## Relation between Chronic Sinusitis and Deviated Nasal Septum

Bv

Apurab Gupta, Krishanlal Gupta, Parmod Kalsotra and Kamal Kishore

ISSN 2319-3077 Online/Electronic ISSN 0970-4973 Print

UGC Approved Journal No. 62923 MCI Validated Journal Index Copernicus International Value IC Value of Journal 82.43 Poland, Europe (2016) Journal Impact Factor: 4.275 Global Impact factor of Journal: 0.876 Scientific Journals Impact Factor: 3.285 InfoBase Impact Factor: 3.66

J. Biol. Chem. Research Volume 36 (1), Part C, 2019 Pages No. 163-166

# Journal of Biological and Chemical Research

An International Peer Reviewed / Referred Journal of Life Sciences and Chemistry

## Indexed, Abstracted and Cited in various International and National Scientific Databases

Published by Society for Advancement of Sciences®

J. Biol. Chem. Research. Vol. 36, No. 1, Part C: 163-166, 2019 (An International Peer Reviewed / Refereed Journal of Life Sciences and Chemistry) Ms 36/01/301/2019 All rights reserved ISSN 2319-3077 (Online/Electronic) ISSN 0970-4973 (Print)





Dr. Krishanlal Gupta http:// <u>www.sasjournals.com</u> http:// <u>www.jbcr.co.in</u> jbiolchemres@gmail.com

Received: 11/02/2019

Revised: 25/04/2019

RESEARCH PAPER Accepted: 26/04/2019

### Relation between Chronic Sinusitis and Deviated Nasal Septum

Apurab Gupta, \*Krishanlal Gupta, \*\*Parmod Kalsotra and\*\*Kamal Kishore Department of ENT, Govt. Medical College & Hospital Jammu (J&K) - 180001 India \*Department of Biochemistry, Govt. Medical College & Hospital Jammu, (J&K)-180001 India \*\*Department of ENT, SMGS, GMC Jammu, India

#### ABSTRACT

Sinusitis is one of the most common diseases of the nose and paranasal sinuses. It is the fifth most common diagnosis for which antibiotics are prescribed. To study the association and relationship of chronic sinusitis with deviated nasal septum. This study was conducted in department of ENT, GMC JAMMU. All the patients with symptomtomatic sinusitis of more than 12 weeks' duration are included in the study.

Sample size: 100 patients

Patients age >15 years and ≤60 years

The study was conducted between July 2017 and December 2018. 86 patients out of 100 with DNS had supervening chronic sinusitis. Present study showed that chronic sinusitis was almost equally prevalent in males and female. Headache was the most common symptom followed by nasal blockage due to pressure and airflow changes caused by DNS. C-shaped deviation was the most common presentation, being more common on the left side. Bilateral Maxillary sinusitis was the commonest presentation, more so in association with C-shaped DNS. Pansinusitis was only associated with S-shaped deviation, since S-shaped DNS obstructs the laminar airflow pattern in both the nasal cavities. Isolated sphenoid sinusitis was not seen as the sinuses occupy a midline position. The ostium occupies a medial and superior position on either side of the nasal septum; hence obstruction of the ostia due to DNS is less common. Keywords: Sinusitis, Antibiotics, Nasal Septum and DNS.

#### INTRODUCTION

Sinusitis is one of the most common diseases of the nose and paranasal sinuses. It is the fifth most common diagnosis for which antibiotics are prescribed [Rosenfeld et al., 2015]. Chronic sinusitis (CS) is an extremely prevalent disorder affecting up to two percent of the world population, has a significant impact on the quality of life of affected individual [Rodney and David, 2008]. The term "sinusitis" refers to a group of disorders characterized by inflammation of mucosa of nose and paranasal sinuses.

Deviated Nasal septum is a common disorder that presents up to 62% of the population, and its role in the pathogenesis of chronic sinusitis remains uncertain [Lloyd, 1990]. Hippocrates in 5th century B.C stated that "In a person having a painful spot in head, with intense headaches, pus or fluid running from the nose removes the disease", which may be referred to as describing sinusitis [Lusk et al., 1996]. Anatomically, areas of mucosal contacts are most likely to occur in the narrow mucosal lined channels of the middle meatus and ethmoid air cell system [Kennedy et al., 1985].

#### **OBJECTIVE**

To study the association and relationship of chronic sinusitis with deviated nasal septum.

