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Association of Deviated Nasal Septum with Chronic otitis Media

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Abstract **Original Research Article**

Background: The existence of a pathophysiologic connection between nose and rniddle ear is widely accepted so that chronic purulent middle ear disease (CPMED) could be expected to be usually associated with chronic nasal disease or impaired function. Nevertheless such association is less frequently observed in clinical practice than one could expect, possibly because of inadequate evaluation of nasal function. ***Objective:*** To observe the association of deviated nasal septum with COM ***Methods:*** Two hundred patients complaining of middle ear discharge and or nasal symptoms were included in this study, to see the association of COM with nasal disorders. This cross sectional study was conducted in Dhaka Medical College Hospital from July 2012 to June 2014.Sample was taken by purposive sampling. Sample was divided into four groups as exposed and diseased, exposed and not diseased, not exposed diseased and not exposed and not diseased. ***Results:*** Along with DNS age, sex, smoking and abusing of nasal drug were compared. Number of patients with septal deviation with a convexity to the same side as affected ear in COM was compared with Chi-square test. Septal deviation founded more frequently on the same side of ear pathology (p<00l), Therefore, septal deviations must be carefully investigated during the management patients with COM. ***Conclusion:*** Septal deviations must be carefully investigated during the preoperative assessment of patients with COM. Along with DNS age, sex, smoking and abusing of nasal drugs were evaluated. Smoking was found to be associated with the development of COM.

Keywords: Middle ear, nose, nasal function, chronic purulent middle ear disease.

INTRODUCTION

Healed COM where there are permanent abnormalities of the pars tensa, but the ear does not have the propensity to become active because the pars tensa is intact and there are no significant retractions of the pars tensa or flaccida. *'Healed* COM' can also be the end result of successful surgery [1]. A deviated nasal septum is a condition in which the nasal septum ~ the bone and cartilage that divide the nasal cavity of the nose in half is significantly off center, or crooked, making breathing difficult. 80% of people, most unknowingly have some sort of misalignment to their nasal septum. Severe imbalances cause significant breathing problems and require treatment. Some people are born with a deviated nasal septum and others due to trauma to the nose that may occur at any time in their life. Most of the septal deviation has hypertrophy of inferior turbinate as a result of compensatory mechanism which is another important cause of nasal and Eustachian tube obstruction A person with a deviated septum will typically have issues with improper nasal drainage. This can cause fluid to enter into the sinuses and middle ear, which can lead to COM and sinusitis [2].

Acute otitis media with or without effusion many a times responds to conservative treatment- Persistent or recurrent and chronic cases must need *healed* COM where there are permanent abnormalities of the pars tensa, but the ear does not have the propensity to become active because the pars tensa is intact and there are no significant retractions of the pars tensa or flaccida. *'Healed* COM' can also be the end result of successfull Surgery [3].

Disease in the middle ear left mostly associated with sinonasal pathology or upper airway obstruction. Rhinosinusities, mechanical or pathological obstruction in nose and nasopharynx act as predisposing factor for developing the disease or turning it into a complicated one, Upper airway catarrh plays important role in developing middle ear inflammation and deviated nasal

septum causing nasal obstruction, allowing having persistent infection in the nasal cavity and transmitting it to the middle ear which may be responsible for chronic middle ear disease [4].

Acute otitis media with or without effusion many a times responds to conservative treatment- Persistent or recurrent and chronic cases must need special attention to nasal cavity, HIT, septal deviation, nasal polyps are common nasal pathology that transforms an acute condition to chronic. For acute condition il is rarely necesssry to do a surgery like myringotomy but for chronic cases most of the time it needs to correct by surgery although it has morbidities and failure rate [5], Surgery consumes time, money and surgical team's hard effort So every time when we are dealing with acute cases of middle ear efftision we must take all necessary steps to prevent transforming it to recurrent or persistent cases. Thus we can prevent development of chronic otitis media and hearing impairment.

Objective

General Objectives: To observe the association of deviated nasal septum with COM

Specific Objectives

1. To see DNS with or without Sinusitis associated with middle ear disease,
2. To evaluate DNS with Smoking /nasopharyngitis associated with middle ear disease
3. To observe the laterality of ear disease in association with deviated nasal septum.

