EDITORIAL

Comment on "Calcium preparations do not inhibit allergic reactions: a randomized controlled trial"

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Allergic inflammation underlying allergic asthma, allergic rhinitis, food allergy, atopic dermatitis, urticaria, and anaphylaxis is associated with enhanced immune activation of numerous inflammatory cells, including eosinophils, neutrophils, lymphocytes, and macrophages. These cells are important sources of a wide variety of proinflammatory mediators.[1,2] Recent studies concerning the pathology of chronic allergic inflammation have indicated that inflammation is induced by T–helper (Th)-2 cells (including Th1, Th2, Th9, Th17, and Th22 and their specific cytokines—interleukin [IL] 17, IL-22, and IL-25), as well as by epithelial cell cytokines such as IL-33 and thymic stromal lymphopoietin.[1,3,4] Moreover, immunoglobulin E, discovered in 1967, has the ability to induce potent inflammatory immune responses in various tissues and organs.[5] Platelets and their mediators, platelet-activating factor in particular, are also implicated in both allergic and nonallergic inflammatory diseases.[6]

The complex mechanisms underlying allergic diseases significantly affect the treatment options available to patients. So far, corticosteroids and antihistamine drugs have been the most common therapies used in numerous allergic diseases. According to the "Indications of Use" and "Summary of Product Characteristics," calcium preparations are recommended as an additive treatment in selected allergic diseases. The US Food and Drug Administration has approved calcium use in allergic diseases in the form of intravenous infusion of calcium gluconate (10%). However, not only international but also Polish guidelines do not recommend the use of calcium preparations in allergic diseases. Therefore, the issue remains controversial.

In an article published in the current issue of the *Polish Archives of Internal Medicine* (*Pol Arch Intern Med*), Matysiak et al[7] discuss the problem of the efficacy of orally administered calcium carbonate in allergic reactions. In their randomized, double-blind, placebo-controlled study, they used the allergen-induced skin prick test to examine the reactions and reported no significant difference in the wheal size or pruritus between patients receiving calcium carbonate or placebo at any of the time points. Therefore, they found no evidence to support the efficacy of calcium preparations in allergy-related skin reactions associated with itching and wheals. The results of this study are very interesting but, as mentioned by the authors, are not corroborated by other studies. According to Bachert et al,[8] intravenous calcium decreased the nasal air flow in the nasal allergen provocation tests in patients suffering from allergic rhinitis. In another placebo-controlled double-blind trial, Bachert et al[9] showed that oral calcium medication administered at a dose of 1000 mg also significantly inhibited the allergen-induced swelling of the nasal mucosa in the allergen provocation test in patients with allergic rhinitis. Debelic[10] assessed the effect of an orally applied calcium preparation on the immediate allergic reaction. The prick test with histamine and grass pollen mixed extract showed a highly significant decrease in the wheal diameter after an oral calcium preparation when compared with the test before application.

In Poland, different calcium formulations are particularly common in allergic diseases, especially asthma, urticaria, angioedema, and even in anaphylaxis. A few years ago, Sozanski et al[11] published an interesting review concerning calcium use in allergic diseases. They generally concluded that the use of calcium preparations in this indication is still controversial, and there had been only single studies reporting a positive effect of calcium in the therapy of allergic diseases.

In summary, the study of Matysiak et al,[7] despite several limitations described in the discussion section, fills the gap in knowledge on the use of calcium preparations in allergic diseases.

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