#### MATERIAL AND METHODS

This study was conducted in department of ENT, GMC JAMMU. All the patients with symptomtomatic sinusitis of more than 12 weeks' duration are included in the study.

Sample size: 100 patients

Patients age >15 years and ≤60 years

#### TFR DIAGNOSTIC CRITERIA FOR SINUSITIS INCLUSIVE CRITERIA:

The presence of two or more major factors, or one major and two minor factors, is considered suggestive of sinusitis.

#### METHODS OF COLLECTION OF DATA:

The cases selected for the study were subjected to

- 1. Clinical examination.
- 2. Diagnostic nasal endoscopy:
- 3. X-ray of nose and paranasal sinuses
- 4. CT scan of nose and paranasal sinuses (in required cases)

After clinical examination patients with suspected sinusitis were subjected to radiological investigations.

#### RESULTS

Table 1.				
GENDER	NO. OF PATIENTS	PERCENTAGE OF		
		PATIENTS		
MALE	58	58		
FEMALE	42	42		

Table 2.

Tuble 2.						
	GENDER	NO. OF PATIENTS	NO.OF PATIENTS	PERCENTAGE OF		
		WITH SINUSITIS	WITH DNS	PATIENTS WITH		
				SINUSITIS WITH DNS		
	MALE	58	46	79.3%		
	FEMALE	42	38	<b>90.4</b> %		
	TOTAL	100	86			

Table 3.						
AGE GROUP	TOTAL NO. OF	PATIENTS	PERCENTAGE OF			
	PATIENTS	WITH DNS	PATIENTS WITH DNS			
15-20	07	O5	71.4%			
21-30	34	31	91.1%			
31-40	28	24	85.7%			
41-50	24	20	83.3%			
51-60	09	06	66.6%			

J. Biol. Chem. Research

Total of 100 patients were enrolled in the study between 15 and 60 years old. All the patients presenting with symptoms of sinusitis of more than 12 weeks' duration with 2 major and one minor or 2 minor symptoms were included in the study. Patients diagnosed as cases of sinusitis based on TFR criteria. Out of 100 patients with diagnosed sinusitis 84 also displayed DNS.

#### DISCUSSION

There are three theories explaining pathophysiological relation between the deviated nasal septal and chronic sinusitis. The first of these is the mechanical theory which states that secretions accumulates in the sinus as a result of narrowing of the ostiomeatal complex and thus infections ensues in the retained secretions and causes chronic rhinosinusitis.

The second theory is the aerodynamic theory. According to this theory, the mucociliary activity decreases following the nasal flow rate increase and mucosal dryness in relation with the nasal septal deviation and consequently, chronic rhinosinusitis develops.

The third theory is the **Bachert''s pressure theory**. According to this theory, deviation of the posterior nasal septum causes chronic rhinosinusitis by creating pressure and air flow changes within the maxillary sinuses [Brown, 2011, Adrian Drake-Lee, 6<sup>th</sup> edition]. In the present study the incidence of DNS was more in female than male with 79.3% female and 90.4 male. In a study by Madani et al, there were 68.3% male and 31.7% female with [Madani et al. 2013]. Ozkurt et al in his study observed that incidence was more in male as compared to female [Ozkurt et al., 2014].

In our study most patients had bilateral maxillary sinusitis in 72 patients (48%) while unilateral maxillary sinusitis was seen in 60 patients (40%), bilateral frontal sinusitis was seen in 34patients (34%), while unilateral frontal sinusitis was seen in 12 patients (12%), bilateral ethmoidal sinusitis was presented in 26 patients (26%) while unilateral ethmoidal sinusitis was seen in 12 patients (12%) and bilateral sphenoidal sinusitis was seen in 6 patients (6%). 6 patients had pansinusitis (6%) while no patient presented with unilateral sphenoidal sinusitis.

In a study by Mohebbi et al, bilateral maxillary sinusitis presentation was seen in 27% of patients while unilateral presentation was seen in 18.4%, similarly unilateral frontal sinus involvement was seen in 12.5% and bilaterally in 11.2%, bilateral ethmoidal sinusitis was seen in 36.1% and unilateral ethmoidal sinusitis was seen in 12.3%, unilateral sphenoid sinusitis was seen in 13% [Mohebbi, 2012]. Rao et al in their study found horizontal spur was most commonly associated in sinus pathology, 43.4% of patients spurs were accounted for sinus pathology, similarly type III (posterior vertical deviation) was seen having osteomeatal complex (OMC) block in 62.5% of cases, S-shaped deviation was associated with OMC block in 50% of cases [Moorthy et al., 2014]. In this study we found that the prevalence of nasal septal deviations and the sinusitis was significant [p-value is <0.001].

