

Eczema herpeticum: A possible side effect of dupilumab(dupixent).

Arjun Kandel¹*, Dong vincent², Divya Koirala³

¹Kandel Arjun Asthma, allergy and sleep center, 345 E 37 th Street, 319, New York, NY 10016

²Dong vincent Touro college of osteopathic medicine, 230 W 125th St, New York, NY 10027

³Koirala Divya Kist medical college Imadol Marg, Lalitpur 44700, Nepal

Abstract

We present a case of eczema herpeticum in a patient with moderate persistent asthma and atopic dermatitis after initiation of Dupilumab (Dupixent). Eczema herpeticum, a disseminated viral infection usually associated with the Herpes Simplex Virus (HSV), is an extensive cutaneous cluster of vesicular itchy blisters or punched out erosions that arises from pre-existing skin disease, usually atopic dermatitis.

Keywords: Eczema herpeticum, Dupilumab, Dupixent.

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Introduction

Eczema herpeticum can progress to disseminated infection and death if left untreated. In the 52-week Dupixent (Regeneron Pharmaceuticals, Inc.) trial, the rate of eczema herpeticum was similar in the placebo and Dupixent groups in the atopic dermatitis trials. We present a case of eczema herpeticum after the patient was initiated on Dupilumab for asthma management and control.

Case

We report on a 13-year-old girl with moderate persistent asthma, allergic rhinitis, atopic dermatitis, and allergy to foods including peanuts, seafood, and eggs. The patient presented in 2019 due to recurrent asthma exacerbations, mainly during the winter periods. In 2018, the patient had two emergency room visits for an allergic reaction, one asthma exacerbation in 2018 where the patient saw her PCP, and in 2017 patient had one emergency room visit for asthma exacerbation. The patient requires the use of an albuterol inhaler at school 15 mins prior to each gym class. Blood work lab testing reported patient's serum IgE is 3913 kU/L with absolute eosinophils 578 cells/uL and eosinophils 8.5%. The patient completed subcutaneous and intradermal skin allergy testing and was sensitized to numerous allergens including tree mix, mountain cedar, hackberry, mulberry tree, white pine, grass mix, nettle, marsh elder, ragweed, sorrel, mold mix, cephalosporin, epicoccum, phoma, Trichoderma, cat, dog, feather mix, cockroach, and mite mix.

The patient's treatment regimen began in January 2019 with the initiation of Flovent 110 mcg 2 puffs twice daily, Singulair 5 mg daily, Albuterol prn, and Prednisone 50 mg daily for five days as per patient's pulmonary function test and NiOx. The pulmonary function test performed at the

patient's initial visit showed reactive airway disease with FEV1 of 92%, normal DLCO, normal residual volume, and a NiOx of 198 ppb. The patient was noncompliant with the medication regimen and followed up in August 2019 with a decreased lung function test which showed small airway disease, high reactivity, high residual volume, normal DLCO, 10th percentile for age, height, and weight, and a NiOx of 88 ppb. As a result, the patient was prescribed Prednisone 50 mg daily for five days followed by Prednisone 20 mg daily for an additional five days and re-initiated inhaled corticosteroid therapy of Flovent 110 mcg 2 puffs twice daily and Singulair 5 mg daily.

The patient's treatment regimen for atopic dermatitis included Eucrisa 2% ointment and Triamcinolone ointment. In addition to inhaled corticosteroid medication therapy, the patient also began allergy subcutaneous immunotherapy and received weekly injections beginning at 0.05 mL with gradual subsequent increases in dose.

Given the patient's diagnosis of moderate persistent asthma and a history of atopic dermatitis, dupilumab (Dupixent) was approved as an add-on maintenance treatment for uncontrolled moderate eosinophilic and oral steroid-dependent asthma. The patient received a loading dose of 600 mg (300 mg in each arm) subcutaneously in October 2019, followed by 300 mg dose every 2 weeks. Alongside biweekly Dupilumab administration, the patient continued a regimen of Flovent 110 mcg 2 puffs twice daily, Singulair 5 mg daily, albuterol prn, and weekly allergy immunotherapy. During the first week of February 2020, the patient received a biweekly injection of Dupilumab, and two days after injection developed multiple painful papulovesicular lesions with punched out crusted ulcer on bilateral cheeks and a smaller amount around the eyes which worsened over two days. As a result,

the patient's mother called the office, and the patient was prescribed a course of Acyclovir 400 mg three times daily and an Acyclovir ointment. Upon following up for an appointment that week patient reported reduced pain and symptoms (Figures 1 and 2).



Figure 1. Eczema herpeticum before treatment.



Figure 2. Eczema herpeticum post-treatment.

Discussion

Eczema herpeticum is a documented rare side effect of Dupilumab. Other known adverse reactions include oral herpes, keratitis, eye pruritis, and other herpes simplex virus infection including genital herpes, herpes simplex otitis externa, and herpes virus infection. Dupilumab is a humanized monoclonal antibody for the alpha subunit of the interleukin-4 receptor, and through this antagonistic action, modulates signaling of both the interleukin 4 and interleukin 13 pathways which are linked to allergy and atopic diseases. The previous study has shown that herpes virus infections were more frequent in patients given dupilumab than in those given placebos and that blockade of IL-4 or IL-13 signaling may result in a slightly increased risk of herpes simplex virus infection in patients with atopic dermatitis who are receiving dupilumab [1-10].

Dupilumab

In March 2017, The United States Food and Drug Administration approved dupilumab for the treatment of uncontrolled moderate to severe atopic dermatitis for patients ages 12+, as an add-on maintenance treatment for moderate to severe asthma with an eosinophilic phenotype or oral corticosteroid dependence for ages 12+, and as add-on maintenance treatment for inadequately controlled chronic rhinosinusitis with nasal polyposis for ages 18+.

Conclusion

About 13 percent of all children in the U.S. have atopic dermatitis, which can adversely affect the quality of life for the patient and their family. Also, children with moderate to severe asthma are also limited in their activity due to pulmonary restriction, further affecting the quality of life. Dupilumab is an effective monoclonal antibody designed as an add-on maintenance treatment for uncontrolled moderate to severe asthma and uncontrolled moderate to severe atopic dermatitis. In this case, we presented a 13-year-old who developed a rare side effect of eczema herpeticum after initiation of Dupilumab.

While on this combination therapy of Dupixent, Flovent 110 mcg 2 puffs twice daily, Singulair 5 mg daily, and allergy subcutaneous immunotherapy patient's asthma was well controlled. The patient had a significant reduction in oral corticoid steroid use alongside with zero emergency room visits, visits to PCP for respiratory issues, and missed no school days due to asthma.

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*Correspondence to:

Arjun Kandel
Asthma, allergy and sleep center,
345 E 37 th Street,
New York,
E-mail: mailatcoc@gmail.com