Case Report

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A rare condition: Montelukast allergy

Fatma Dindar Çelik, Hatice Çelik Tuğlu, Melis Yağdıran, Özgür Akkale, Onur Telli, Kurtuluş Aksu

ORCID:
Fatma Dindar Çelik: 0000-0001-7694-8365
Hatice Çelik Tuğlu: 0000-0003-1185-7803
Melis Yağdıran: 0000-0002-0384-3957
Özgür Akkale: 0000-0003-4848-6014
Onur Telli: 0000-0001-5053-827X
Kurtuluş Aksu: 0000-0001-6195-1158

Abstract:

Montelukast, selective leukotriene (LT) receptor antagonist specific for cysteinyl LT type 1 receptors, serves as an alternative treatment option for asthma and different allergic clinical conditions. However montelukast, itself, may rarely induce hypersensitivity reactions. Although rare, clinicians, especially those working in pulmonology and allergy clinics, should be aware of the potential for montelukast to cause hypersensitivity reactions. Herein, we present a 61-year-old female patient who was followed up with Samter's syndrome and developed urticarial rashes after montelukast treatment, and montelukast allergy was confirmed by oral drug provocation test.

Keywords:

Allergy, asthma, hypersensitivity, leukotrienes, montelukast, pulmonary medicine

Introduction

Leukotrienes (LTs) are mediator molecules that play a pivotal role in the pathogenesis of asthma, leading to mucus secretion and bronchoconstriction. Montelukast is a selective Leukotriene Receptor Antagonist (LTRA) targeting cysteinyl LT type 1 receptors, providing an alternative treatment approach for asthma.[1] Apart from its antagonistic effect on LTs, montelukast contributes to bronchodilation by activating beta-2 receptors. It is commonly employed in pulmonary diseases and allergy clinics for various indications. First, according to international guidelines for asthma and allergic rhinitis, montelukast is recommended for mild, moderate, and severe asthma, as well as for rhinitis that is unresponsive to nasal steroids.[1,2] Second, montelukast is sometimes used in conjunction with antihistamines in specific urticaria cases.[3] Third, montelukast is suggested as a premedication in desensitization protocols applied for drug allergies.[4] Lastly, using LTRA in the Samter triad has shown benefits in alleviating nasal symptoms and increasing asthma control.[5] Nonetheless, montelukast, although employed for various allergic conditions, infrequently induces hypersensitivity reactions.

Division of Immunology and Allergy, Department of Chest Diseases, University of Health Sciences, Ankara Atatürk Sanatoryum Training and Research Hospital, Ankara, Türkiye

Address for correspondence:
Dr. Kurtuluş Aksu, Division of Immunology and Allergy, Department of Chest Diseases, University of Health Sciences, Ankara Atatürk Sanatoryum Training and Research Hospital, Ankara, Türkiye.
E-mail: kurtulusaksu@yahoo.com

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Case Report

A 61-year-old female patient diagnosed with Samter syndrome presented to the allergy clinic complaining of month-long redness, swelling, and itching on her body. Her treatment regimen included inhaled budesonide-formoterol fumarate combination, intranasal fluticasone propionate, and oral montelukast and bilastine. She indicated that her symptoms worsened, especially after administering bilastine and montelukast. Her physical examination revealed widespread urticarial lesions across her body, but her systemic examination was otherwise normal.

Laboratory tests, which encompassed complete blood count, renal and liver function tests, blood glucose and serum electrolytes, urinalysis, complement component 4 (C4), total immunoglobulin E (IgE), and serum triptase levels, were within standard parameters. Rheumotalogic markers such as cytoplasmic anti-neutrophil cytoplasmic antibodies (c-ANCA), perinuclear anti-neutrophil cytoplasmic antibodies (p-ANCA), anti-double-stranded DNA (anti-dsDNA), and antinuclear antibodies (ANA), along with hepatitis serology, were negative. No pathogens were identified in the urine culture or the parasitic stool examination.

To manage the patient's urticaria symptoms, oral methylprednisolone 40 mg/day was initiated. Due to the patient's drug history that involved simultaneous use of bilastine and montelukast, LTRA and antihistamine were halted pending further assessments. The patient's symptoms receded within five days following systemic steroid administration, after which the treatment was discontinued. Drug provocation tests were subsequently planned. In the interim, when the patient sought treatment at the dermatology clinic, ebastine was prescribed following a biopsy of the lesions, which were found to be consistent with urticaria. On her follow-up visit to our clinic, she reported taking ebastine 20 mg daily for three months without any issues. Urticarial plaques did not reappear during the 2-month follow-up after discontinuing ebastine. Both her asthma and rhinitis were managed effectively with inhaler and intranasal treatments. Subsequent tests included a prick-to-prick skin test with montelukast 10 mg tablets, which yielded a negative result. An oral provocation test with montelukast began with an initial dose of 0.833 mg, followed by doses of 1.66 mg, 2.5 mg, and 5 mg at one-hour intervals. Itching, redness, and swelling manifested around the oral area and on both gluteal regions seven hours after the final dose [Fig. 1]. These reactions subsided naturally within 5-6 hours without any residual marks. Given the uricarial response seven hours after the montelukast oral provocation test, the patient was diagnosed with a montelukast allergy.

