

FREQUENCY OF OTITIS MEDIA IN PATIENTS OF NASAL POLYPI

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Background: Otitis media is a common disease encountered in ENT practice. Its incidence has fallen in the developed world. It is expected that nasal polypi causes Eustachian tube dysfunction which in turn leads to negative middle ear pressure causing to develop otitis media with effusion or recurrent otitis media. The objective of this study was to find the frequency of Otitis Media in patients of nasal polypi. **Subjects and Methods:** It was a cross-sectional study. Seventy patients with bilateral nasal polypi were taken for study from OPD of ENT Department, Fauji Foundation Hospital Rawalpindi. Purposive (non-probability) sampling was done keeping p=4%. There were 24 (34.3%) males and 46 (65.7%) females included in the study. Age range was 26–38 years. Tympanometry was done in every patient to look for signs of Otitis media. Duration of study was from 24th Apr 2008 to 30th Jul 2009.

Results: In our study, all patients were having bilateral nasal polypi. Age range was between 26 and 38 years. Frequency of patients having retracted tympanic membrane on right side was 25 (35.7%), and those who developed it on left side was 30 (42.9%). However, 35 (50%) of the 70 patients were having retraction of tympanic membrane whether right or left. This shows frequency of otitis media in patients of nasal polypi was found to be 50%. **Conclusion:** Frequency of developing otitis media in patients of nasal polypi is quite high. Nasal problems lead to development of ear diseases.

Keywords: Otitis Media, Nasal Polyp, Middle Ear, Eustachian Tube, Tympanometry

INTRODUCTION

Otitis media is a common disease encountered in ENT practice. Its incidence has fallen in the developed world. The 1993 World Development Report estimated that about 5.12 million disability-adjusted life years (DALYS) were lost from otitis media, 91% of which come from developing world.¹ Currently, there is a consensus for using the term acute otitis media and otitis media with effusion regarding otitis media. Acute otitis media is the rapid onset of signs and symptoms, such as otalgia and fever, of acute infection within the middle ear. Otitis media with effusion is an inflammation of the middle ear with a collection of fluid in the middle ear.² The disease was first described in detail by Politzer in 1869, while Hilton gave the otoscopic appearance of the disease in 1874.³ Forty percent of all children have experienced one or more episodes of Otitis media by age 2 years.⁴ Nasal polypi represents a wide spectrum of sinonasal disease.⁵ Chronic rhinosinusitis is an inflammatory disease of the nasal and paranasal sinuses that is present for more than three months, and is associated with inflammatory changes ranging from polypoid mucosa to gross nasal polypi.⁶ Nasal polypi causes post nasal drip which is considered to cause Eustachian tube dysfunction. Origin of otitis media is multifactorial; Eustachian tube dysfunction plays an important role.⁷ Chronic rhinosinusitis, and nasal obstruction and post nasal discharge are often accompanied by ear complaints (recurrent acute otitis media or otitis media with effusion) in 40–68%.⁸ This association between nasal diseases and otitis media is not unexpected, as the middle ear can be considered a kind of specialised paranasal space. It is expected that

nasal polypi causes Eustachian tube dysfunction which in turn leads to negative middle ear pressure causing to develop otitis media with effusion or recurrent otitis media.

SUBJECTS AND METHODS

The Cross-sectional study was conducted at the Outpatient Department of ENT, Fauji Foundation Hospital, Rawalpindi from April 2008 to July 2009. A total of 70 patients with bilateral Nasal Polypi were taken keeping prevalence of nasal polypi 4% and using formula

$$n = \frac{z^2}{e^2} * p q$$

and keeping margin of error at 5%. Purposive (Non-probability) sampling technique was used. Patients aged more than 13 years having otitis media or nasal polypi from both genders were included in the study. Patients with previous surgery of nose or ear, where type of surgical procedure performed was not available, excluded from study. In addition diagnosed cases of cystic fibrosis, karatagners' syndrome, aspirin intolerance, asthma and antrochoanal polyp were also excluded from study. A specially designed proforma was used for data collection. Approval of study from ethical committee was taken. Seventy cases meeting the inclusion and exclusion criteria were registered. An informed consent was obtained from them prior to using their data in research.

Data collected patients' variables like age, gender, tympanic membrane, signs of otitis media for both ears and nasal polyps for nose. A complete history was taken from patient including questions regarding asthma. Patient was examined with the help of head light in OPD. Nasal speculum was used for examination

of nose. Probe was used to check the sensitivity of nasal polypi as well as the number whether single or multiple (polypi insensitive to touch). Vasoconstrictor Xylometazoline was sprayed in the nasal cavity to differentiate polypi from turbinate (turbinate shrink with vasoconstrictor). Both nostrils were examined in this way.

Otoscope was taken to visualise the integrity of tympanic membrane (intact or perforated) and signs of otitis media (retraction pockets, cholesteatoma). Findings of the patients were noted. Proforma was filled at the same sitting and Tympanometry performed.

Data was stored and analysed using SPSS-10. Mean and standard deviation was calculated for age of the patients. Frequency and percentages were calculated for categorical variables, i.e., gender, tympanic membrane for retraction (sign of otitis media), perforation, cholesteatoma for both ears, nasal polypi for nose.

RESULTS

A total of 70 patients were examined having bilateral nasal polypi during the time period under study. The age of these patients ranged from 17 to 45 years (Mean age: 32.7±6.5814 years). Highest numbers of the patients were between the ages of 31–35 years and lowest between the ages of 40–45 years. Age range was from 26–38 years.

Out of these 70 patients, there were 24 (24.3%) males and 46 (65.4%) females. It was seen that frequency of patients having retracted tympanic membrane on right side was 25 (35.7%), and those who developed it on left side was 30 (42.9%). However, 35 (50%) of the 70 patients were having retraction of tympanic membrane whether right or left. No patient was found having cholesteatoma.

