

ORIGINAL PAPER

Spreading and impact of the World Health Organization's Allergic Rhinitis and its Impact on Asthma guidelines in everyday medical practice in France. Ernani survey

P. Demoly*, V. Concas[†], R. Urbinelli[‡] and F.-A. Allaert[‡]

*Allergy Department, University Hospital of Montpellier and Inserm U657, Hôpital Arnaud-de-Villeneuve, 34295 Montpellier Cedex 05, France, [†]Therabel Lucien Pharma Laboratories, 123 Rue Jules Guesde, 92309 Levallois-Perret, France and [‡]Département de Biostatistiques, Centre d'évaluation et de Normalisation des Biotechnologies, CENBiotech, CHRU du Bocage, 21034 Dijon Cedex, France

Clinical and Experimental Allergy

Summary

Objectives The aim of this study was to determine the spreading level of the WHO-ARIA (World Health Organization's Allergic Rhinitis and its Impact on Asthma) guidelines among the medical community and their influence on medical practices.

Methods A cross-sectional study based on a questionnaire was performed between April and July 2005 on randomly chosen general practitioners (GPs) (943) and ear, nose and throat (ENT) physicians (277).

Results About 54.4% of the physicians claimed to know the WHO-ARIA guidelines and 49.7% said they followed them. These results vary significantly, mainly according to medical specialty (ENT vs. GP). In comparison to those who did not know the guidelines, their patients benefited more frequently ($P < 0.0001$) from allergen search (42.2% vs. 31.7%), a nasal endoscopy (38.3% vs. 26.0%), a follow-up consultation (64.9% vs. 52.6%) and written information on rhinitis (30.7% vs. 14.1%). Paradoxically, they do not search more frequently for asthma and do not provide different first-line treatment strategy and duration.

Keywords allergic rhinitis, ARIA, ENT, general practitioners, medical practice

Submitted 19 October 2007; revised 26 June 2008; accepted 1 July 2008

Correspondence:

P. Demoly, Allergy Department, University Hospital of Montpellier and Inserm U657, Hôpital Arnaud-de-Villeneuve, 34295 Montpellier Cedex 05, France.
E-mail: pascal.demoly@inserm.fr

Introduction

Allergic rhinitis has a prevalence of up to 20–35% in the population and has significant repercussions on the professional, educational and economic life of patients [1–3]. Therefore, recommendations have been proposed by learned societies and/or governing bodies to guide physicians in their daily practice and to allow patients to benefit from quality care supported by evidence-based science [3, 4].

Among these guidelines, the publication of the WHO-ARIA (World Health Organization's Allergic Rhinitis and its Impact on Asthma) group, in 2001, on a new classification of allergic rhinitis and new treatment guidelines [3] constitutes a fundamental step in the profession's approach to quality practice.

The ARIA consensus is not intended to be a standard of care document for individual countries. It is provided as a basis for physicians and organizations involved in the treatment of allergic rhinitis and asthma in various countries to develop relevant local standard of care documents for their patients.

As for any professional guidelines, it seems very important to evaluate its level of penetration among medical professionals and the impact on their daily professional practice. To reach this purpose, a study entitled 'Evaluation of the influence of the WHO-ARIA allergic rhinitis guidelines in every day medical practice in France' was undertaken in France.

Material and methods

Study objectives

The objectives of this national cross-sectional study were

- to determine the percentage of ear, nose and throat (ENT) physicians and general practitioners (GPs) who state that they are familiar with and follow the WHO-ARIA treatment guidelines for allergic rhinitis, and to identify the professional characteristics of the medical practitioners which may influence their awareness of these guidelines;

- to assess the influence of these guidelines on medical practice by comparing treatment modalities offered to patients according to whether or not the physicians know these guidelines.

Populations studied

Representative physician sampling was obtained by random selection. Within 15 days, each physician enrolled in the study was required to include the first three consecutive patients seen for allergic rhinitis (men and women between 18 and 65 years of age). In order to reflect the reality of medical practice, the protocol was without exclusion criteria except for prior inclusion of the patient in a clinical trial or another epidemiological study.

Data collection

Physicians completed a questionnaire describing their socio-professional profile, knowledge of the WHO-ARIA guidelines and the extent to which they followed the guidelines. They described the socio-demographic profile of the three patients included in the protocol, the clinical symptoms of their rhinitis, its effect on their daily life and the treatment modalities offered.

