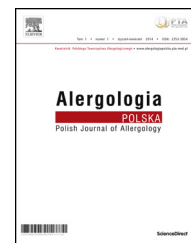


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Review/Praca pogładowa

Practical implications of nasal allergen provocation testing



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ABSTRACT

Due to its high sensitivity and specificity, nasal allergen challenge has a special place among differential diagnostic tests for allergic rhinitis. Such assessment of early and late phases of allergic reactions not only provides information on the local nasal mucosa response, but helps determine the degree of sensitivity to specific allergens as well.

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Introduction

Nasal allergen provocation testing (NAPT) plays a role in nasal allergy diagnostics due to its high sensitivity and specificity. Moreover, in case of significant discrepancies between the patient's history, skin prick test results, and/or sIgE levels, NAPT often has the decisive role in qualifying the patient for immune therapy (Fig. 1). Allergic Rhinitis and its Impact on Asthma (ARIA) Guidelines define allergic rhinitis as "the symptoms caused by immunologically mediated (most often IgE-dependent) inflammation after the exposure of the nasal mucous membranes to offending allergens. Symptoms of allergic rhinitis include rhinorrhea,

nasal obstruction or blockage, nasal itching, sneezing and postnasal drip that reverse spontaneously or after treatment." [1].

Nasal allergen challenge

Allergen challenge produces an immediate response within the nasal mucosa. This involves mainly mast cell and macrophage activation. Coated with immunoglobulins, these cells stimulate the release of mediators, such as tryptase, histamine, CysLT, and PGD₂, which in turn activate sensory nerve and blood vessel receptors within the nasal mucosa [2, 3]. Moreover, mast cells release chemotactic

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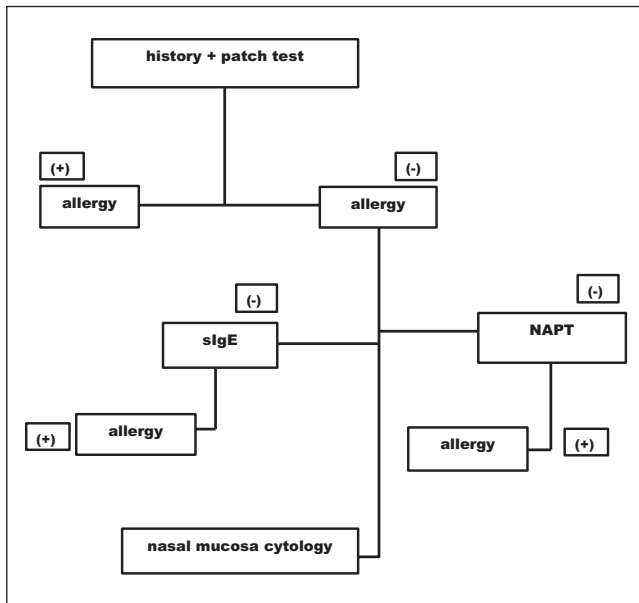


Fig. 1 – The protocol for allergic

agents and the platelet activating factor (PAF), which enhance the inflammation [3].

The early phase of an allergic reaction typically lasts up to 20–30 min and (in approximately 30–40% of subjects) may continue into the late phase, with an onset approximately

4 h after the initial nasal allergen challenge [4]. The early phase includes the following symptoms:

- itching within the first minute
- sneezing and increased production of serous secretion at 2–3 min
- swelling of nasal mucosa at approximately 10 min [2].

Following localized allergen challenge, nasal symptoms last usually up to 30 min, with their intensity depending on individual sensitivity and the extent of the allergic reaction. Despite generally being considered a relatively safe method, due to the potential NAPT-related side effects, this examination technique requires the allergy testing office to be equipped with an anti-anaphylaxis drug kit [5–7]. Kupczyk estimated the rate of NAPT-related side effects to be approximately one in several hundred tests [8].