METHOD

Type of Study: Cross sectional study

Piace of Study: Dhaka Medical College Hospital, Dhaka.

Period of Study: July 2012 to June 2014

Study Population: Patient with COM attending in ENT department.

Study Sample: Patient of COM and DNS fulfilling the inclusion criteria attending to the department of ENT & Head Neck surgery of Dhaka Medical College Hospital.

Samplc Size: 200 cases were taken for this study

SELECTION CRITERIA

Inclusion Criteria:

1. Patient sufiering from chronic Otitis media.
2. Patients complaining of symptoms of DNS.
3. More than 18 years of age.

Exclusion Criteria:

1. Patient having history of traumatic perforation or specific causes of COM e,g Tuberculosis,
2. Patient who refused to be included in the study,
3. Patient who were not mentally sound.
4. Patient who was without attendants or who could not give consent or information

Data Colicetion Method:

After taking informed written consent of the subject or from the guardian, data was collected through a structured questionnaire (appendix-I) and clinical examination with certain investigation. Age, sex, habit, habitam, occupational history was taken. Type and duration of complain regarding both ear and nasal pathology was asked, Full ENT examination was done. Endoscopie examination of ear and nose were conducted.PTA, Tympanometry, X- ray PNS, X-ray Mastoid and in some cases CT scan were done. After accumulating of all data 200 patients were divided into 4 groups. Data were analyzed by SPSS method.

RESULTS

200 patients were enrolled for this study. 100 patients were complainmg of ear problem and 100 nasal symptoms, They were classified as COM with DNS, COM without DNS, DNS without COM and no DNS no COM-

Table: I- Frequency of Nasal Septal Deviation (n-140)

Type of Septal Deviation	FREQUENCY	PERCENTAGE (%)
Anterior Dislocation	10	7.14
C-Shaped	72	51.43
S-Shaped	38	27.14
Septal Spur	12	8.57
Septal thickening	8	5.71
Hypertrophied Turbinate	85	60.71
	225	

- > 100% means same patient having multiple pathology e.g. DNS with HIT

Table: II- Association of DNS with Sinusitis

DNS	Sinusitis		No Sinusitis		Total	
	n	(%)	n	(%)	n	(%)
DNS +ve	90	64.29	50	45.71	140	70
DNS-ve	20	33.33	40	66.67	60	30
Total	110	55	90	45	200	100

- Chi-square test shows at 1% level of significance against df=1, value of $x^2 = 24.52$, So P < .001

Table: III- Association of DNS with Hearing loss (PTA)

DNS	Sinusitis		No Sinusitis		Total	
	n	(%)	n	(%)	n	(%)
DNS +ve	120	85.71	20	14.29	140	70
DNS-ve	10	16.67	50	83.33	60	30
Total	113	65	70	35	200	100

- Chi-square test shows at 1% level of significance against df=1, value of $x^2 = 88.01$, So P < .001

Table: IV- Association of DNS with Tympanogram

DNS	B-Curve		C-curve		Total	
	n	(%)	n	(%)	n	(%)
DNS +ve	12	37.5	20	62.5	32	68.09
DNS-ve	06	40	09	60	12	31.91
Total	18	38.30	29	61.70	47	100

Table: V- Associations of Let sided DNS with left sided COM

Septal Deviation	Lt COM		No Lt. COM		Total	
	n	(%)	n	(%)	n	(%)
DNS to Lt	53	84.13	17	22.08	70	50
No DNS to Lt	10	15.87	60	77.92	70	50
Total	63	100	77	100	140	100

- Chi-square test shows at 1% level of significance against df=1, value of $x^2 = 53.35$, So P < .001

Table: VI- Associations of Right sided DNS its Right sided COM

Septal Deviation	Rt. COM		No Rt. COM		Total	
	n	(%)	n	(%)	n	(%)
DNS to Rt	25	71.43	10	9.52	35	25
No DNS to Rt	10	28.57	95	90.48	105	75
Total	35	100	105	100	140	100