Statistical analysis

The percentages of medical practitioners knowing or not knowing the WHO-ARIA guidelines are described and compared according to their professional characteristics. Statistical analysis describes patients' socio-demographic profile, clinical description of the allergic rhinitis and its effect on the daily life of patients, associated diseases, diagnostic and therapeutic modalities prescribed by the physician and patient follow-up. It compares treatment profile and modalities according to whether or not the physician was familiar with the guidelines and followed them. Analysis was conducted for all physicians and separately for ENT physicians and GPs. It relies on conventional statistical parameters: mean and standard deviation for quantitative variables, percentage for qualitative variables. Mean comparisons were performed using variance analysis, and percentages were compared using χ^2 -tests. Alpha risk was set at $\alpha = 0.05$.

Results

Familiarity with and observance of World Health Organization's Allergic Rhinitis and its Impact on Asthma guidelines

The study sample, determined to be representative of its respective national population, included 943 (77.3%) GPs

and 277 (22.7%) ENT physicians. From April to July 2005, 2984 patients were enrolled. Of these physicians, 45.6% stated they were not familiar with the WHO-ARIA guidelines, while 54.4% were familiar. These rates varied significantly according to the physician's professional characteristics and in particular according to the following factors:

- age: 55.0% under 40 years old, 47.5% between 41 and 50 years and 56.6% after 50 years ($P = 0.02$);
- specialty: 48.4% for GPs and 65.0% for ENT physicians ($P < 0.0001$);
- practice: 44.6% when the practitioner is practicing alone and 55.9% when in medical centres ($P = 0.07$);
- number of rhinitis patients consulting per week: 46.7% when less than 6, 53.1% when 6–10, 59.6% when 11–20 and 75.4% when more than 20 ($P < 0.0001$).

Among the 54.4% of medical practitioner familiar with the WHO-ARIA guidelines, 4.7% answered they did not followed them. Therefore, due to their somewhat paradoxical nature and the small size of their sample, this small group of practitioners was excluded, and the analyses of physician behaviours concentrated essentially on the groups 'know and follow ARIA guidelines' (49.7%) and 'did not know WHO-ARIA guidelines' (45.6%).

Comparison of consulting patient clinical profile

Before comparing treatment modalities offered to their patients by the two main physician categories, 'do not know ARIA' and 'know and follow ARIA', comparability of their patients was examined. The results of these comparisons are presented in Table 1 and show that patient populations are essentially comparable, in particular, regarding age, BMI, sex ratio as well as nasal symptoms (rhinorrhea, sneezing, olfactory difficulties, with the exception of ocular pruritus and nasal pruritus), presence of associated diseases such as asthma or ENT infection and duration of rhinitis.

Comparison of patient management modalities according to physician's knowledge and observance of Allergic Rhinitis and its Impact on Asthma guidelines

At the time of consultation, patients whose physicians were familiar with the ARIA guidelines more frequently underwent allergen testing (42.2% vs. 31.7%, $P < 0.0001$; Table 3), endonasal examination (38.3% vs. 26.0%, $P < 0.0001$; Table 3) and complementary examinations (16.6% vs. 13.4%; $P = 0.02$) than those whose physicians were not familiar with the guidelines. The types of examination requested (total serum IgE, allergen-specific IgE, CAP Phadiatop, sinus radiography, sinus CT scan,

blood cell count) were on the whole comparable, although there was a difference of about 2% for lung radiography and allergy prick tests, which attained statistical significance because of the large number of subjects (Table 2). Testing and treatment modalities for possible asthma and chronic ENT pathologies were also comparable (Table 3). There was no difference in terms of prescribing a specialist consultation (which was an allergist 2 times out of 3).

There appeared to be no difference in strategy in the choice of first-, second- and third-line treatment (Table 3),

Table 1. Comparisons of the demographic and clinical characteristics of the patients according to the knowledge of the WHO-ARIA guidelines

	Not familiar with ARIA guidelines	Familiar with ARIA guidelines	P-value
Age	34.9±13.9	35.4±13.6	0.37
Woman	611 (48.00%)	762 (49.10%)	0.56
Rhinorrhea	1101 (85.15%)	1324 (85.04%)	0.93
Sneezing	1020 (78.89%)	1250 (80.28%)	0.36
Olfaction disorders	311 (24.05%)	397 (25.50%)	0.37
Nasal obstruction	747 (57.77%)	930 (59.73%)	0.29
Nasal pruritus	452 (34.96%)	605 (38.86%)	0.03
Tearing	598 (46.25%)	733 (47.08%)	0.66
Conjunctival redness	290 (22.43%)	345 (22.16%)	0.86
Ocular pruritus	560 (43.31%)	603 (38.73%)	0.1335
Palpebral oedema	58 (4.49%)	82 (5.27%)	0.34
Length of symptoms (day)	60.1±342.3	77.0±494.4	0.29
Intermittent rhinitis	699 (54.06%)	737 (47.33%)	0.0003

WHO-ARIA, World Health Organization's Allergic Rhinitis and its Impact on Asthma.

either for patients as a whole, or for persistent or intermittent rhinitis. The same was true for the duration of treatment, which varied from 41 to 43 days, and the time at the end of which the physician diagnosed treatment failure (two weeks in 62–64% of cases). No difference in replacement management strategy in case of failure was noted according to the physician group.

