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The place of spirometry in the diagnosis of asthma in those suffering from allergic rhinitis: a pilot study

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Key words: Asthma; diagnosis; rhinitis; self-questionnaire; spirometry.

Since many epidemiological studies have shown that asthma and rhinitis co-exist frequently, it would appear to be essential to search for asthma in patients suffering from allergic rhinitis (1–3). General practitioners and ENT specialists who do not possess suitable equipment for measuring pulmonary function see the majority of patients affected. The aim of this study was to determine the place of spirometry in the diagnosis of

A self-questionnaire was capable of diagnosing asthma in allergic rhinitis patients better than spirometry.

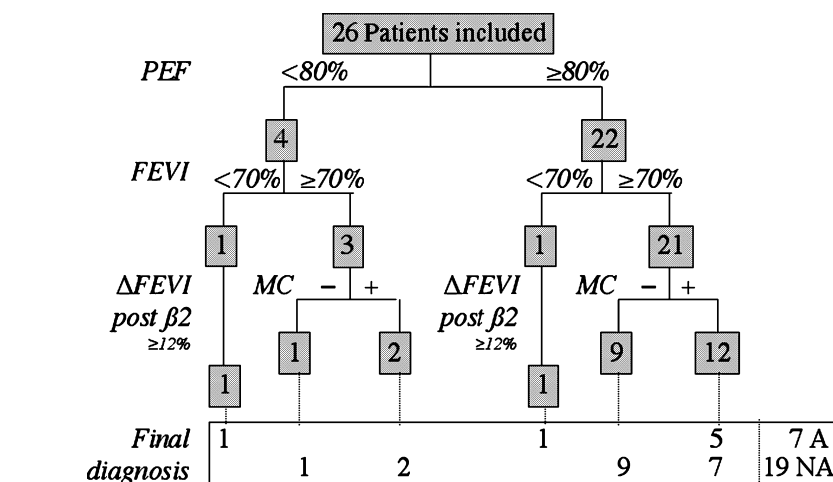


Figure 1. Algorithm of asthma diagnosis.

asthma in patients diagnosed with rhinitis and allergy.

To set the diagnosis of asthma in rhinitic patients, we built up an algorithm combining the results of a self-administered questionnaire and pulmonary function tests. We utilized the validated questionnaire of Venables et al. (4). It has nine questions which assess the last 4 weeks for the presence or absence of asthma symptoms (cough, wheeze, chest tightness, difficulty with breathing) at different periods of time and in different situations (e.g. running or climbing stairs at speed, sleeping, in the morning, whilst in a smoky room or dusty place). Whether asthma was indeed suspected or not at this stage depended on the number of positive responses (probable nonasthmatic: 1–2, possible asthma: 3–4, probable asthma: 5–8). Patients with nine positive responses were considered as asthmatics. The first 2–4 patients diagnosed with rhinitis (showing two of three symptoms: sneezing/nasal itching – nasal obstruction – rhinorrhea for at least 2 years at the same time of the year) and allergy (confirmed within the last 2 years by skin tests and/or IgE positive to the common air-borne allergens of our area) who consulted either GPs or ENT specialists were included. Patients with known asthma, smoking more than five pack-year or any severe concomitant disease were excluded. Patients with at least one positive question were invited to our allergy department. These tests included: peak expiratory flow (PEF), FEV1 measurements and, depending on

the FEV1 results, a reversibility test to beta-mimetics or the methacholine challenge test. The algorithm (Figure 1) combining the results of the self-questionnaire and the pulmonary function tests led to the final diagnosis and permitted patients to be classified as asthmatics (A) or nonasthmatics (NA). The ethical committee of Montpellier approved this study and all patients signed an informed consent.

ROC curves expressed as the area under the curve (AUC $\pm$ SD) were utilized to assess the place of each measurement in the diagnosis of asthma.

Twenty-six patients (M/F: 11/15; 36.2 ± 13.1 years) were enrolled by six general practitioners and five ENT doctors during spring 2002. Patients were divided into six probable NA, 12 possible A and eight probable A in response to the self-questionnaire and 19 NA and seven A after the complete procedure (Figure 1). There was a correlation between the self-questionnaire results and the final diagnosis, with no A amongst the probable NA and possible A from the self-questionnaire, and seven A among the eight probable A. All asthmatics had a score higher than five on the self-questionnaire and all but one nonasthmatic had a score lower than 5. When ROC curves were performed and compared with the AUC of the self-questionnaire (AUC = 0.962 ± 0.450), pulmonary function tests added little ($P > 0.05$).

