

# Epidemiological Study in Patients With Nasal Polyposis

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**Objective:** To investigate the epidemiologic data in 165 patients suffering nasal polyposis.

**Material and method:** We collected different variables that included age, gender, asthma, ASA sensitive, allergic rhinitis, smoker, drinker, familiar history. We studied the main symptoms (nasal blockage, rhinorrhea, anosmia, and headache) as well as otological and dermatological involvement.

**Results:** Nasal polyposis affects men (63%) more frequently, with a mean age of 46.5 years. Asthma was found in 36.6% of patients with nasal polyposis. The most frequent symptom was nasal blockage (88%) followed by anosmia (78%). Ears were affected in 42% of patients and 20% of first-degree relatives also suffer the same condition.

**Conclusions:** Nasal polyposis affects both genders in middle age and may have an associated genetic factor in some patients. We must rule out asthma in all these patients.

**Key words:** Nasal polyposis. Epidemiology. Adult. Rhinosinusitis. Chronic.

**Estudio epidemiológico en pacientes con poliposis nasal**

**Objetivo:** Realizar un estudio descriptivo de los pacientes con poliposis nasal.

**Material y método:** Estudiamos las variables: edad, sexo, asma, intolerancia a los antiinflamatorios no esteroideos, rinitis alérgica, antecedentes familiares, hábitos (fumador, bebedor), síntomas mayores (obstrucción nasal, rinorrea, pérdida de olfato y cefalea) y afectación otológica y dermatológica.

**Resultados:** Afecta más a varones (63%) con una media de edad de 46,5 años. Un 36,6% de los pacientes presenta asma asociada. El síntoma más frecuente es la obstrucción nasal (88%), seguido de la pérdida de olfato (78%). Los oídos se afectan en un 42% de los pacientes. Hay un 20% de pacientes de primer grado afectados de la misma enfermedad.

**Conclusiones:** La poliposis nasal es una enfermedad que afecta a ambos sexos en la edad media de la vida. En algunos pacientes puede tener relación con un factor genético. En todo paciente con poliposis nasal debemos estudiar la presencia de asma.

**Palabras clave:** Poliposis nasal. Epidemiología. Adulto. Rinosinusitis. Crónica.

## INTRODUCTION

Although nasal polyposis is a disease described since antiquity,<sup>1</sup> many of its aetiopathogenic aspects are still to be discovered. According to data published in the United States, it affects 2%-5% of the general population and accounts for 5% of otolaryngology consultations.

It is a disease that affects men more frequently than women by a ratio of 2-3:1, and often appears in the middle ages of life. Its appearance is exceptional in children and when it does happen, mucociliary and immunodeficiency diseases should be ruled out. Cystic fibrosis patients have a prevalence of nasal polyposis between 6% and 48%.

We know many details about the relationship between nasal polyposis and other diseases, including asthma, aspirin intolerance, and allergic rhinitis. The prevalence of nasal polyposis is higher in subjects with asthma than in non-asthmatics, as 16.5% of asthmatic patients over 40 years of age have nasal polyps.<sup>2</sup> Moreover, the prevalence of intolerance to acetylsalicylic acid (ASA) is 11%-20% and is a bad prognostic factor for the evolution of nasal polyposis in these patients.<sup>3</sup> As for allergic rhinitis, it has been reported that 0.5%-1.5% of patients with allergic rhinitis have nasal

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polyposis. In patients with non-allergic rhinitis the percentage of patients with nasal polyposis increases to 5%.<sup>4</sup>

In Spain, epidemiological data have been published in review articles on the surgical outcome of treating nasal polyposis.<sup>5-8</sup> The objective of our paper is to analyze epidemiological data from patients with nasal polyposis that can orient us in the diagnosis, help in making clinical trials more exhaustive and provide comprehensive treatment for these patients.

## MATERIAL AND METHOD

The patients studied, all diagnosed with nasal polyposis, numbered 165. In all cases, the medical history was reviewed and an otolaryngological physical examination was performed. Nasal endoscopy was carried out on all patients. The number of variables studied was 17, as listed in Table 1. It was explained to the patients that all questions about the symptoms should be related to nasal polyposis. As shown in the said table, there were patients who did not answer all the questions in the test. Therefore, there is a particular sub-group of patients for the study of each variable. Appendix 1 shows the protocol used for the study and the classification used for each variable is explained. Informed consent was obtained from patients to carry out the study according to the Helsinki protocol.

Additionally, there was also a sample of 55 volunteer subjects who visited the otolaryngology consultation for reasons other than a sinonasal problem. This group of subjects received the same tests and were asked about the same variables as patients with nasal polyposis. All patients underwent anamnesis and otolaryngology physical examination, including nasal endoscopy.

