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Allergic rhinitis and asthma ad hoc survey: clinical and psychological perspectives

F. Braido, I. Baiardini, S. Brandi, A. Porcu and G. W. Canonica

Allergy and Respiratory Diseases, DIMI, Genoa University, Genoa, Italy

Clinical and Experimental Allergy

Summary

Background Several studies have provided evidence of a strong association between asthma and rhinitis, with consequences in terms of therapy and disease management.

Objectives The aims of our study were to evaluate physicians' knowledge about rhinitis/asthma comorbidity, to note the patients' management behaviour and to assess the patients' experience about symptoms and expectations, and to investigate the clinical and psychological meaning of general practitioners' and patients' awareness.

Methods One hundred and one general practitioners and 504 asthmatic patients participated in the study. General practitioners and patients filled in two different multiple choice questionnaires concerning asthma–rhinitis link and impact.

Results 34.7% of general practitioners are aware of the link between asthma and rhinitis, and 43.6% of them hypothesize the comorbidity on the basis of their clinical experience. 21.8% of physicians make the diagnosis autonomously. 27.8% of asthmatic patients experience three or less rhinitic symptoms, 41% from four to six symptoms and 31.2 more than six symptoms. These symptoms deeply interfere with daily life, causing sleep problems (87.3%), lack of concentration (78.9%), difficulties in spare time (71.8%) and sport (71.7%). Rhinitis symptoms are responsible for the worsening of asthma, with an increase in dyspnoea (86.3%), cough (73.9%), and wheezing (59%). Ninety-three percent of patients expressed an interest in a combination therapy approach.

Conclusions Asthma and rhinitis interact in the development of clinical burden and impact on quality of life. The survey results showed different perspectives when evaluated from clinical and psychological points of view.

Keywords asthma, Comorbidity, disease management, knowledge, rhinitis, survey

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Correspondence:

F. Braido, Allergy and Respiratory Diseases, DIMI, Genoa University, Pad. Maragliano, L.go R Benzi 10, 16132 Genoa, Italy. E-mail: fulvio.braido@unige.it

Introduction

There is accumulating evidence that the prevalence of asthma [1–3] and allergic rhinitis (AR) [4] has increased world-wide during the last decades. Changes in diagnostic sensitivity and in reporting attitude can only partly explain this increase, which has been attributed mainly to changes in exposure to environmental risk factors and to the so-called western lifestyle [5–7].

Asthma is estimated to affect approximately 4–11% of the general population while AR is estimated to affect 10–30% [8, 9]. Asthma and AR are often co-morbid diseases [10]. They are systemically linked by common and interrelated inflammatory processes of the upper and lower airways [11–14]. Furthermore, epidemiological stu-

dies have consistently demonstrated that asthma and rhinitis often co-exist in the same patient [15–21] and that the prevalence of AR among asthmatic patients is usually over 50%. In addition to the symptomatic burden of AR in patients with asthma [22], AR can complicate asthma management and result in poorer asthma outcomes [23]. As a result, and as preliminary evidence from observational studies suggests, asthma-related medical resource usage may increase in patients with asthma and concomitant AR compared with those with asthma alone [24, 25].

As mentioned before, asthma and AR share common, and possibly linked pathophysiology, with nasal and bronchial biopsies showing similar inflammatory processes [26] in the lower and upper airways. Both

conditions are characterized by inflammation of the respiratory mucosa and are associated with the same inflammatory cells and mediators [27, 28]. Nasal provocation, as well as segmental bronchial provocation in non-asthmatic, seasonal AR patients, induced inflammation in both bronchial and nasal mucosa, and produced pulmonary symptoms and decreased airway functions [29].

The results of the *post hoc* analysis of the IMPACT trial [30] show that patients with asthma and concomitant AR are more than twice as likely to require emergency care visits for asthma. They are also significantly more likely to experience asthma attacks when compared with patients with asthma alone, despite having milder and slightly better controlled asthma at baseline. Three studies have demonstrated that among patients with asthma and concomitant AR, those receiving treatment for AR have a significantly lower risk of subsequent asthma-related events (emergency care visits/hospitalizations) than those not receiving treatment [31, 32]. Optimal management of rhinitis may improve coexisting asthma and, thus ideally, a combined treatment strategy should be used to treat these two conditions [33]. It has been shown that congestion or inflammation in the upper airway can adversely affect lower airway function. There are several hypotheses to explain this, including [34] that nasal congestion may lead to mouth breathing, with increased allergen deposition into the lungs and reduced warming/humidification of inspired air [35]; that upper airway inflammation leading to systemic absorption of mediators may trigger asthma symptoms; and [36] that there is a neurogenic bronchoconstrictive reflex linking the upper and lower airways [37, 38].