Desensitization was more frequently prescribed in the group of physicians who knew and followed ARIA as compared with those who did not know the ARIA guidelines: 19.4% vs. 15.0%, $P=0.005$. This difference also appeared when analysis was performed on patients presenting intermittent rhinitis, but not for persistent rhinitis.

Sick leave was comparably prescribed among groups with 5.8% of patients for an average duration of 5.8 ± 5.1 (median 4.5) days, but subsequent follow-up consultation was prescribed more frequently in the group that knew and followed ARIA guidelines (64.9% vs. 52.6%, $P<0.0001$). The waiting time for a follow-up was identical (median 30 days).

We also note that physicians who knew and followed the ARIA guidelines were more likely to provide the patient with written information on rhinitis (30.7% vs. 14.1%, $P<0.0001$).

Influence of specialty medicine on management modality comparisons according to knowledge and observance of Allergic Rhinitis and its Impact on Asthma guidelines

Patients seen in consultation by ENT specialists compared with those consulting GPs had experienced significantly

Table 2. Types of examinations according to the knowledge of the WHO-ARIA guidelines knowledge

	Not familiar with ARIA guidelines	Familiar with ARIA guidelines	P-value	OR in multivariate analyses: ENT vs. GP	OR in multivariate analyses: familiar with ARIA vs. not familiar
Allergen testing	407 (31.65%)	653 (42.21%)	<0.0001	1.56 (1.29–1.90) $P<0.0001$	1.45 (1.23–1.71) $P<0.0001$
Endonasal examination	322 (25.97%)	575 (38.28%)	<0.0001	11.66 (9.3–14.6) $P<0.0001$	1.48 (1.22–1.79) $P<0.0001$
Complementary examinations	172 (13.41%)	256 (16.56%)	<0.05	1.99 (1.23–3.22) $P=0.0047$	Not in the final model
Total serum IgE	51 (3.98%)	81 (5.24%)	NS	1.92 (1.31–2.82) $P=0.0009$	Not in the final model
Allergen-specific IgE	1243 (96.88%)	1476 (95.47%)	NS	2.97 (1.98–4.44) $P<0.0001$	Not in the final model
Lung radiography	16 (1.25%)	41 (2.65%)	<0.01	Not in the final model	1.97 (1.09–3.56) 0.0236
CAP phadiatop	57 (4.44%)	62 (4.01%)	NS	4.64 (3.16–6.84) $P<0.0001$	0.47–1.01 0.0586
Prick test	21 (1.64%)	51 (3.30%)	<0.01	4.60 (2.79–7.59) $P<0.0001$	1.95 (1.13–3.38) 0.0172

Logistic regression adjusted for age, sex and clinical characteristics (list of clinical characteristics in Table 1) – stepwise procedure.

ENT, ear, nose and throat; GP, general practitioners; NS, not significant; OR, odds ratio; WHO-ARIA, World Health Organization's Allergic Rhinitis and its Impact on Asthma.

Table 3. Strategy of treatment: first line of treatment according to the knowledge of the WHO-ARIA guidelines knowledge

First line of treatment	Not familiar with ARIA guidelines	Familiar with ARIA guidelines
Local Anti-H1	22 (1.75%)	30 (1.99%)
Local Anti-H1 + oral Anti-H1	31 (2.46%)	43 (2.86%)
Oral anti-H1	710 (56.44%)	891 (59.20%)
Other combinations of treatments	194 (15.42%)	231 (15.35%)
Eye drop preparation + oral Anti-H1	32 (2.54%)	22 (1.46%)
Eye drop preparation + local steroid + oral Anti-H1	56 (4.45%)	66 (4.39%)
Local steroid	45 (3.58%)	67 (4.45%)
Local steroid + oral Anti-H1	168 (13.35%)	155 (10.30%)
Missing data	35	52

χ^2 : 17.26, *P*: NS.

WHO-ARIA, World Health Organization's Allergic Rhinitis and its Impact on Asthma.