For the diagnosis of nasal allergy, we evaluated the following categories: nasal allergy symptoms (obstruction, itching, sneezing in bursts, and hydnorrhea), positive skin tests against aeroallergens and the relationship between aeroallergens and the onset of a nasal allergic condition. The Allergology Department of our hospital provided the diagnosis of patients, in all cases. The following criteria were used for the diagnosis of asthma: clinical signs of asthma (dyspnoea, wheezing, and/or cough) and positive metacholine test with reversibility of symptoms after application of bronchodilator therapy. As a criterion for the diagnosis of intolerance to non-steroid anti-inflammatory drugs (NSAIDs), we used the onset of rhinitis-like symptoms, asthma, itching, and/or anaphylactic reaction within minutes of taking NSAIDs.

Descriptive statistical analysis was conducted for quantitative data, determining the mean, standard deviation, and confidence interval. For qualitative data, we calculated percentages. In the statistical analysis, we compared the means of the samples for the variables: smoking, drinking, concomitant illness, medications taken, level of education and income, asthma, intolerance to NSAIDs, family history of nasal polyposis, and allergies. All these variables were compared using the Mann-Whitney *U* test. The sample was calculated for an alpha error = .05.

**Table 1.** Variables Studied

	With Polyps		Without Polyps	
	Valid	Lost	Valid	Lost
Age	165	0	53	2
Gender	165	0	50	5
Smoker	165	0	54	1
Drinker	162	3	55	0
Asthma	164	1	52	3
Intolerance to NSAIDs	165	0	55	0
Allergic rhinitis	142	23	54	1
Nasal obstruction	165	0	–	–
Loss of smell	162	3	–	–
Rhinorrhea	165	0	–	–
Headaches	142	23	–	–
Itchy nose	164	1	–	–
Sneezing	165	0	–	–
Itchy eyes	164	1	–	–
Involvement of the ears	158	7	–	–
Involvement of the skin	153	12	–	–
Family history	134	31	53	2

NSAIDs indicates non-steroid anti-inflammatory drugs.

## RESULTS

Among patients, 61 females (37%) and 104 men (63%) had nasal polyposis. The healthy volunteers were 32 women (64%) and 18 men (36%).

When we studied the sample of volunteer subjects, the average age was 44.5 (13.7) years (95% confidence interval [CI], 40.7-48.3). The average age of the patients with nasal polyposis studied was 46.5 (13.6) years (95% CI, 44.2-48.7). When we compare the ages of both groups, no significant differences are found.

Of the total of 165 patients studied, 42 (25.5%) were smokers.

Out of 54 volunteer subjects, 21 (38.9%) were smokers.

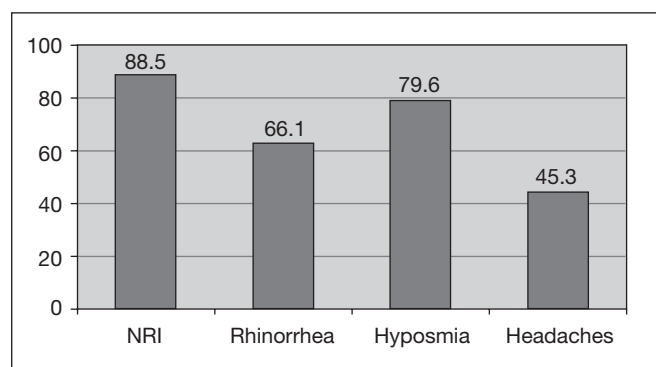
No significant differences were found when comparing both groups.

Out of a total of 162 patients, 42 (42.6%) drank alcohol every day as did 10 out of the total of 55 volunteer subjects (18.2%). We found significant differences when comparing both groups (MWU, 3770, *P*=.001).

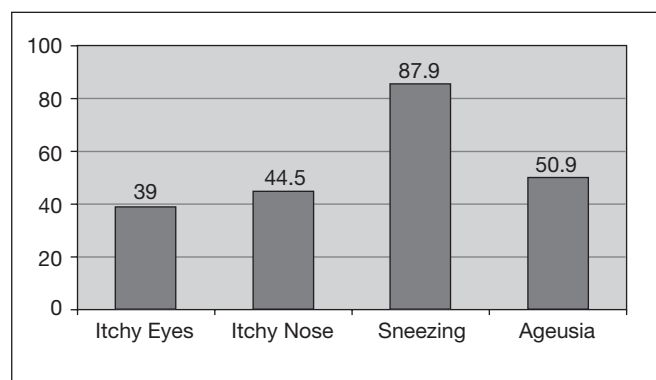
Out of a total of 164 patients, 60 (36.6%) presented associated asthma and received treatment; out of the total of 52 volunteer subjects, 8 (15.4%) had asthma and were receiving treatment.

We found significant differences when comparing both groups (MWU, 3778, *P*=.004).

