

Autosensitization dermatitis: A case of rosacea-like id reaction



Sarah D. Ferree, BA,^{a,b} Connie Yang, BA,^a and Arianne Shadi Kourosh, MD, MPH^a
Boston, Massachusetts

Key words: autosensitization dermatitis; id reaction; rosacea; rosacea-like reaction.

INTRODUCTION

Autosensitization dermatitis, or id reaction, is a cutaneous phenomenon in which an acute secondary dermatitis develops at a location distant from a primary inflammatory focus. The most commonly reported autosensitization dermatitis occurs in patients with venous stasis, with an estimated 37% of these patients experiencing 1 or more episodes of a dermatitis distant to the legs.¹ Autosensitization also frequently results from cases of infection. The classic example of an infectious etiology resulting in auto-sensitization is tinea pedis causing an eczematous eruption on the hands and/or legs. However, multiple infectious organisms including bacteria, viruses, parasites, and fungi are found to cause reactions at areas distant to the site of infection. Id reactions do not always present as eczematous eruptions and may be urticarial, lichenoid, morbilliform, psoriatic, or scarlatiniform in morphology. Additionally, erythema nodosum and erythema multiforme have been observed, among other cutaneous responses.² Here we report a case of a 46-year-old woman with a history of periodontal disease who presents with erythematous papules and pustules on the face, initially diagnosed as papulopustular rosacea but resistant to all usual treatments for this disease. Later, she was found to have a rosacea-like id reaction in response to an oral infection after treatment with amoxicillin-clavulanate.

CASE

Although initially not reported to our team, the patient had a history of periodontal disease as a complication of her type II diabetes and, as a result, had received a full set of dentures 6 months before

presenting to her primary care physician for a rash on her face. Rosacea was diagnosed and initially treated unsuccessfully with courses of topical metronidazole, several oral tetracyclines, and isotretinoin before she was referred to our dermatology clinic. A skin scraping of the affected area was positive for *Demodex* mites, and she underwent 2 rounds of treatment with ivermectin without response. She subsequently underwent treatment with topical metronidazole and oral metronidazole, and then topical dapsone with oral metronidazole, with some, however, insufficient improvement in her symptoms. Because she reported that her flushing was episodic and at times very severe and associated with sensation of heat, laboratory values for carcinoid syndrome and pheochromocytoma were also ordered, and results were within normal limits.

Approximately 1 year after her initial visit to our clinic, the patient presented to urgent care for pain and swelling under the right jaw. At this time, she also revealed a 1-year history of worsening gingival pain of her right lower mouth, ipsilateral to the facial swelling. The dental examination was limited, as she had her dentures in place, but the oral mucosa was otherwise normal. The right submandibular region was notable for a 2-cm, erythematous, warm, and tender nodule. The dermatology service was consulted and submandibular cellulitis was diagnosed and treated with a 10-day course of amoxicillin-clavulanate. At follow-up visit 3 weeks later, the submandibular infection had resolved, and the skin examination was clear of papules and pustules on the face with minimal residual erythema of the medial cheeks. However, the patient reported a gradual recurrence of the facial lesions in the weeks

From Massachusetts General Hospital and Harvard Medical School^a and Boston University School of Medicine^b.

Funding sources: none.

Conflicts of interest: None disclosed.

Correspondence to: Arianne Shadi Kourosh, MD, MPH, Department of Dermatology Massachusetts General Hospital, 55 Fruit St, BAR 622, Boston, MA 02114. E-mail: Akourosh@partners.edu.

JAAD Case Reports 2019;5:410-2.
2352-5126

© 2019 by the American Academy of Dermatology, Inc. Published by Elsevier, Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.jidcr.2019.02.029>



Fig 1. Central face with erythema and multiple erythematous papules and pustules.

after our examination. Thus, she was treated with an additional 3-week course of amoxicillin-clavulanate. At follow-up 5 months later, she reported sustained improvement of her skin with no recurrence. She was referred to a dentist for follow-up evaluation and monitoring to ensure that there is no persistent nidus for subclinical infection.

PHYSICAL EXAMINATION

Upon initial referral to our clinic, cutaneous examination of the face was significant for central erythema, telangiectasias, and multiple papules and pustules (Fig 1).

DISCUSSION

The current mechanism of autosensitization dermatitis is thought to be related to spillover of excess cytokines produced in response to an irritation or wounding of the skin that are then hematogenously disseminated. These cytokines may then predispose certain regions of the skin to autosensitization and cause a secondary dermatitis.^{3,4} Feit et al⁵ suggest sluggishness of the blood in areas of poor circulation may be the reason that id reactions and other dermatologic diseases frequently appear on acral regions, which include the nose and medial face. Feit et al⁵ report additional examples of diseases commonly predisposed to affect areas of slowed or altered circulation, such as lupus erythematosus and leprosy localized to the medial face and erythema induratum in response to infection with

Mycobacterium tuberculosis affecting the acral area of the lower legs. As seen in rosacea, relatively poor functionality of vascular structures within the skin of the medial face including increased vasodilation, vascular hyperreactivity, and abnormal neovascularization may cause a susceptibility to injury in these areas.⁶ Rosacea skin may be especially vulnerable to injury from bacterial products and cytokines released from a nearby infection. In addition to altered vascular function, rosacea skin is found to have altered innate immune responses compared with normal skin types, with enhanced reactivity to immune stimuli and increased release of cytokines and antimicrobial molecules in rosacea skin.⁷ Papulopustular rosacea may, at least in some cases, be a reaction to bacteroides or inflammatory products in areas of skin with vascular structures particularly sensitive to accumulation of bacterial components and cytokines.⁵

Although this patient's erythematous papules and pustules completely resolved after treatment with several weeks of amoxicillin-clavulanate, the patient continues to have mild erythema and telangiectasias of the medial cheeks. This patient likely has erythematotelangiectatic-type rosacea at baseline, and indeed was also *Demodex* positive at initial presentation to our clinic and showed very mild but unsustainable improvement to the combination oral and topical metronidazole, but not ivermectin, treatments. The patient's underlying rosacea, with vascular dysfunction and heightened innate immune responses seen in this disease, likely predisposed her to an autosensitization dermatitis. The subsequent autosensitization of irritable medial facial tissues resulting from continued local release and circulation of cytokines from the oral infection then led to a papulopustular rosacea-like id reaction. Treatment of the underlying infection resolved the id reaction, whereas the underlying erythematotelangiectatic-type rosacea remains.