- Chi-square test shows at 1% level of significance against df=1, value of $x^2 = 55.35$, So P < .001

DISCUSSION

Out of 200 patients enrolled for the study 92 (48.42%) were smoker and 98 (51.58%) were non smoker, 80 (57.14%) smoker patients developed COM whether 60(42.86%) non smoker developed it (Table-IV), Chi-square test showed it to be statistically significant. Smoking may not cause COM but by impairing the cilliary activity upper respiratory tract it may cause rhino-sinusitis which is an important factor for converting AOM to COM. Smoking also has an impact on GORD which is also considered as a factor for causation of COM- [6]. This also commented by Poelmans J, TackJ, Feenstra L, in their study in 2001. We have taken history whether these patient were abusing any drug per nasally e.g cocaine, heroin or gum of shoes. We found that 44(44%) patient out of 200 were abuser of drugs per nasally. Out of 140 COM patients only 30(15%) had history of nasal drug abuser. This is not statistically significant but it might be an iceberg. There should be an independent study with the drug addicts to see the prevalence of ENT disease among drug addicts, But I think may be we are still in hopeful situation in drug addiction and it may be due to our social tradition and religious belief.

Study on the frequency of nasal obstruction and type of septal deviation 72(51.43%) patients were seen to suffer from C type of deviation and 38 patients were suffering from S type deviation Hypertrophied inferior turbinate are usually result of compensatory mechanism developed in 85 patients, HIT may also develop in allergic rhinitis or Rhinitis medicamentosa. They may also cause Eustachian tube dysfunction especially if hypertrophy involves the posterior part.

On analysis of COM out of 200 patients 140 had COM and 60 had no COM. Out of 140, unilateral COM was 98(70%) and Bilateral COM was 42(30%). Out of

200 sample 140 patient had DNS with or without different type of other pathology. Out of 140 COM 13(9.28%) patient had COM but no nasal pathology (Table-III), DNS to the left was more common than right. This result similarity the findings of a nationwide survey in Korea [7] (Kim CS e.t *1991).* On analysis of site of COM and nasal obstruction among 140 patients, 98(70%) patient were suffering from unilateral COM and42 (30%) were suffering from bilateral COM [8]. Unilateral nasal obstruction was seen in 85(60.71%) and bilateral nasal obstruction was seen in 55(39.29%).

In table VII have analyzed DNS with hearing loss, PTA was done for all patients. 130 patients were found to suffer frorn hearing loss of different grade.95% were of conductive lype of hearing impairment. 120(85.71%) of DNS positive groups shown hearing impairment, In fact DNS has no direct relation with hearing impairment. DNS impairs the function of eustachian tube thus causing OME or COM and ultimately hearing loss. Chi-square test was done to see statistical significance between hearing impairment and DNS and it was found statistically significant (X^2=88.01).

Out of 200 patients 47 patients were found to have intact TM, Tympanometry was done to see the middle ear status Le pressure in the middle ear. Among these 47 patients 37.5% of DNS positive patients shown B curve that is fluid in the middle ear and 62.5% shown C-curve on tympanograph that is retracted TM. This statement signifies the association of DNS with changes in the middle ear pressure [9].

Out of 63 left sided COM DNS to left was seen in 53 cases and out of 35 right sided COM right sided DNS was seen in 25 cases. Significant association was seen by Chi-square test(x^2=53.50,P<.001) between COM and same sided nasal obstruction. This result is similar to the result of W. E. Bolger *et al.*,; conducted in l991 30 patient had DNS but no COM and 15% patient had no COM and no sinonasal pathoiogy although they were complaining of symptoms like COM or DNS. They were suffering from myringitis, otomycosis or functional disorder [10].

CONCLUSION

This cross sectional study indicates that septal deviations bave association with COM which commonly occurs on the same side. Therefore, septal deviations must be carefully investigated during the preoperative assessment of patients with COM. Along with DNS age, sex, smoking and abusing of nasal drugs were evaluated. Smoking was found to be associated with the development of COM.

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