#### CONCLUSION

Present study showed that chronic sinusitis was almost equally prevalent in males and female. Headache was the most common symptom followed by nasal blockage due to pressure and airflow changes caused by DNS. C-shaped deviation was the most common presentation, being more common on the left side. Bilateral Maxillary sinusitis was the commonest presentation, more so in association with C-shaped DNS. Pansinusitis was only associated with S-shaped deviation, since S-shaped DNS obstructs the laminar airflow pattern in both the nasal cavities. Isolated sphenoid sinusitis was not seen as the sinuses occupy a midline position. The ostium occupies a medial and superior position on either side of the nasal septum; hence obstruction of the ostia due to DNS is less common.

#### ACKNOWLEDGEMENTS

Authors are highly grateful to Dr. Pramod Kalsotra and Colleagues for helping and guiding during research.

**REFRENCES** 

- Rosenfeld, R.M., Piccirillo, J.F., Chandrasekhar, S.S., Itzhak Brook, I., Kumar, K.A., Kramper, M., et al. (2015). Clinical Practice Guideline (Update): Adult Sinusitis. Otolaryngology–Head and Neck Surgery, Vol. 152(2S) S1–S39.
- Rodney J. Schlosser and David W. Kennedy (2008). Nasal endoscopy, Scott-Brawn's Otorhinolaryngology, Head and Neck Surgery, volume 2, pg 1344.
- Lloyd, G. (1990). CT of the paranasal sinuses: study of a control series in relation to endoscopic sinus surgery. *J Laryngol Otol*; 104:477–481.
- Lusk, R.P., McAlister, B. and Ahmed, F. (1996). Anatomic variations in Pediatric chronic sinusitis. A CT study. *OCNA*; 29:75-91.
- Kennedy, D.W., Zinreich, J., Arthur, E., Rosenbaum and Johns, M.E. (1985). Theory and diagnostic evaluation. *Arch Otolaryngol Head and Neck Surg*; 111(9): 576-582.
- Collet, S., Bertrand, B., Cornu, S., Eloy, P. and Rombaux, P. (2001). Is septal deviation a risk factor for chronic sinusitis? Review of literature. *Acta Otorhinolaryngol Belg*; 55(4):299-304.
- Rao, J.J., Kumar, E.C.V. et al. (2005). Classification of nasal septal deviations-relation to sinonasal pathology," Indian journal of otolaryngology and head and neck surgery; 57(3): 199-20.
- Moorthy, P.N.S., Kolloju, S., Madhira, S. and Jowka, A.B. (2014). Clinical study on deviated nasal septum and its associated pathology. *International Journal of Otolaryngology and Head & Neck Surgery*, 3, 75-81.
- **Mohebbi, et al. (2012).** An epidemiologic study of factors associated with nasal septum deviation by computed tomography scan: a cross sectional study. BMC Ear, *Nose and Throat Disorders*, 12:15.
- **Brown, S. (2008).** Anatomy of nose and paranasal sinuses. In: Lund VJ, H Stammberger, Scott Brown Otolaryngology, Basic Sciences; 5, Butterworth-Heinemann; oxford, 7th edn; 2008: Pg1318.
- Adrian Drake-Lee "The Physiology of the Nose and Paranasal Sinuses" Scott Brown"s Otolaryngology. 6thedition, Volume 1, Basic Sciences pp 1/6/11-15.
- Madani, S.A. et al (2013). Association between anatomical variations of the sinonasal region and chronic rhino sinusitis: A Prospective Case Series Study. Scientific Journal of the Faculty of Medicine in Niš 2013; 30(2): 73-77.
- Ozkurt, F.E. et al. (2014). Relation between the Nasal Septal Deviation and Chronic Rhinosinusitis, International Journal of Basic and Clinical Studies (IJBCS); 3(1): 25-30.

## Corresponding author: Dr. Krishanlal Gupta, Department of ENT, SMGS, GMC Jammu, India

Email: apurabgupta314@gmail.com