There are several other case reports of infectious dental foci associated with rosacea.^{5,8-10} Similarly, our patient had the symptoms of papulopustular rosacea shortly after extraction of teeth caused by diabetic periodontal disease and receiving new dentures. This patient's rosacea did not respond to any medications used in the usual treatment of rosacea and *Demodex*, and all other known contributing factors in rosacea such as ultraviolet light exposure, alcohol, and exercise had also been accounted for—we had exhausted all standard treatment options for both papulopustular rosacea and demodex. This patient's rosacea-like symptoms only resolved after a course of antibiotic treatment

for a submandibular soft tissue infection.¹¹ The patient had been treated with multiple rounds of antibiotics, but none with oral anaerobe coverage. Given the history of escalating gingival pain in combination with lack of dental care and resolution of both her dental and skin symptoms with amoxicillin-clavulanate, we believe the patient likely had a persistent subclinical oral infection that was left untreated and escalated to a submandibular infection. We are aware of few other cases of papulopustular rosacea being treated with a nonstandard antibiotic like amoxicillin-clavulanate; however, often these cases include amoxicillin in triple therapy for the treatment of *Helicobacter pylori* infection related to rosacea symptoms.¹² The successful resolution of rosacea symptoms after the eradication of *H pylori* may raise the question of rosacea-like id reaction in these cases as well as support a relationship between oral and gastrointestinal infection and rosacea or rosacea-like id reaction, although some studies on this subject have been mixed, and certainly more research is required to establish a clear causality.¹³

Interestingly, all previous reported cases of rosacea-like id reactions triggered by dental sources have been associated with frank dental abscesses and visible periodontal disease that were noted on examination in the mouth and in most cases treated by drainage or removal of dentition and thus the nidus of infection. In this case, there was no obvious site of infection identified, and throughout continued rosacea symptoms over the course of a year and a half, the patient never reported any dental symptoms or informed any of her providers that she had false teeth. This illustrates the importance of considering rosacea-like id reactions in the differential diagnosis and obtaining an oral/dental history in addition to oral examination in patients with refractory cases of rosacea. Furthermore, in patients who have false teeth or history of similar dental work, even in cases in which they may be asymptomatic and not have obvious oral lesions, the possibility of subclinical oral infections should be

considered, as patients may benefit from treatment options that include coverage for oral anaerobes.

CONCLUSION

Rosacea-like symptoms can be associated with dental infection. Certain cases of rosacea, especially those refractory to traditional treatments, may in fact be id reactions in response to localized infections, especially oral infections, and may benefit from a course of antibiotics with coverage for oral flora.

REFERENCES

1. Evans MP. Id reaction (autoeczematization). eMedicine [updated Jul 10, 2018]. <http://www.emedicine.com/derm/topic193.htm>. Accessed August 22, 2018.
2. Ilkit M, Durdu M, Karakaş M. Cutaneous id reactions: a comprehensive review of clinical manifestations, epidemiology, etiology, and management. *Crit Rev Microbiol*. 2012; 38(3):191-202.
3. Uchi H, Terao H, Koga T, Furue M. Cytokines and chemokines in the epidermis. *J Dermatol Sci*. 2000;24(Suppl 1):S29-S38.
4. Bruynzeel DP, Nieboer C, Boorsma DM, Scheper RJ, van Ketel WG. Allergic reactions, "spillover" reactions, and T cell subsets. *Arch Dermatol Res*. 1983;275(2):80-85.
5. Feit H, Elizabeth AL, Frank V. Rosacea interpreted as a bacterid from focal infection. *JAMA*. 1935;105(22):1738-1741.
6. Rainer BM, Kang S, Chien AL. Rosacea: epidemiology, pathogenesis, and treatment. *Dermatoendocrinol*. 2017;9(1): e1361574.
7. Yamasaki K, Gallo RL. The molecular pathology of rosacea. *J Dermatol Sci*. 2009;55(2):77-81.
8. Cameli N, Cavallotti C, Muscardin L, Mariano M. Two cases of gnatophyma, an unusual form of rosacea. *Skin Appendage Disord*. 2017;2(3-4):180-182.
9. Lesclous P, Maman L. An unusual case of a relationship between rosacea and dental foci. *Oral Surg Oral Med Oral Pathol Radiol Endod*. 1999;88(6):679-682.
10. Ilyas EN, Hanson MR, Lawrence N, Green JJ. Gnatophyma: a rare rosacea phyma variant. *J Am Acad Dermatol*. 2006;55(1): 165-166.
11. Boscolo-Rizzo P, Da Mosto MC. Submandibular space infection: a potentially lethal infection. *Int J Infect Dis*. 2009;13(3): 327-333.
12. Utaş S, Ozbakir O, Turasan A, Utaş C. Helicobacter pylori eradication treatment reduces the severity of rosacea. *J Am Acad Dermatol*. 1999;40(3):433-435.
13. Lazaridou E, Korfitis C, Kemanetzi C, et al. Rosacea and Helicobacter pylori: links and risks. *Clin Cosmet Investig Dermatol*. 2017;10:305-310.