($P < 0.0001$) more nasal obstruction (68.6% vs. 55.7%), and their rhinitis was of longer duration (158 vs. 45 days), was more often persistent (56.8% vs. 47.6%) but not more severe, thus permitting a comparison of therapeutic strategies (Table 3). Allergen testing by ENT specialists was statistically more frequent (48.3% vs. 34.3%), as was endonasal examination (73.6% vs. 21.2%) and bioassays (32.3% vs. 11.9%). Requests for specialized (mostly allergists) consultations by ENT physicians were twice as frequent (25.5% vs. 9.6%, $P < 0.0001$).

Analyses show that medical specialty influences first-line treatment modalities: ENT physicians prescribe more local corticosteroids (31.2%), sometimes with an H1 antihistamine (19.8%), than GPs (17.2% and 9.5%, respectively, $P < 0.01$) and GPs prescribe more H1 antihistamines (81.8%) than ENT physicians (76.0%). Knowledge of the guidelines influenced desensitization prescribing only slightly, differing essentially between GPs and ENT physicians, even when both were aware of the ARIA guidelines: 27.6% vs. 16.7% for ENT physicians and GPs, respectively, $P < 0.0001$. On the other hand, among GPs, frequency of follow-up consultation was significantly affected by the knowledge of the guidelines (61.3% vs. 48.4%; $P < 0.0001$), while it was comparable among ENT physicians for whom, in both cases, 75% of the patients were followed up.

Discussion

Whatever the country studied, patients suffering from rhinitis are seen mainly by GPs and ENT specialists. ARIA guidelines despite having been widely disseminated for the past 7 years have reached slightly more than half of French physicians (54.5%), amongst whom only 4.7% claim to know but not follow them. Only those physicians who have kept up their training by attending continuing medical education seminars, conferences and meetings

or by reading the medical literature were aware of the ARIA documentation. Training via pharmaceutical representatives is not to be underestimated, because ARIA guidelines were widely disseminated by the allergy medication industry. This is surely not to say that half of French physicians do not keep up with their continuing medical education, because GPs and ENT physicians manage many different illnesses. It is possible that allergic rhinitis is simply not included among their priorities and that the time spent on continuing education is devoted to other diseases. This hypothesis is supported by the fact that in our study, a higher percentage of ENT physicians than GPs are aware of ARIAs and that the percentage of medical practitioners aware of ARIA is statistically linked with the number of rhinitis patients consulting per week. It is also noticeable that practitioners working in a medical centre know more frequently ARIA than those working alone, and this may suggest that their organization allows them to spend more time on their own continuous training.

However, modern standards of management of a disease as prevalent as allergic rhinitis will generally result in optimal treatment or at least appropriate use of diagnostic and treatment modalities. Even in the absence of studies on allergic rhinitis, evidence-based medical standards are doubtlessly cost-efficient. Alternatively, it is possible that allergic rhinitis is not managed at all. Given the effect of this condition on the quality of life, dissatisfied patients will likely increase their medical consultations without correct treatment compliance. The positive aspect of this study is that physicians who know them apply ARIA guidelines. This remained to be corroborated through the second study objective: assess the influence of the guidelines on medical practice by comparing management modalities offered to patients by physicians who followed the guidelines and other who do not. Rather than seek a theoretical evaluation of this management, this study asked that a detailed questionnaire be completed by the first three consecutive patients – men and women between 18 and 65 years of age – suffering from allergic rhinitis and consulting within 15 days of the physician's decision to participate in the study. In order to reflect the reality of daily medical practice, no exclusion criteria were defined aside from previous participation in a clinical trial or an epidemiological study. Clearly, knowledge of the ARIA guidelines results in improved allergy testing, nasal examination, remote consultation and more frequent distribution of patient written information on allergic rhinitis. As allergic rhinitis is an allergic rhinopathy, a basic nasal examination is important, simple, accessible to all physicians and revealing. Although it is often difficult to diagnose allergic rhinitis by case history alone, it has been shown that the presence of meaningful symptoms, recurring at the same time over several years in similar surroundings, has a predictive value of 82–85% for seasonal allergens and at least 77% for perennial allergens

[5]. It is nonetheless easier to diagnose pollen and domestic animal than mite or mould-induced allergic rhinitis [6]. An allergy diagnosis is facilitated by skin or blood tests. Such tests, which are recommended by ARIA [3], are requested more frequently by physicians who are aware of the guidelines.