Table-1: Left Retracted Tympanic Membrane

		Frequency	%	Valid (%)	Cumulative (%)
Valid	No	40	57.1	57.1	57.1
	Yes	30	42.9	42.9	100
Total		70	100	100	100

Table 2: Right Retracted Tympanic Membrane

		Frequency	%	Valid (%)	Cumulative (%)
Valid	No	45	64.3	64.3	64.3
	Yes	25	35.7	35.7	100
Total		70	100	100	100

DISCUSSION

Otitis media was first discovered by Politzer in 1869, though a couple of workers had identified it before. In 1874, Hilton gave the otoscopic picture of the disease. Otitis media with effusion with its more than fifteen names including Glue ear was given by Jordan in 1949.⁹

The aetiology is thought to multifactorial. Bacterial infections like chronic rhinosinusitis, Eustachian tube obstruction, respiratory viral infections and bacterial biofilms all have been postulated.

Chronic rhinosinusitis is an inflammatory disease of the nasal and paranasal sinuses that is present for more than three months, and is associated with inflammatory changes ranging from polypoid mucosa thickening to gross nasal polypi. Chronic rhinosinusitis, and nasal obstruction and post nasal discharge are often accompanied by ear complaints (recurrent acute otitis media or otitis media with effusion) in 40–68%. This association between nasal diseases and otitis media is not unexpected, as the middle ear can be considered a kind of specialised paranasal space. The relationship between nasal polypi and chronic rhinosinusitis is much debated but in its broadest sense nasal polypi should probably be considered as one form of chronic inflammation in the nose and sinuses, i.e., part of the chronic rhinosinusitis. It is expected that nasal polypi causes Eustachian tube dysfunction which in turn leads to negative middle ear pressure causing to develop otitis media with effusion or recurrent otitis media. The association of Otitis media with the dysfunction of Eustachian tube and the disorders of the nose has repeatedly been confirmed.¹⁰

Otitis media, especially secretory otitis media or otitis media with effusion, in its acute as well as chronic form, is a very common disorder in children, but it can also regularly occur in adults. Otoscopy reveals retraction of tympanic membrane as well air bubble behind tympanic membrane. Special audiological test like tympanometry is used to diagnose the condition.

The earliest reports of nasal polypi date to 1000 BC. The reported prevalence of nasal polypi varies between 0.2% and 4.3% of the population. Larsen and Tos estimated an incidence of 0.627 per thousand per year in Denmark in symptomatic patients.¹¹ The word ‘Polyp’ is derived from Greek, meaning many footed (poly, many; pous, footed) but a polyp has only one foot (stalk).¹² The relationship between nasal polypi and chronic rhinosinusitis is much debated but in its broadest sense nasal polypi should probably be considered as one form of chronic inflammation in the nose and sinuses, i.e., part of the of chronic rhinosinusitis.⁸ Although historically polypi have been believed to be a manifestation of allergy, because of the histologic prominence of eosinophils, epidemiologic evidence is still not available. The incidence of allergy is not higher in patients with nasal polypi than in the population as a whole. They are frequently observed in chronic rhinosinusitis, including allergic rhinosinusitis, and other chronic sinonasal inflammatory states.¹³ The aetiological role

of nasal allergy and sinusitis in the dysfunction of Eustachian tube and in various clinical forms of Otitis media has regularly been discussed in the literature. Nevertheless, few data are available to demonstrate a direct causal involvement of hypersensitivity mechanisms appearing primarily in the nasal mucosa and by this way leading to the dysfunction of Eustachian tube and to the secondary response of middle ear.¹⁴

The first modern-era researcher of the Eustachian tube was Bartolomeus Eustachius. Eustachius was an anatomist, for whom the Eustachian tube is named, studied several areas in the human body including the Eustachian tube.¹⁵ Further work was done by Antonio Valsalva. Valsalva was a Professor of Anatomy and is most recognised for his middle ear insufflating manoeuvre that is named after him. Valsalva is credited with naming the auditory tube, the Eustachian tube, and describing its function.¹⁶ Adam Politzer is probably best known for his contribution to otology and probably considered the greatest otologist of the 19th century. One of his contributions was a hand-held air bag that allowed insufflations of the middle ear space. Further therapies developed by Politzer included a primitive middle ear ventilation tube.¹⁷

The Eustachian tube possessing manifold functions. It facilitates the communication of the middle ear cavity with the nasopharynx, nasal cavity, nasal mucosa, and indirectly also with the paranasal sinuses. By this way the Eustachian tube plays a major role in the disorders of the middle ear. The major types of abnormal function of the Eustachian tube that may cause secretory otitis media are its obstruction, abnormal patency, and the non-optimally functioning ciliated epithelium lining the Eustachian tube.¹⁸

In our study, all patients were having bilateral nasal polypi. Age range was between 26 and 38 years. Otitis media was found in 35 (50%) of the patients. This shows that half of the patients developed otitis media whether acute or secretory. However, it was an incidental finding that 25 (35.7%) of patients developed in right ear and 30 (42.9%) of patients developed in left ear. Both ears were involved in 20 (28.6%) patients. Frequency of otitis media in patients of nasal polypi was found to be 50%. Half of the patients develop it and other half didn't.

Chronic rhinosinusitis is a major factor contributing to ear diseases. The Eustachian tube possessing manifold functions facilitates the communication of the middle ear cavity with the nasopharynx, nasal cavity, nasal mucosa, and

indirectly also with the paranasal sinuses, and plays an important role in the disorders of the middle ear.

CONCLUSION

Frequency of developing otitis media in patients of nasal polypi is quite high. Nasal problems lead to development of ear diseases.

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