Treatment of nasal congestion has been shown to improve asthma symptoms in patients with AR who also had asthma [39, 40]. The correlation between improvements in asthma scores and rhinitis scores supports the relationship between the upper and lower airways and a potential benefit in treatment modalities that can positively affect both diseases concomitantly [41]. The aims of our study were to evaluate physicians' knowledge about rhinitis/asthma comorbidity, to note the patients' management behaviour and to assess the patients' experience about symptoms and expectations and to investigate the clinical and psychological meaning of general practitioners' and patients' awareness.

Material and methods

The Rhinitis and Asthma ad hoc survey was performed from December 2005 until January 2006. The study design was based on recruitment of patients by physicians, a method that provides strict controls on sampling and all other aspects of patient selection. This was a quantitative research programme utilizing questionnaire data collection methods. One hundred and ten general practitioners

(GPs), members of the Italian Association of General Practitioners, had been randomly contacted to voluntarily participate in a survey on the impact of AR on asthma. All GPs were in charge of the care of 1000 patients (approximately 40 asthmatic patients) and they had not participated in asthma-related research in the 3 months before study entry. Physicians were eligible if they were aged 30–65 years and had been qualified for between 2 and 30 years. Physicians were asked to identify patients with asthma who were aged ≥ 16 years, had a physician diagnosis of asthma and were attending the surgery either for a consultation or to collect a prescription for asthma medication. To minimize selection bias, physicians were requested to ask their next 10 consecutive patients with asthma whether they would participate in the survey. The survey included two phases: the physicians had to fill in a questionnaire and, each of them had to recruit at least five patients who reported asthma symptoms. Patients voluntarily and anonymously adhering to the protocol had to compile a self-administered questionnaire. Patients with symptoms related to upper respiratory tract infections (URTI), pyrexia and short time-course symptoms were not included. The questionnaire given to GPs was composed of four multiple choice questions concerning the scientific and clinical relationship between rhinitis and asthma, the management of allergic respiratory diseases and the relevant specialists for the combined airways diseases treatment. The questionnaire given to the asthmatic patients had five multiple choice questions investigating the presence of AR symptoms, the duration of these symptoms and their impact on asthma and quality of life (QoL) and the interest in a combined treatment approach.

The survey was conducted by SWG and Bonaparte48, agencies devoted to these kinds of analyses. The study was supported by an unrestricted educational grant from MSD, Italy. The data analysis was performed by physicians and a psychologist from the Allergy and Respiratory Diseases Department, University of Genoa.

All physicians and patients who were recruited into the study did not receive payment for their time and involvement.

Results

One hundred and one out of 110 (91.8%) general practitioners who agreed to participate in the survey returned the questionnaire and all the questionnaires were correctly compiled. Six hundred and three questionnaires were given to the patients. Fifty-eight patients refused to participate in the study. Five hundred and forty-five filled in the questionnaire. Only the questionnaires without missing data (504) were considered for the analysis. A descriptive analysis of the results was carried out.

General practitioners

Table 1 shows the general practitioners' answers to the questionnaires.

The results of the questionnaires indicated that most general practitioners (78.3%) were aware of the relationship between asthma and AR. In this group, 43.6% experienced co-morbidity in the clinical practise without any knowledge of its scientific basis, whereas 34.7% knew that asthma and AR are two aspects of the same disease. Of the general practitioners who received the questionnaire, 3% did not answer the question mentioned above and 11.9% were unaware of the link between AR and asthma.

Concerning the management of AR, the results suggest that 41.6% of general practitioners ordered the execution of the diagnostic test and care for the patient by themselves; 21.8% autonomously performed the diagnostic test and prescribed therapy; 15.8% of GPs prescribed the diagnostic test and required the specialist's support for planning treatment; 12.9% delegated the diagnosis and treatment to the specialists; and 5.9% planned the treatment without any diagnostic test. Two percent of physicians did not answer this section.

If the general practitioners decided to refer the patient to a specialist, 34.7% chose the specialist to whom the

more troublesome symptom concerns, 29.7% choose a pulmonologist, 26.7% an allergologist and 3% an ENT specialist. 5.9% did not answer this section.

The last domain regarded the understanding of the relationship between asthma and rhinitis. The results showed that the general practitioner's attention was mainly focused on asthma (39.6% of GPs thought that rhinitis in an asthmatic patient was more common than asthma in a rhinitis patient, whereas 32.7% thought the opposite. 21.8% were not able to answer these questions. 5.9% of our GPs believed that asthma and rhinitis are always concomitant).

Asthmatic patients

The patients' answers are shown in Table 2.