Intolerance to NSAIDs was present in 44 (26.7%) of the 165 patients, and 6 (10.9%) of the 55 volunteers. We have found significant differences when comparing both groups (MWU, 5777, *P*=.013).



**Figure 1.** Major symptoms in the group with polyposis.



**Figure 2.** Minor symptoms in the group with polyposis.

Out of a total of 142 patients, 68 (47.9%) presented allergic rhinitis and received treatment for that disease. Out of a total of 54 volunteer subjects, 25 (45.5%) presented nasal allergy. We found significant differences when comparing both groups (MWU, 3699,  $P=.047$ ).

Of the 134 patients who responded, 27 (20.1%) indicated that they had some first-degree relative (father/mother, brother/sister, son/daughter) suffering from nasal polyposis. Of the 53 volunteer subjects who responded, 6 (11.3%) indicated that they had some first-degree relative affected. We found significant differences when comparing both groups (MWU, 3515,  $P=.022$ ).

The frequency of major and minor symptoms of nasal polyposis in the patients studied can be seen in Figures 1 and 2.

Of the 153 patients who responded, 20 (13.1%) reported involvement of the skin with dermatitis.

Of the 158 patients who responded, 70 (44.3%) reported otological symptoms. Of these, 57 (81%) presented ototubaritis that was diagnosed through anamnesis, otoscopy, and tympanogram. None had a medical or surgical history of prior otological disease.

## DISCUSSION

As can be seen in Table 1, the variable in which there were most lost cases was the level of family income. The second

variable with most losses is the level of studies. Therefore, we can conclude that such personal questions are difficult to answer in a survey of this type and require a higher degree of confidence of the patients with the doctor in order to predispose them to give a reply.

Nasal polyposis is a disease affecting men in the middle stages of life more commonly. This is consistent with the data found in other series in the literature.<sup>9</sup>

The high percentage of patients who drink alcohol regularly should be highlighted. This data is important when dealing with the patient, as alcohol is documented to favour nasal congestion<sup>10</sup> and therefore may aggravate the obstruction caused by nasal polyposis. Although we have not found significant differences in the smoking variable, it is also recommended that patients with nasal polyposis should not smoke to avoid further inflammation of the nasal mucosa.

When we analyzed the family incidence of nasal polyposis, we found that 20% of patients had first-degree relatives who were also affected. Several authors<sup>9,11,12</sup> have investigated the hereditary factor in the origin of the disease; one of them found that 14% of patients with nasal polyposis had a family history of this condition.<sup>9</sup> Another author reported a pair of monozygotic twins, both with nasal polyposis and associated intrinsic asthma.<sup>12</sup> Therefore, although environmental factors are important in nasal polyposis, there is evidence to support the hypothesis of a genetic predisposition for the development of the disease.

Patients with nasal polyposis often present associated asthma. Approximately 13% of patients with intrinsic asthma have nasal polyposis, while this only affects 5% of patients with extrinsic asthma.<sup>13</sup> Asthmatic patients older than 40 years have 4 times greater risk of suffering nasal polyposis than those under 40 years of age.<sup>4</sup> In addition, Slavin et al<sup>14</sup> reported that patients with nasal polyposis present more severe asthma than those without polyposis.

Of patients with nasal polyposis, 26.7% showed intolerance to NSAIDs. This is one of the largest percentages of patients known in the literature.<sup>15</sup> Settupane and Chafee<sup>4</sup> report an incidence of 14.2% in a group of 211 patients with nasal polyposis. In a study in asthmatics, 16% presented intolerance to NSAIDs according to their medical history, whereas if the intolerance is studied through evidence of tolerance to oral NSAIDs, this figure rises to 19%. Patriarca et al<sup>16</sup> found that 35% of patients with nasal polyposis had an intolerance to aspirin.

It is rare for patients with allergic rhinitis to present nasal polyposis. Settupane and Chafee<sup>4</sup> found that only 1.5% of patients with allergic rhinitis had nasal polyposis. In the same paper, the authors reported that it was more common to find nasal polyposis in patients with non-allergic rhinitis than in those with allergic rhinitis and this difference was statistically significant (4.7% vs 1.5%;  $P<.01$ ). In our sample, we have found that there is a high incidence of allergic rhinitis among patients with nasal polyposis (47%). Still, it should be noted that persistent allergic rhinitis, formerly known as perennial allergic rhinitis (to dust, epithelia), is much more frequent than seasonal allergic rhinitis by pollens.