The self-questionnaire was capable of discriminating asthma without false

negative results and just one false positive. Even if the results of a small group of 26 patients may not be extrapolated to the whole rhinitis population, they make it possible to validate a strategy to diagnose asthma based on a questionnaire and not based on pulmonary function tests in this patient population. This is of importance for a couple of reasons: firstly asthma guidelines (1–3) only list the means to diagnose asthma and do not categorize them; secondly, rhinitis patients frequently have asthma-related symptoms such as cough, chest tightness and nocturnal awakenings and may not all be asthmatics as in the present study. The intention of this study was to show that a self-questionnaire could make it possible to determine which patients might benefit from pulmonary function tests. These tests are however mandatory to assess asthma severity and set the level of treatment.

Very often asthma is underdiagnosed (5) and rhinitis patients present asthma-related symptoms (6), thus providing a window of diagnosis opportunity. Moreover, clinical history is accessible to all doctors and can become facilitated with the use of a self-administered questionnaire. Therefore, the place of pulmonary function tests in the diagnosis of asthma in allergic rhinitic patients has not been confirmed. They may only be needed for a patient population previously selected by a self-administered asthma questionnaire. Addressing this question requires a much larger study.

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Allergy due to *Ensis macha*

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Key words: *Ensis macha*; cross-reactivity; tropomyosin.

Ensis macha is a mollusc that belongs to class Bivalvia, family Solenidae. The existence of cross-reactivity among molluscs and arthropod groups (such as

mites, mosquitoes, and crustaceans), is well established (1).

Tropomyosin, a kind of muscle protein of about 37 kDa, which sensitizes predisposed individuals via food or house dust, may be the panallergen responsible for this cross-reactivity (2–5).

We describe an uncommon case of a 55-year-old female who presented three episodes with generalized pruritus and facial angioedema in the last year. These symptoms appeared after the intake of razor clam *Ensis macha*, with more intensivity each time, and the reaction stopped after treatment (epinephrine, corticosteroids and antihistamines).

Skin prick test (SPT) with shellfish extracts (clam, squid, prawn, mussel, oyster and lobster), *Anisakis simplex*, house-dust mite (*D. pteronyssinus*, *D. farinae*) and cockroach (*Blattella germanica* and *Periplaneta americana*) were negative. Prick by prick with the implicated *Ensis macha* were positive and control test performed in six patients were negative. The diameter of the wheal induced by razor clam was 7 × 6 mm.

Total serum IgE was 14 kU/L. Specific IgE antibodies levels against *Ensis macha* were 4.2 kU/L and were below the detection limit of the assay (<0.35 kU/L) against clam, prawn, mussel, stroke, oyster, *Anisakis simplex*, roundworms and lobster.

Protein extracts of razor clam (*Ensis macha*), clam (*Meretrix meretrix*), snail

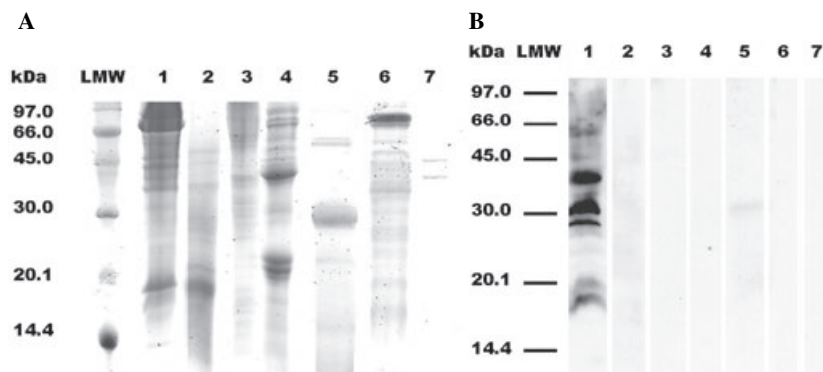


Figure 1. (A) Protein separation by 12.5% sodium dodecyl sulphate-polyacrylamide gel electrophoresis (reducing conditions). LMW, Molecular weight standard. Lane 1, *Ensis macha*; lane 2, *Meretrix meretrix*; lane 3, *Helix aspersa*; lane 4, *Perna perna*; lane 5, *D. Pteronyssinus*; lane 6, *Blattella germanica* and lane 7, tropomyosin. Coomassie blue staining of the gel. (B) IgE-Inmunoblotting. Lane 1, *Ensis macha*; lane 2, *Meretrix meretrix*; lane 3, *Helix aspersa*; lane 4, *Perna perna*; lane 5, *D. Pteronyssinus*; lane 6, *Blattella germanica*; and lane 7, tropomyosin.

A case report of an allergy to *Ensis macha*.