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A twelve-year-old female patient developing anaphylaxis during the initial phase of conventional immunotherapy: a case report

Konvansiyonel immünoterapinin başlangıç fazında anafilaksi gelişen on iki yaşında kız hasta: bir olgu sunumu

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Abstract
Allergen specific immunotherapy is administered to asthmatic patients and allergic rhinitis treatment. Local and systemic reactions can occur after administration of allergen specific immunotherapy. Our case was a patient with allergic rhinoconjunctivitis whose complaints could not be controlled by medical treatment and eventually subcutaneous immunotherapy was administered. Approximately ten minutes after subcutaneous injection during the initial phase of conventional immunotherapy, the patient developed shortness of breath, cough and pruritus and was diagnosed with anaphylaxis due to immunotherapy. We aim to emphasize that severe systemic reactions (anaphylaxis) can occur due to immunotherapy injections which are effectively used in the treatment of allergic rhinitis and asthma.
Keywords: Anaphylaxis; Immunotherapy; Initial Phase.

Öz
Allerjen spesifik immünoterapi, astım hastalarında ve alerjik rinit tedavisinde kullanılan bir tedavi yöntemidir. Alerjen spesifik immünoterapisinin uygulamasından sonra, lokal ve sistemik reaksiyonlar ortaya çıkabilmektedir. Olgumuz, alerjik rinokonjuktivit tanısı alan ve verilen medikal tedaviye rağmen şikayetleri kontrol altına alınamayan bir hastaydı ve konvansiyonel immünoterapi tedavisi başlanıldı. Konvansiyonel immünoterapinin başlangıç fazında yapılan subkutan enjeksiyondan yaklaşık on dakika sonra nefes darlığı öksürük ve vücudunda yaygın kaşıntı şikayeti başladı. Hastaya immünoterapiye bağlı anafilaksi tanısı konuldu. Bu olgu nedeniyle alerjik rinit ve astım tedavisinde etkin olarak kullanılan immünoterapi enjeksiyonuna bağlı şiddetli sistemik reaksiyonların (anaflaksi) görülebileceği bir kez daha vurgulamak istenildi.
Anahtar Kelimeler: Anafilaksi; İmmünoterapi; Başlangıç Fazı.

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INTRODUCTION

Allergen-specific immunotherapy is a treatment method that is used effectively in the treatment of allergic rhinitis and asthma. However, the application of allergen immunotherapy can lead to local and systemic reactions [1]. While systemic reactions are highly dependent on immunotherapy methods, mild local reactions such as erythema, hives, swelling as well as reactions that can cause life-threatening conditions such as respiratory distress or anaphylaxis can be seen. The applied methods include immunotherapy in which the rate of systemic reactions in patients undergoing immunotherapy can reach 34%; this ratio in patients undergoing conventional immunotherapy, this rate is around 1% (1-2). Although the majority of systemic reactions are usually seen in the first 30 minutes in subsequent implementation of immunotherapy injection, these reactions rarely occur in later periods (2). In this report, we presnet the case of a patient, who underwent conventional immunotherapy, develops systemic reaction (anaphylaxis) for about 10 minutes after the injection in the initial phase of the immunotherapy.

We want to emphasize that severe systemic reactions injections (anaphylaxis) can be seen due to immunotherapy, a treatment modality which is used in allergic rhinitis and asthma.

CASE REPORT

A twelve-year-old female patient presented with epiphora, nasal itching in summer, when sneezing, nasal congestion, and itchy eyes are common place compared to the other 3 seasons. The patient, who had allergic rhinoconjunctivitis, was examined and induration against grass pollen 7x 6 mm (Timothy 8x5 mm), grape seed, and 9x7 mm and 5x5 mm rye were detected in skin prick tests. Although the patient's complaints had been continuing despite a two-year medical treatment at another clinic, the patient was diagnosed with allergic rhinoconjunctivitis. The disease severity was moderate-severe allergic rhinitis. We started subcutaneous immunotherapy with Allergovit vaccine (Allergovit; Allergopharma GmbH & Co. KG, Hamburg, Germany) 006 herbs (80%) + 158 rye (20%) and Allergovit vaccine (Allergovit; Allergo pharma GmbH & Co. KG, Hamburg, Germany) along with 154 grape seed. The patient developed complaints of cough, generalized pruritus and respiratory distress symptoms about ten minutes after the immunotherapy injection applied with B bottle (0.6ml). On physical examination, the patient's respiratory rate was 36/min, pulse was 100/min, and arterial blood pressure was 85/55 mmHg; the patient also had sibilant rhonchi with auscultation of bilateral lungs. The patient was diagnosed with anaphylaxis. We administered intramuscular epinephrine 0.01 mg/kg and short-acting inhaled beta-2 agonists in addition to oxygen treatment. Five minutes after the intramuscular adrenaline administration, the patient stated that the shortness of breath was recovered; the patient's arterial blood pressure was found to be 105/75 mmHg at this moment. The patient was discharged after a twenty-four-hour monitoring without any complaints and the immunotherapy was terminated.

DISCUSSION

Allergen-specific immunotherapy is an effective treatment method used in patients with asthma and allergic rhinitis (3). Allergic rhinitis patients have shown recovery in their asthma using this treatment modality (4-8). However side-effects can be seen in the subcutaneous allergen specific immunotherapy. Side effects can occur as these may range from local reactions such as redness, swelling and pain at the injection area to systemic reactions such as respiratory distress symptoms and anaphylaxis reactions (8-10).

Local and systemic reactions developing during allergen immunotherapy treatment vary according to the type of modification and the allergen extract used in immunotherapy. Local reactions can occur within the first 30 minutes of local injection. In case these local reactions take place during monitoring, adjustment of the dose of allergen in the immunotherapy may be required (1). In aluminum adsorbed extracts, a physical modification type, site nodules are more prevalent in subcutaneous injection areas. It is stated that the nodules regress during follow-ups and there is no need to initiate immunotherapy treatment. For patients who develop these types of reactions, practitioners should prefer aluminum-free preparations (1-3). Systemic reactions are characterized by generalized symptoms away from the injection site; systemic reactions starts within the first ten minutes while they rarely occur within 30 minutes of injection. Itching in the throat, widespread allergic reactions such as angioedema and systemic symptoms lead up to anaphylactic shock. In case of such systemic reactions, it is necessary to revise the immunotherapy treatment. Asthma plays an important role in the onset of systemic reactions (11). Such reactions and the majority of fatal cases associated with asthma are reported to occur within the first half hour of injection treatment (10-11).

Treatment induced systemic reactions are classified according to their induction time and severity. Systemic reactions are classified as reactions developing within 30 minutes after the treatment, which are referred to as early-onset systemic reactions, and as reactiong developing after 30 minutes, referred to as late-onset systemic reactions (1-6). Classification according to severity of systemic reactions is based on World Health Organization's classification system of subcutaneous immunotherapy (5-7). Our case has been recognized as a grade 4 systemic reaction according to WHO classification due to hypotension and respiratory problems (sibilant rhonchi).

In our case, immunotherapy treatment was terminated due to emerging anaphylaxis following subcutaneous immunotherapy injections. Observation time should be extended for systemic reactions after subcutaneous immunotherapy injection. Patients must be informed about potential systemic reactions and their consent must be obtained.

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