of 154 genes linked at risk of early-onset neoplasms did not show variants of pathogenetic significance. Over the next 4 weeks, the skin condition progressively worsened due to the bleeding of existing PGs and the continuous appearance of new ones. Owing to the severity and recurrence of cutaneous manifestations, we decided to start a systemic treatment with propranolol a dose of 60 mg twice daily. Large angiomas were treated with electrosurgical procedures. After 8 weeks she reported a remarkable clinical improvement with disappearance of the smallest granulomas and reduction of larger lesions (Figure 1(C,D)). After 16 weeks of treatment, the patient experienced a complete resolution of lesions, without any adverse effect.

To date, no validated treatments are available for the treatment of eruptive GP. Beta-blockers are well known to be successful in treating infantile hemangiomas, with few reports demonstrating their efficacy in treating PG.[3] Beta-adrenergic receptor expression in vascular tumors has been investigated and both beta-1 and beta-2 adrenergic receptors have been found in PG.[4] Propranolol is a non-cardioselective blocker of beta-adrenergic receptors. Its possible mechanisms of action in the treatment of vascular tumors are linked to vasoconstriction that reduces capillary blood flow in vascular tumors, a decreased release of proangiogenic factors (i.e., VEGF, bFGF, MMP-2 and MMP-9) and apoptosis of endothelial cells induced by the blocking of VEGFR-2.

To our knowledge, this is the first report of successful treatment of disseminated eruptive PG in adult patient with systemic propranolol. Further research on pathogenic mechanisms implicated in this disease, as well as studies evaluating the efficacy of different treatment modalities are needed in order to better clarify the possible role of systemic propranolol treatment in the management of PG.

Statement of Ethics: A written informed consent was obtained from the patient for the publication of this case report and accompanying images. The authors have no ethical conflicts to disclose.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

AUTHOR CONTRIBUTIONS

Davide Fattore: conceived the work. **Gabriella Fabbrocini**: approved the version to be published. **Adriana Di Guida** and **Gaia De Fata Salvatores**: wrote the manuscript and acquired data. **Lucia Gallo**: wrote the manuscript and revised it critically. **Aikaterini Detoraki**: drafted the work and ensured the accuracy of any part of it.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study

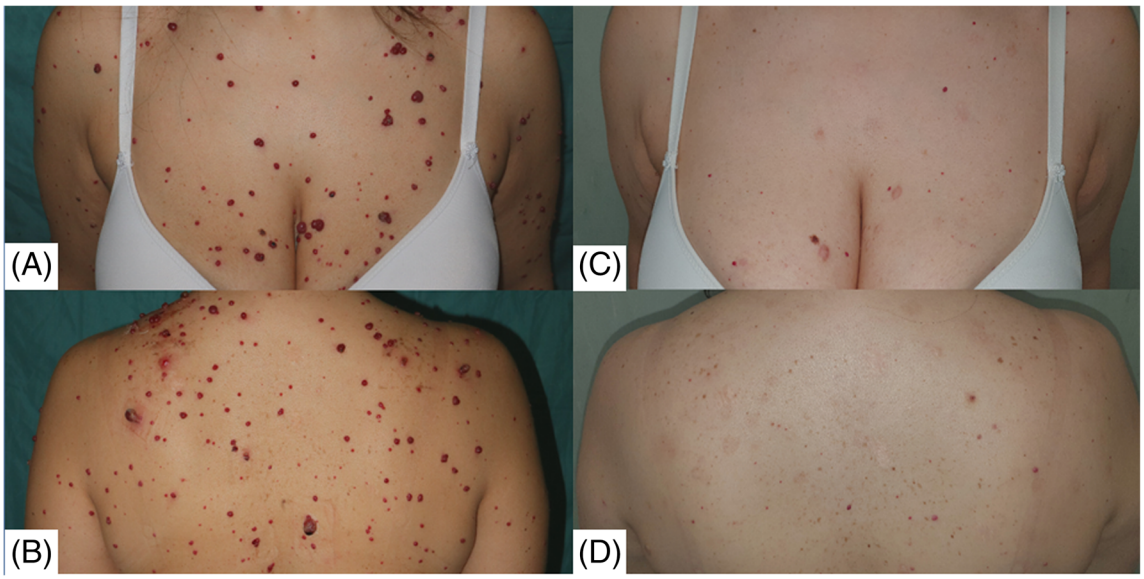

FIGURE 1 Multiple red, rapidly growing papules and nodules, some with eroded surface and bleeding, 1 to 15 mm in diameter, located to chest (A) and back (B). Successful treatment after electrocautery and propranolol both on chest (C) and back (D). Mild post inflammatory hyperpigmentation at the treatment points and small lesions persist

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