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### Epidemiological and Clinical profile of Allergic Rhinitis in Brazzaville

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#### Abstract

Allergic rhinitis (AR) is a very frequent pathology, defined by the set of nasal manifestations after exposure to an allergen. It includes a nasal symptomatology dominated by sneezing and nasal pruritus.

The objective of this study was to report the epidemiological and diagnostic profile of allergic rhinitis in Brazzaville.

**Materials and Methods:** This was an observational, retrospective, descriptive and cross-sectional study conducted in the ENT department of the University Hospital of Brazzaville from January 1, 2013 to December 31, 2016, i.e. 4 years. We included in this study all patients with a clinical follow-up form, an endoscopic examination report and a conclusive prick test with Immunoglobulin E dosage.

**Results:** The hospital incidence of AR was estimated at 6.1%. The median age was 22 years with extremes from 3 to 67 years. The sex ratio was 0.68. The living conditions revealed that our patients resided in a dusty environment in 55.26% of cases (n=336), humidity and poor ventilation in 17.10% of cases (n=104), and mold in 5.26% of cases (n=32). Risk factors were highlighted, it was smoking in 39.47% of cases (n=240), cohabitation with animals in 32.89% of cases (n=200), dusty work environment in 13.15% of cases (n=80) and damp in 7.89% of cases (n=48). A history of asthma, limboconjunctivitis and GERD (gastroesophageal reflux disease) was found in 26.31% (n=160), 10.52% (n=64) and 38.15% (n=232) respectively. The prick test was positive in all patients (papule greater than 6 mm), and the immunoglobulin E level was greater than 150 IU/ml in 98.35% of patients (n=598). The sign of salvation associated with the lower palpebral crease was found in 7.89% of cases.

**Conclusion:** AR is a frequent pathology, which significantly impairs the quality of life. The poorly known epidemiological status motivated the realization of this work. The symptomatology remains dominated by pruritus and sneezing.

**Keywords:** Allergic Rhinitis; Pollen; Diagnosis; Symptoms; Epidemiology

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## Introduction

Allergic rhinitis (AR) is defined as the set of nasal manifestations induced by IgE-dependent inflammation of the nasal mucosa after exposure to an allergen [1]. It is manifested mainly by nasal symptomatology dominated by sneezing and nasal pruritus [1]. Although data on the prevalence of allergic rhinitis are scarce, some European series estimate it to be between 5 and 40% [2,3]. The WHO estimates that 10% of the world population is affected by this problem, which is becoming a public health concern [2]. In Congo Brazzaville in particular, the scarcity of studies devoted to this effect, motivated the realization of this work whose objective is to describe the epidemiological and diagnostic profile of AR in the Hospital and University Center of Brazzaville (CHU)

## Material and Methods

This was an observational, retrospective, cross-sectional and descriptive study conducted in the ENT department of the University Hospital of Brazzaville from January 1, 2013 to December 31, 2016. Data were collected from clinical observation records (clinical follow-up sheets), hospitalization registers, and statistical data from the department. We included in this study, all patients received in ENT consultations during the study period and who benefited from a nasal endoscopy and a prick test in pneumology, for which the results were conclusive for at least one allergen. Specific immunoglobulin E (IgE) was systematically measured. Unusable files (absence of endoscopy report and irregular update) and patients for whom the prick test was negative were not included in this study. Data were entered and analyzed using Microsoft Word and

Epi 7 info software. We studied the following parameters: epidemiological data (age, sex, living conditions, risk factors, and history), clinical data (reasons for consultation, examination data), endoscopic data, evolutionary data (periodicity or persistence), results of the prick test and specific IgE assay.

## Results

### Epidemiological aspects

We received 608 patients with AR. The frequency was estimated at 6.1%. The median age was 22 years with extremes from 3 to 67 years. Females predominated with 59% (n=360) compared to 41% males (n=248) and the sex ratio was 0.68. Living conditions were studied in 77.63% of patients (n=472). Patients lived in dust in 55.26% of cases (n=336), in humidity and poor ventilation in 17.10% (n=104) and mold in 5.26% of cases (n=32). Risk factors were also associated with smoking in 39.47% of cases (n=240), the presence of pets in 32.89% of cases (n=200), the humid workplace in 7.89% of cases (n=48), exposure to pollen in 6.57% of cases (n=40), the dusty workplace in 13.15% of cases (n=80) A history of asthma was found in 26.31% of cases (n=160), tropical endemic chronic limbo-conjunctivitis in 10.52% of cases (n=64), gastroesophageal reflux disease in 38.15% of cases (n=232), urticaria in 15.62% (n=96) and in 9.21% (n=56) of cases there was no history.

