

## Need for medication and stuffy nose predict the severity of allergic rhinitis

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### To the Editor,

As a part of the Finnish Allergy Programme 2008-2018 [1], we surveyed patients to assess allergic rhinitis symptoms, the use of medications and health care services in Finland.

The study cohort consisted of 1,114 patients aged 5–75 years (mean age, 47 years; 72% females) who obtained asthma or allergy medication from 382 Finnish pharmacies (47% of all 812 pharmacies) across the country. The participants were the first consecutive 1–5 clients per pharmacy purchasing asthma or allergy medication during 1 week period in September 2010 [2]. Participants (or their parents for those 5 to 16 years old) completed a self-administered questionnaire to assess their allergy symptoms, use of medications, health care service use (number of hospital admissions and physician appointments).

In those patients with self-reported allergic rhinitis, we examined symptom severity by using the *Rhinasthma* questionnaire and an allergy severity score on numeric rating

scale (NRS). Rhinitis was rated as no symptoms (0 to 1), mild symptoms (2 to 5), moderate symptoms (6 to 8) and severe symptoms (9 to 10). We studied the determinants of moderate-severe allergic rhinitis (NRS 6 to 10, n = 682) and the correlation of NRS and *Rhinasthma* questionnaire.

Amongst all 1,114 participants, 1,068 had self-reported physician diagnosed asthma or allergic rhinitis or both and 682 (61%) reported physician diagnosed allergic rhinitis. Participants with moderate to severe rhinitis (NRS of 6 to 10, n = 277, of which 186 [67.1%] had self-reported physician diagnosed asthma) and patients with mild rhinitis (NRS of 2 to 5, n = 384 of which 246 [64.1%] had asthma) and were compared to those with asymptomatic rhinitis or no rhinitis (n = 407, of which 344 [84.5%] had asthma). In this group all the patients had some atopic disorder (asymptomatic rhinitis, NRS 0-1, asthma, atopic eczema, food allergy or allergic conjunctivitis or two or more of the previous conditions).

Items in the *Rhinasthma* section were divided into 5

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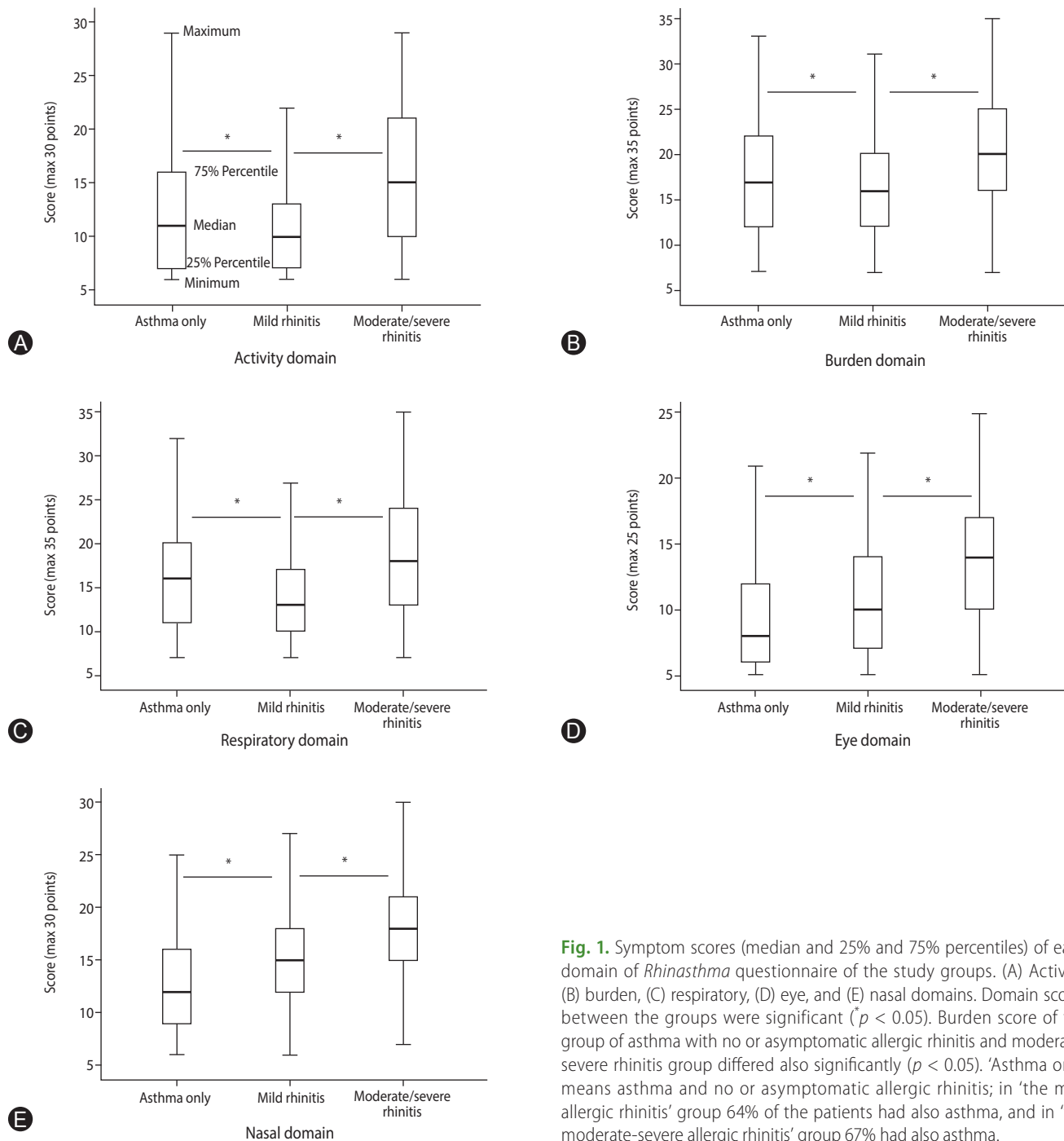
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**Fig. 1.** Symptom scores (median and 25% and 75% percentiles) of each domain of *Rhinasthma* questionnaire of the study groups. (A) Activity, (B) burden, (C) respiratory, (D) eye, and (E) nasal domains. Domain scores between the groups were significant (\* $p < 0.05$ ). Burden score of the group of asthma with no or asymptomatic allergic rhinitis and moderate-severe rhinitis group differed also significantly ( $p < 0.05$ ). 'Asthma only' means asthma and no or asymptomatic allergic rhinitis; in 'the mild allergic rhinitis' group 64% of the patients had also asthma, and in 'the moderate-severe allergic rhinitis' group 67% had also asthma.