In the Spanish series by Llorente et al,<sup>5</sup> a frequent prevalence of allergic rhinitis was reported in patients

**Table 2.** Comparison Between the Symptoms in Different Series of Nasal Polyposis

	<i>Houseman et al,<sup>17</sup> 1988</i> (n=220)	<i>Toledano,<sup>18</sup> 2006</i> (n=165)	<i>Llorente et al,<sup>5</sup> 2002</i> (n=54)	<i>Levine,<sup>19</sup> 1990</i> (n=250)	<i>Sprekelsen et al,<sup>7</sup> 2001</i> (n=246)
Nasal obstruction, %	45.5	88.5	90.7	31.6	98
Rhinorrhea, %	–	66.1		51.2	90
Hyposmia, %	13.6	78.2	31.4	15.6	72
Headaches, %	16.4	18.4	79.5	36.4	55
Others, %	20.5	32	5	–	13

with nasal polyposis (57.4%), very similar to that in our series.

The complaint expressed most often by patients with nasal polyposis is nasal obstruction; this is the most common symptom in all the series published. A summary of some published series showing the major symptoms of the disease and their frequency<sup>5,7,17-19</sup> can be found in Table 2.

In our series we have studied some other symptoms associated with nasal polyposis. Those most frequently encountered include tubaric problems referred to the ear. As we can see in our series, more than 40% of patients with nasal polyposis present a tubaric problem, such as ototubaritis or otitis with effusion. Therefore, this is a symptom that we have to assess when studying a patient with nasal polyposis. Atopic dermatitis is a skin condition that cannot be disregarded in patients with nasal polyposis.

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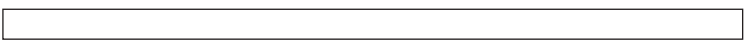
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**Appendix 1.** Epidemiology of Nasal Polyposis

Age: _____ Gender: _____					
Family and personal history					
1. Do you have allergies?	No	Yes	To what?		
2. Are there allergies in the family:	No	Yes	To what?		
3. Do you have relatives with polyps?	No	Yes	Parents	Siblings	Children
4. What field do you work in:					
5. Smoking:	No	Yes	Nº of cigarettes:		
6. Alcohol intake:	No	Yes	g/dL:		
7. Any illness:	No	Yes:	Hypertension	Diabetes	Heart
Other:			Arthritis	Kidney	Lung
			Neurological	Thyroid	Gynaecological
			Prostate	Depression	Cancer
8. Are you taking any medication:	No	Yes:	Vasoconstrictor	Anti-hypertensive	
Others:			Immunosuppressants	Analgesics	
			Antidepressants	Prostate	
			Hormones	Contraceptives	
9. Have you been vaccinated recently?			Allergies	Virus	Bacteria
10. Have you been affected by the poisoned oil syndrome?	No	Yes			
11. Can you take aspirin?	No	Yes			
12. Do you have asthma?	No	Yes			
13. Do you have any skin conditions?	No	Yes			
14. Have you had a nose operation?	No	Yes	Wall	Aesthetic	Sinusitis
Economic and social/cultural information					
1. Level of education:	Primary		High school	Degree	Postgraduate studies
2. Monthly income (euros)					
< 900	901/1500	1501/2100	2101/3000	> 3000	

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**Appendix 1. Epidemiology of Nasal Polyps (Continued)**

Current disease					
1. Nasal obstruction:	 0 1 2 3 4 5 6 7 8 9 10 <b>No</b> <b>Unbearable</b>				
2. Side of obstruction:	Alternating		Right	Left	Both
3. Seasons with obstruction:	Spring		Summer	Winter	Autumn
4. Locations with obstruction:	At work		At home	In park	In country
5. Abundant mucus?	 0 1 2 3 4 5 6 7 8 9 10 <b>No</b> <b>Unbearable</b>				
6. Aspect of mucus:	Watery		Yellow-thick	White-thick	
7. How is the mucus expelled?	Forward		Swallowed	Both	
8. Seasons with most mucus?	Spring		Summer	Winter	Autumn
9. Places where most mucus is produced: At work	At home		In park	In country	
10. Sneezing:	Occasional		Many at once	None	
11. Sneezing seasons:	Spring		Summer	Winter	Autumn
12. Places of sneezing:	At work		At home	In park	In country
13. Itchy nose:	Yes	No			
14. Itchy eyes:	Yes	No			
15. Itchy throat:	Yes	No			
16. Itching seasons:	Spring		Summer	Winter	Autumn
17. Places of itching:	At work		At home	In park	In country
18. Loss of smell:	Yes	No			
19. Loss of taste:	Yes	No			
20. Snoring:	Yes	No			
21. Cough:	No	Yes	During the day	At night	Both
22. Bleeding nostrils:	No	Yes	Right	Left	Both
23. Blocked ears:	No	Yes	Right	Left	Both
24. Headaches:	No	All the head	Forehead	Back of the head and neck	Eyes
25. Since when?	Weeks		Months	Years	
26. Source of nose problem:	Allergy		Environment	Smoking	
	Medication		Operation	Others	
27. Subjective assessment of the problem:	 0 1 2 3 4 5 6 7 8 9 10 <b>No</b> <b>Unbearable</b>				