### Clinical aspects

The reasons for consultation found are recorded in *Table 1*. Ocular signs were found in 10.52% of patients (n=64). These were lacrimation and itching. General signs such as drowsiness and decreased alertness were noted in 21.05% of

patients (n=128). A sign of salvation associated with the lower palpebral crease was found in 7.89% of patients (n=48), including 40 children and 8 adults. Nasal speculum and endoscope examination revealed different aspects of the pituitary mucosa in *Table 2*. The prick test was positive in all patients. The specific IgE assay revealed a level higher than 150IU/ml for 98.35% of patients (n=598). Evolutionary data: rhinitis was intermittent in 40% of cases and persistent in 60% of cases. Among the pneumallergens found, we noted 80% mites.

**Table 1:** Distribution of patients according to reasons for consultation.

Symptoms	Number	Percentage (%)
Pruritus	200	32.89%
Sneezing	160	26.31%
Rhinorrhea	152	25%
Anosmia	56	9.21%
Nasal obstruction	40	6.57%
Total	608	100%

**Table 2:** Distribution of patients according to the endoscopic aspect of the mucosa.

Endoscopic appearance	Number	Percentage (%)
Purplish blue	288	47.36%
Pale	160	26.31%
Inflammatory	80	13.15%
Normal	80	13.15%
Total	608	100%

## Discussion

Our study had some limitations related to poor record keeping, archiving difficulties, and inadequate technical facilities. The frequency varies according to the authors. While in our study it was estimated at 6.1%, some authors [2,5] estimate it at 9.5% and 40% respectively. This frequency can be this frequency can be estimated thanks to surveys carried out systematically on the general population. The median age in our series was 22 years, whereas in Tunisia it is 28 years with extremes of 4 to

60 years [1]. The predominance is female in Brazzaville. These data corroborate those of the literature which report this predominance [1,2,5,6]. Dust, poor ventilation and humidity are the most common living conditions found in our series in respectively 55.26% and 17.10%. This could be explained by the lack of urban roads and the abundance of water in our cities. The most common risk factors found are smoking (39.47%), the presence of animals (32.89%) and exposure to pollen in 6.57% of cases. In Tunisia, Bechraoui *et al* [1] found the same factors in 42% and 20% of cases respectively. Some authors believe that the risk factors may also be genetic and epigenetic [1,3,5]. In addition to pollen exposure, global warming and air pollutants act as co-factors [7]. Therefore, monitoring of pollen exposure and health effects should be encouraged and strengthened.

History was associated with these atopic terrains in our study, including asthma in 26.31%, limbo-conjunctivitis in 10.52%, gastroesophageal reflux in 38.15% and urticaria in 15.62%. Bechraoui *et al* [1] reported on a sample of 80 patients, the same history as those found in our case. Asthma in 10 cases, allergic conjunctivitis in 5 cases, and urticaria in 4 cases. The most common reasons for consultation were pruritus in 32.89% (n=200), sneezing in 26.31% of cases (n=160), anosmia in 9.21% of cases (n=56), rhinorrhea in 25% of cases (n=152), nasal obstruction in 6.57% of cases (n=40). These reasons were also found by other authors [1,2,5,7]. The endoscopic aspects of the nasal mucosa, which we have described, have been reported by most authors [1,2,5] who mention that the mucosa was inflammatory in 13.15% of the cases, the lower turbinates were purplish or blue in 47.36% of the cases, and the mucosa was normal in 13.15% of the cases. This chronic inflammation may be the bedrock for the development of malignant tumors by the lack of expression of the MUC2 and 4 genes [8].

Rhinitis was periodic in 40% of cases and persistent in 60% in our series. Elsewhere 25%

of rhinitis was intermittent and 75% was persistent [1]. The latter expose to numerous comorbidities. If asthma is the most important of them [10], other comorbidities such as conjunctivitis, sinusitis, seromucosal otitis, food allergy, atopic eczema and obesity have a considerable and significant impact on professional and daily life [10]. Although house dust mites were the most common pneumallergens found in 80% of our cases, Yang P. *et al* [6] isolated other types of allergens including mugwort in 44.8%, chenopodium in 61.6%, poplar in 30.3%, house dust mites in 30.3%, plantain in 29.8% and acacia in 25.9%. New therapeutic data call for sublingual immunotherapy with grass pollen [4,8]. Small *et al* [11] suggest antigenic immunotherapy if pharmacological treatment is no longer effective or poorly tolerated. Luo C *et al* [12] in China recommend the use of probiotics which have shown their effectiveness on the symptoms of allergic rhinitis. Similarly, the use of green tea would have a positive impact (anti-allergic properties) by its polyphenolic compound, epigallocatechin galate. Indeed, its administration increases the regression of the symptoms in a spectacular way [9].

## Conclusion

Allergic rhinitis is a frequent pathology. The current epidemiological status is poorly known. Indeed, data on the prevalence of asthma and allergic rhinitis are scarce. The major symptomatology is nasal, dominated by sneezing and nasal pruritus. However, general signs such as drowsiness and decreased alertness, as well as ocular signs (lacrimation) are possible. The endoscopic aspect of the mucosa can take on different aspects, notably inflammatory, pale, purplish, which must attract the attention of the practitioner.

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