A relevant percentage of asthmatic patients – without having a cold, experienced the following rhinitis symptoms: sneezing (77.2%), an itching nose (62.9%), itchy eyes (54.6%), a stuffy nose (68.1), a runny nose (64.7), watery eyes (60.5) and eye redness (51.8%). Concerning the above-mentioned symptoms, 27.8% of patients

Table 1. General practitioners' answers

1. Recent reconsideration on asthma and allergic rhinitis like different aspects of the same disease, leaves you . . .	
Nothing new, I already know it	43.60%
I suppose it because of clinical observations made in the consulting room	34.70%
I didn't expect it	11.90%
It's indifferent to me	6.9%
Doesn't answer	3%
2. How do you manage problem of allergies?	
I prescribe allergometrics tests and then I care for the patient by myself	41.60%
I perform allergometrics tests and I prescribe the treatment	21.80%
I prescribe and I send patient to a specialist	15.80%
I commit problem to a specialist	12.90%
I don't make tests but I treat equally the patient	5.90%
Doesn't answer	2.00%
3. If you apply to a specialist because of the problem of asthma and allergic rhinitis, who do you consult first?	
Specialist who concern with the most severe disease in that patient	34.70%
Pneumologist	29.70%
Allergologist	26.70%
Otolaringologist	3.00%
Doesn't answer	5.90%
4. In your opinion which one of these assertions is correct?	
The majority of asthmatic patients suffer from rhinitis	39.60%
The majority of rhinitic patients suffer from asthma	32.70%
Every asthmatic patient has an associated allergic rhinitis and, conversely, every rhinitic patient has associated asthma	5.90%
I don't know	21.80%

Table 2. Asthmatic patients' answers

Have you ever experimented one of this symptoms without having got a cold?	Yes (%)			
Runny nose	64.7			
Stuffy nose	68.1			
Itchy nose	62.9			
Red eyes	51.8			
Itchy eyes	54.6			
Tearing	60.5			
Sneezing	77.2			
When do these symptoms appear?				
Only during season of allergies	33.3			
Throughout the year	19.4			
Throughout the year but with seasonal worsenings	36.1			
I don't know	11.1			
Do these symptoms make your quality of life worse?				
	Worsened a lot (%)	Worsened (%)	Worsened a little (%)	Unchanged (%)
Night rest	17.3	38.7	31.3	10.3
Concentration	10.1	31.2	37.5	15.1
Sport activities	12.9	27.6	31.2	17.1
Does your asthma get worse when rhinitic symptoms are present?	Yes (%)			
Frequent night awakenings	70.7			
Worsening of wheezing	59.0			
Worsening of cough	73.9			
Frequent dyspnoea	83.6			
Frequent use of SABA	64.7			
Are you interested in a combined treatment for asthma and allergic rhinitis?				
Yes	92.4			
No	7.6			

experienced three or less symptoms, 41% from three to six symptoms and 31.2% more than six symptoms. The average number of symptoms experienced was 5.1.

The real impact of symptoms on patients' lives has been measured by a five point Likert scale. The patients were asked to indicate whether and how the rhinitis symptoms interfered with sleep, concentration, spare time and sporting activities. 87.3% referred to disturbed sleep, 78.9% lack of concentration and 71.8% and 71.7% indicated rhinitis-related difficulties in spare time and sporting activities. 5.6% of patients indicated a worsened QoL related to different domains: 12.2% to two domains, 19% to three and 63.2% to all the investigated areas.

Rhinitis symptoms are the cause of the worsening of concomitant asthma: in particular, patients referred an increased in dyspnoea (83.6), emergency medication (64.7%), sleep disturbance (70.7%), cough worsening (73.9%) and wheezing (59%).

Obviously, on asking the patients whether they were interested in a treatment strategy that would control both asthma and rhinitis, 93% of them answered that they really needed that. It is also important to underline that the majority of patients (55.6%) suffered from allergic symptoms through out the year.

Discussion

The reported results have been evaluated from two different points of view: medical and psychological.

Medical analysis

A large percentage (around 80%) of interviewed GPs were aware of the relationship between asthma and rhinitis. It is interesting to note that it is greater than the percentage of physicians who have learned about this problem in practise, but probably do not know of the pathophysiological correlations existing between asthma and rhinitis. The understanding of this point is of crucial importance for identifying the long-term and anti-inflammatory treatment indicated in several patients. Asthma and rhinitis show a relevant prevalence and a better diagnostic and therapeutic approach, especially, can be achieved throughout an integrated treatment plan. In this way, the percentage of physicians who are not aware of the link between rhinitis and asthma (11.9%) should be reduced.

A variety of clinical strategies are followed by GPs when they approach allergic respiratory symptoms. One out of five made the diagnosis autonomously and required the specialists' support for the planning of treatment; around 42% of GPs made the diagnosis through tests performed in specialist settings and independently defined the care. 15.8% of GPs prescribed the diagnostic test and required a specialist's support for the planning of treatment and 12.9% delegated diagnosis and treatment to the specialists.