domains (activity restriction [6 items], burden of disease [7 items], respiratory [7 items], eye [5 items] and nasal symptoms [6 items]). Scores from each domain were summed and means for each domain and group were calculated. In addition, the summed scores for each participant were correlated against the NRS-score

for the allergy severity. Participants who had not answered to all 31 items ( $n = 49$ ) were excluded.

In the moderate-severe allergic rhinitis group, the most disruptive symptom domains included the nasal (mean [standard deviation, SD], 18.2 [4.7]; max, 30), burden of disease (mean

[SD], 20.8 [6.2]; max, 35) and eye (mean [SD], 14.0 [4.9]; max, 25) domains (Fig. 1).

The mean score for the burden disease domain reached a mean of 20.8 (SD, 6.2) in the moderate-severe group, 17.3 (SD, 6.2) in the group of asthma with no or asymptomatic rhinitis and 16.3 (SD, 5.4) in the group of mild rhinitis. The mean burden scores differed between the moderate-severe allergic rhinitis group and the group of asthma with no or asymptomatic rhinitis ( $p < 0.05$ ) but also between the moderate-severe allergic rhinitis group and the mild rhinitis group ( $p < 0.05$ ).

Likewise, the need to take medication, nasal congestion and avoiding environments represented the most disruptive individual symptoms. Allergy severity (NRS) correlated best with nasal symptoms in general ( $r = 0.44$ ,  $p < 0.001$ ), eye symptoms ( $r = 0.44$ ,  $p < 0.001$ ), and the burden of disease ( $r = 0.36$ ,  $p < 0.001$ ) when compared to the *Rhinasthma* questionnaire domains.

Amongst patients experiencing moderate-severe allergic rhinitis, nasal congestion represented the most disruptive (3.70/5) self-reported individual symptom within nasal domain. The NRS allergy severity scale correlated most closely in the whole study population with nasal and eye symptoms and with the burden of disease. In accordance with this, the need to take medication (3.95/5) and nasal congestion (3.70/5) were the most disruptive symptoms in the moderate-severe allergic rhinitis group. Amongst these patients, 59% reported the regular use of antihistamines, 24% regularly relied leukotriene antagonists, and 36% regularly used nasal glucocorticoids. Only 12 patients (4.4%) from the moderate-severe allergic rhinitis group received immunotherapy during the last 12 months. Furthermore, 2.5% reported using an epinephrine autoinjector in the last 12 months and 14.1% reported receiving emergency room treatment.

Previous studies have found that both the severity and duration of rhinitis negatively impacts one's quality of life, especially when symptoms of ocular and nasal obstruction are present [3]. Studies have also shown that patients with moderate-severe allergic rhinitis have more and also longer episodes of exacerbated allergic rhinitis throughout the year, compared to mild allergic rhinitis [4].

The visual analogue scale and its correlation with the rhinoco-

njunctivitis quality of life questionnaire amongst patients with allergic rhinitis represents a well-accepted findings [5]. Visual analogic scale has been used to estimate asthma and rhinitis symptoms but there are no reports on NRS as assessment tool for asthma or rhinitis symptoms [3, 5].

In our study, we used the NRS-score in the selection of allergic rhinitis groups and found a moderate correlation with the NRS allergy severity and *Rhinasthma* questionnaire scores. A patient with a high NRS-score most likely primarily experiences disruptive nasal congestion and ocular symptoms. Nasal obstruction, need to take medications and avoiding environments are the most common complaints. Moderate-severe allergic rhinitis patients have also emergency care use. Moderate-severe allergic rhinitis increases remarkably the burden of asthma.

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