The late phase of allergic reactions is characterized by the release of cytokines and chemokines into the bloodstream, which leads to the recruitment of eosinophils from the bone marrow and the secretion of eosinophil cationic protein (ECP) and major basic protein (MBP). The signs and symptoms of the late phase of allergic reactions are:

- nasal congestion
- sneezing
- nasal discharge [2, 4]

The International Committee on Objective Assessment of the Nasal Airways [9] and 2010 Polish Consensus on Standardization of Nasal Allergen Provocation Testing [2] guidelines include:

- Testing protocol (Fig. 2) – provocation testing is typically assessed via acoustic rhinometry, rhinomanometry, or

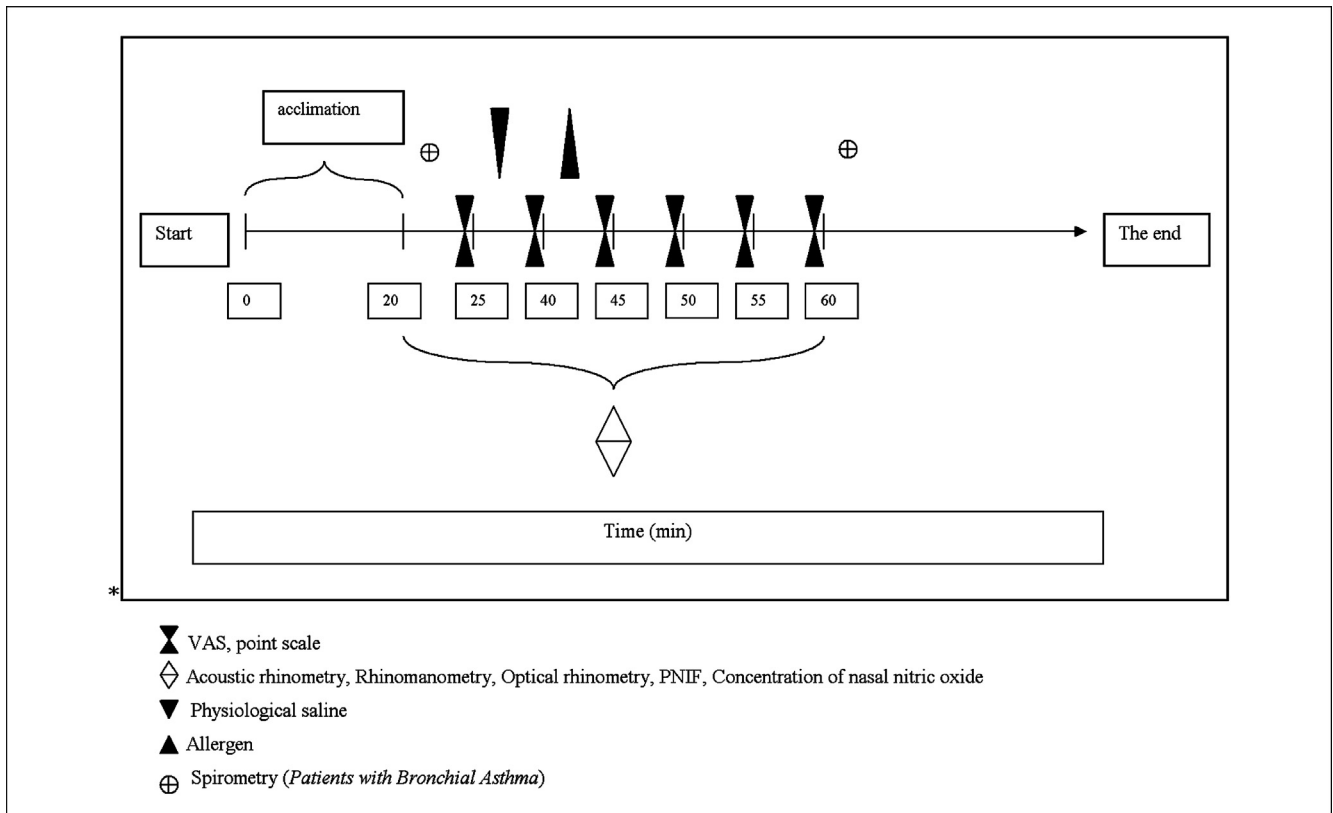


Fig. 2 – Testing protocol

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