Finally, around 6% of GPs prescribed therapy exclusively on the basis of their clinical experience. It appears to be relevant that an appropriate causal diagnosis should be made before a decision on treatment is made because only on the basis of allergic sensitivity, severity classification and co-morbidity evaluation can the best clinical results be achieved. The behaviour reported above illustrates the complex interactions between GPs and specialists. The phenomenon is likely to be related to personal work situations rather than to an encoded strategy in the same way as the specialist's choice. Besides, it is clear that more than one third of the GPs require the specialist's support in relation to the symptoms that are more troublesome for the patient. Despite the contents of Allergic Rhinitis and its Impact on Asthma guidelines (ARIA), which underline the opportunity to evaluate each patient affected by rhinitis and vice versa, for asthma, nowadays it is mainly the symptoms that guide the GPs' approach towards these pathologies.

The results obtained from this survey moreover underline that the prevalence of asthma in rhinitis and the prevalence of rhinitis in asthma are not always clear. An educational effort should address this point, which is essential to improve clinical practise.

A very relevant percentage of asthmatic patients had rhinitis symptoms, and the average number of symptoms experienced by the patients was extremely high (5.1). The symptomatic burden of AR should worsen the patients' physical activity, impact on the QoL and complicate the coexistent asthma. Concerning this last point, it is interesting to underline the patients' ability to identify in rhinitis a cause of asthma worsening and related use of rescue medications. The patients survey results confirm in the real setting what has been established by the new ARIA document: AR should no more be classified as seasonal and perennial but as intermittent and persistent.

As underlined in a recent review [42], sleep problems associated with AR constitute a troublesome factor exacerbating the burden of illness and contributing to an impairment of life quality. Sleep disturbance, physical activities and cognitive patterns are QoL domains well studied in clinical research, whose presence in real life was confirmed by this ad hoc survey.

Psychological analysis

We can hypothesize that physicians' answers should be correlated to different cognitive styles and different opinions about AR and asthma co-morbidity. With the expression 'cognitive styles', we refer to the preferred way an individual processes and uses information, or in other words the person's typical mode of thinking, remembering or problem solving [43]. Kolb [44] proposes a theory of experiential learning that involves four principal stages: concrete experiences, reflective observation, abstract conceptualization and active experimentation.

Theoretically, cognitive and learning styles could be used to predict what kind of instructional strategies or methods would be most effective for a given individual and learning task. This aspect should be borne in mind when planning educational training programs. For example, GPs who build their knowledge on the basis of clinical practise may take advantage of scientific educational programmes starting from common clinical cases with the aim of integrating personal experience to evidence-based sources (current guidelines, epidemiologic and literature data). On the other hand, physicians who do not suspect the A-AR link need more intensive training based on instruments for disease identification and appropriate management.

For GPs declaring themselves indifferent to the problem, an educational programme emphasizing the consequences of non-diagnosis in terms of clinical, economic and social impacts may be useful. We also have to consider that the percentage of GPs claiming to know the existence of rhinitis problems in asthmatic patients may induce to regard them as more competent.

The relationship between GPs and specialists obviously gives way to a wide range of situations, as well as organizational problems and personal disposition (ego-centrism vs. reliance). It is probable that GPs are emotionally inclined to a prompt relief in symptoms. This outlook also guides him/her towards the specialist's choice. A systematic managerial long-term plan should always be considered as a priority. Patients are labelled as asthmatic, but a simple survey would be sufficient to design a more complex picture: the presence of numerous, troublesome rhinitic symptoms that cause restrictions and other problems has been reported. Furthermore, patients themselves are able to indicate rhinitis as a factor that could worsen asthma.

Most asthmatic patients have one or more rhinitic symptoms that impact on several aspects of daily life. Why are these symptoms not controlled? It is possible to hypothesize two different explanations: patients tend to consider their rhinitis as an easy problem and they usually cope with it. In other words, coping strategies refer to the specific efforts, both behavioural and psychological, that people use to master, tolerate, reduce or minimize stressful events. A second explanation is that physicians do not investigate, minimize or consider rhinitis symptoms a trivial problem.

In conclusion, the average GP's knowledge about the link between asthma and rhinitis is good but it is based especially on clinical practise. Educational interventions starting from the clinical setting should be adopted in order to improve the pathogenetic knowledge that is fundamental to understand and plan a long-term treatment.

Another point that should be emphasized is the relevance of rhinitis symptoms as a worsening factor for asthma. This information should be clarified to the

patients. In fact, they tend to require physician intervention only for more worrying symptoms such as dyspnoea and cough.

GP's behaviour about the diagnosis and therapy for allergic respiratory diseases and about the relationship with specialists is actually inhomogeneous. A better interaction among patients, GPs and specialists involved in allergic disease management would be helpful.

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