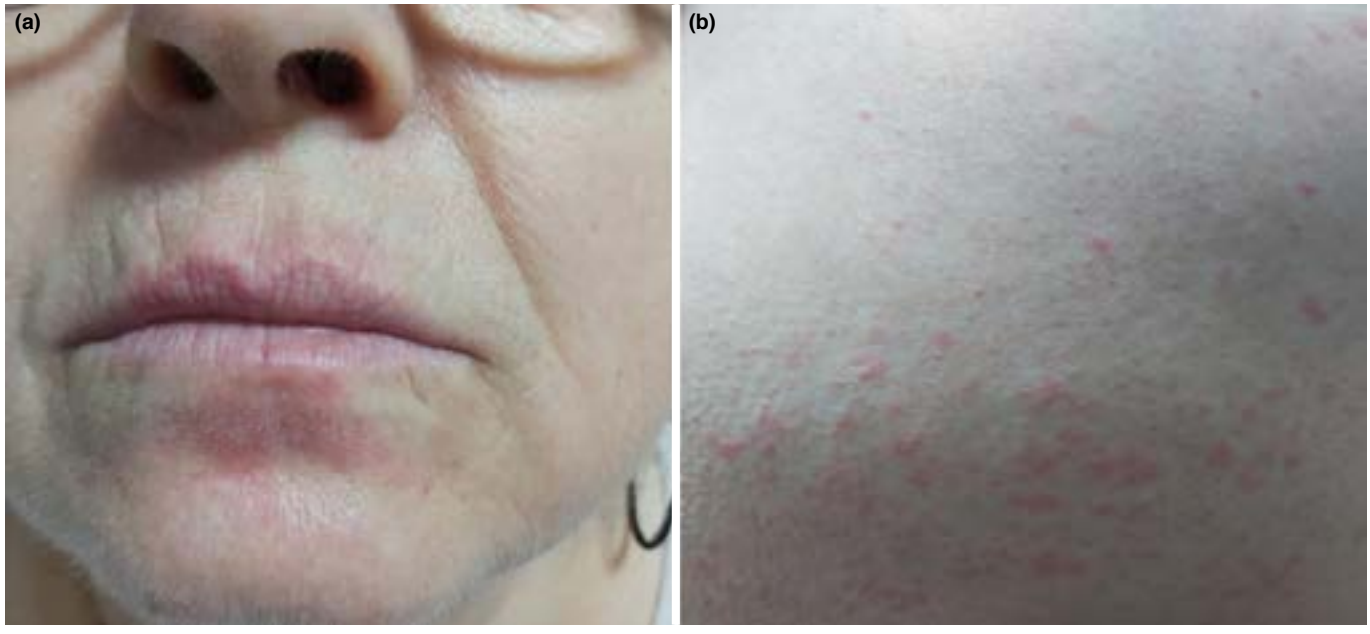

Figure 1: Redness in the peroral area (a) and the gluteal region (b)

Discussion

For asthma management, it is advised to commence treatment with inhaled corticosteroids (ICS) as an initial step and to integrate combination therapies as the treatment intensifies. Present Global Initiative for Asthma (GINA) guidelines advocate LTRAs as an alternative treatment option beginning from the second step of asthma management.[1] Montelukast, utilized for treating asthma, allergic rhinitis, and urticaria, is generally well-received by patients. Nonetheless, although rare, side effects such as anaphylaxis, angioedema, muscle weakness, elevated transaminases, eosinophilia, sleep disturbances, depression, and agitation can occur.[6] Eosinophilic granulomatous polyangiitis, a seldom-seen vasculitis associated with asthma, has had cases linked to montelukast use, even though its exact pathogenesis remains elusive.[7,8] There have been reports in literature of dermatitis and urticaria arising post-montelukast consumption. Often, these instances feature concurrent use of other medications alongside montelukast montelukast.[9, 10]

In the case presented, we report urticaria development following montelukast use due to Samter's syndrome. The patient's allergy to montelukast was confirmed through an oral drug provocation test. In previously reported montelukast allergy cases, unlike this one, diagnoses were often based on patient histories, many of which involved the concurrent use of various drugs.

While montelukast allergies are extremely rare, clinicians, especially those in pulmonary diseases and allergy clinics where this drug is frequently prescribed, should be aware of the potential for rare hypersensitivity reactions to montelukast.

Informed Consent

Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Conflicts of interest

There are no conflicts of interest.

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Nil.

Peer-review

Externally peer-reviewed.

Authorship Contributions

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