ARIA guidelines do not affect medical collaboration in this study (request for medical consultation is identical: 11.5–15.8%), spirometric tests for asthma (EFR requested 11–15.9% of the time) or therapeutic strategy. However, the recent report by ARIA experts [3] shows indisputable advantages for asthma screening in allergic rhinitis patients, a population at risk. This is the strong point of the consensus. Numerous epidemiological studies have shown that asthma and rhinitis frequently coexist in some patients [7–9]. Additionally, asthma was present in 13.4–15.8% of patients in this study. It has also been shown that allergic rhinitis in an asthmatic considerably increases the cost of the asthma, by 46% on average [10]. Finally, rhinitis management improves control of associated asthma [11]. Diagnosis of asthma in a rhinitis patient passes through several steps, of which the simplest is the patient interview. ARIA guidelines juxtapose asthma diagnosis techniques without organizing them. They do, however, emphasize spirometric asthma testing, and our study does not reveal any increase in the frequency of these tests, although we did not directly question clinical history of asthma because such a question would have forced a reply. Our second surprise was the absence of an impact on medication prescribed in primary care, while guidelines in this area improve disease control [12]. In general, prescribed medications included antihistamines (4/5) and local glucocorticoids (1/5) which do not affect rhinitis severity. Here again, ARIA is not particularly precise as to primary treatment (even though corticosteroids are recommended for moderate to severe cases). ARIA's initial goal being to establish the level of evidence for each treatment, it most often proposes without preferring one or the other of the allergic rhinitis treatments [3], a fact which can hardly serve to guide the medical community.

This study allowed us to highlight the fact that ARIA guidelines are widely known (half of physicians questioned) and particularly by ENT physicians by whom the percentage reached 65%. The ARIA knowledge improves certain aspects of diagnosis and follow-up of allergic rhinitis, but neither encourages further examination of asthma, nor guides primary treatment.

Acknowledgements

The logistical support for this study was provided by Thérabel Laboratories.

References

- 1 European Community Respiratory Health Survey. Variations in the prevalence of respiratory symptoms, self-reported asthma attacks, and use of asthma medication in the European Community Respiratory Health Survey (ECRHS). *Eur Respir J* 1996; **9**:687–95.
- 2 Leynaert B, Neukirch C, Liard R, Bousquet J, Neukirch F. Quality of life in allergic rhinitis and asthma. A population-based study of young adults. *Am J Respir Crit Care Med* 2000; **162**:1391–6.
- 3 Bousquet J, van Cauwenberge P, Khaltaev N the WHO panel members. Allergic rhinitis and its impact on asthma. ARIA. In collaboration with the World Health Organization. *J Allergy Clin Immunol* 2001; **108**:S1–315.
- 4 International Consensus Report on Diagnosis and Management of Rhinitis. International Rhinitis Management Working Group. *Allergy* 1994; **49**:1–34.
- 5 Crobach MJJS, Hermans JO, Kaptein AA, Ridderikhoff J, Petri H, Mulder JD. The diagnosis of allergic rhinitis: how to combine the medical history with the results of radioallergosorbent tests and skin prick tests. *Scan J Prim Health Care* 1998; **16**:30–6.
- 6 Lindberg S, Malm L. Comparison of allergic rhinitis and vasomotor rhinitis patients on the basis of a computer questionnaire. *Allergy* 1993; **48**:602–7.
- 7 Greisner WR, Settipane RJ, Settipane GA. Co-existence of asthma and allergic rhinitis: a 23-year follow-up study of college students. *Allergy Asthma Proc* 1998; **19**:185–8.
- 8 Leynaert B, Bousquet J, Neukirch C, Liard R, Neukirch F. Perennial rhinitis: an independent risk factor for asthma in nonatopic subjects: results from the European Community Respiratory Health Survey. *J Allergy Clin Immunol* 1999; **104**:301–4.
- 9 Demoly P, Bozonnet MC, Dacosta P, Daures JP. The diagnosis of asthma using a self-questionnaire in those suffering from allergic rhinitis: a pharmaco-epidemiological survey in everyday practice in France. *Allergy* 2006; **61**:699–704.
- 10 Yawn BP, Yunginger JW, Wollan PC, Reed CE, Silverstein MD, Harris AG. Allergic rhinitis in Rochester, Minnesota residents with asthma: frequency and impact on health care charges. *J Allergy Clin Immunol* 1999; **103**:54–9.
- 11 Taramarcaz P, Gibson P. Intranasal corticosteroids for asthma control in people with coexisting asthma and rhinitis. *Cochrane Database Syst Rev* 2003; **4**:003570.
- 12 Bousquet J, Lund VJ, van Cauwenberge P. *et al.* Implementation of guidelines for seasonal allergic rhinitis: a randomized controlled trial. *Allergy* 2003; **58**:733–41.