Risk factors for nasal polyps, a case-control study

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Research Article

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Abstract

Background : Nasal polyposis is considered one of the most common diseases that cause obstruction of the respiratory tract and impede the patient's quality of life.

Aims : The aim is to determine if smoking and body mass index are risk factors for hyperplastic nasal polyps in patients with chronic obstructive rhinitis and allergic rhinitis, and thus conducting early diagnostic investigations to detect the disease early and limit its development.

Methods : A cross-sectional case control study was conducted that includes patients who came to Damascus Hospital with complaints of chronic obstruction of the nose and chronic allergies that doesn't respond to conventional treatments and who met the entry criteria and patients from ENT Division without symptoms of obstructive respiratory tracts .

Results : 120 patients were included in the study and were distributed as follows: 60 patients with nasal polyps and 60 patients without nasal polyps. The arithmetic mean of age in the group of cases was 31 ± 16.7 years, while in the controls 32.2 ± 18.3 , the BMI value was expressed as the arithmetic mean and it was 30.5 ± 4.16 years, while in the controls 23.6 ± 4.30 , and the sex ratio was equal between cases and controls with A statistically non-significant value $p = 1.000$, while the proportion of smokers in cases was 70%, while in controls 37%, with a statistically significant value $p = 0.0003$.

Conclusion : Smoking and body mass index had a statistically significant relation with the development of nasal polyposis.

Introduction

Although nasal polyposis has been defined for a long time, it remains one of the unsolved mysteries of medicine. There is no consensus on the types and formation of polyps, and there are multiple surgical approaches to treatment .

Nasal polyps are not a single entity, they include variations in both the growth pattern and response to different drugs. Nasal polyposis are diverse, including a wide range of myxedema and single polyps to large and diffuse polyposis .

About 5% of the European population suffers from chronic sinusitis and nasal polyps account for 5% of referrals to ear, nose and throat clinics and 4% of referrals to allergy clinics. In other studies, the prevalence of nasal polyps was found to be between 1.3 and 5.6%, and it was found in Davidson reports that the annual incidence of polyposis is 0.43 per 1,000 people. Nasal polyposis occurs in about 0.6% of adults, but it increases to 15% in patients with bronchial asthma, up to 95% of patients who have a type of bronchospasm intolerance to analgesics will develop chronic polyposis .

Polyps are more common in non-asthmatic men and atopic patients, while asthmatic patients have no difference in prevalence between males and females. Diffuse eosinophilic polyposis behaves differently

from disseminated non-eosinophilic diffuse polyposis, polyposis with eosinophilia have a close relationship with asthma, intolerance to analgesics, and nasal polyposis increase asthma symptoms and its treatment is known to have a positive effect on asthma, in In cases where nasal polyposis is the only one present, asthma or aspirin intolerance may develop up to 10 years later .

On the contrary, nasal polyposis may follow asthma and aspirin intolerance. 15% of patients with nasal polyposis have a type of bronchospasm intolerance to analgesics, and it increases to 60% in patients who require subsequent surgery due to the large re-growth of polyps after the initial surgery. Polyps may cause serious complications if not treated (1)(2).

Methods

A case-control study was conducted in Damascus Hospital in ENT Division. The sample included 120 patients with complaints of chronic obstruction of the nose and chronic allergies that did not respond to traditional treatments and patients who met the admission criteria in addition to patients in Damascus Hospital in ENT Division without symptoms of obstructive respiratory tracts. The sample patients were divided according to the following:

The first group (the control group) : patients from the ENT Division from Damascus Hospital were randomly selected on the condition that they do not suffer from any obstructive symptoms, and their number was 60 patients.

The second group (case group) : patients from the ENT Division diagnosed with nasal polyps, and their number reached 60 patients. The study included all cases from 1/1/2013 until 2/3/2021.

Entry criteria:

1. Age of patients over 10 years old.
2. The presence of nasal polyps and none of the exclusion criteria were included in our study.

Exclusion criteria:

1. The presence of a foreign body in the nose.
2. The presence of fungal tumors in the nasal cavity.
3. The presence of a frequency deviation.
4. The presence of a mucocele.
5. Existence of leather garments.

Ethical approval was obtained from Damascus Hospital Institutional Review Board (IRB) .

All data was collected on Microsoft Office (Excel) , Statistical analysis was done by (JMP).

Results

1. Body mass Index (BMI) :

The body mass index was studied within the study sample by dividing it into two parts, the cases section and the controls section, as shown in the Table (1) .

The mean BMI in the group of people diagnosed with nasal polyps was 30.5, with a standard deviation of 4.16, while in the control group it was 23.6, with a standard deviation of 4.30.

Statistical analysis was carried out using the student's T-test and the differences between the two groups of cases and controls were statistically significant with a P value of **0.045 ***.

Table (1): represents the mean body mass index for polyp patients and controls

	Case	Control	P.Value
BMI	30.5(4.16)	23.6(4.30)	0.045*

2. Smoking :

Smoking was studied within the study sample by dividing it into two parts, the cases section and the controls section, as shown in Table (2).

The percentage of diagnosed cases of nasal polyps was from smokers 70%, and their number was 42 cases, while the percentage of non-smokers diagnosed with nasal polyps was 30%, and their number was 18 cases, while the percentage of smokers in the controls was 37%, and their number was 22 cases, and the percentage of non-smokers in the controls 63% and their number was 38 cases.

Statistical analysis was carried out using the student's T-test, and the differences between the two groups of cases and controls were statistically significant with a P value of **0.0003 ***.

Table (2): represents the percentages and numbers of smokers and non-smokers among cases and controls .

	Case	Control	P.Value
	Number (%)	Number (%)	0.0003 *.
Smokers	42 (70)	22 (37)	
Non-Smokers	18 (30)	38(63)	
Total	60 (100)	60 (100)	

Discussion

Nasal polyps is a common disease that causes many unpleasant symptoms, such as nasal obstruction and difficulty breathing, and thus hinders the patient's quality of life . Therefore, identifying risk factors for the development of nasal polyps is important in early investigation and prevention (3).

By studying the relation between nasal polyps and BMI, where the mean was 30.5, there was a strong statistical relation between the increase in BMI and the incidence of nasal polyps in our study , and this was consistent with the study of (Kabeya Y, Kato K, co-authors)(4).

By studying the relation between nasal polyps and smoking, the proportion of infected and smokers was 70%, and the proportion of non-infected and smokers was 37%, and thus we found a strong statistical relation, and in comparison to the study of (Görgülü O, Ozdemir S, co-authors) The percentage of infected smokers was 70%, while non-infected smokers 41%, and there was a strong relation that supports our study (5), the explanation of this relation is that smoking is associated with increased sensitivity and sensitivity increases the incidence of polyps (Collins MM, Pang YT , Loughran S, co-authors) (6) .

Conclusion

Smoking and body mass index had a statistically significant relation with the development of nasal polyposis therefore , it's important to advise smokers to stop smoking and people with high BMI to lower their weights especially those who have relatives with nasal polyposis .

Declarations

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Availability of data and materials:

All data related to this paper's conclusion are available and stored by the authors. All data are available from the corresponding author on a reasonable request.

Conflict of interest:

The authors declare that they have no conflict of interest.

Authors' contributions:

AY , SS and SK conceptualized the study, wrote the study protocol, performed the statistical analysis, participated in data collection, and did the literature search . FK did the translation of this study ,made the design of this paper and did the publishing . LD did a literature search and revision of the draft. All authors read and approved the final draft.

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Figures

Figure 1

The figure represents the percentages between smokers and non-smokers between cases and controls