



Variations in Anatomy on CT in Chronic Sinusitis- A Prospective Study

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Abstract

This study is a prospective cross sectional, which includes 85 patients suffering from sinusitis for twelve weeks or more who have been evaluated by endoscopic nasal examination and CT scan for anatomical variations and their distribution in patients suffering from chronic rhinosinusitis. Among the variations noted the maximum is determined to be deviated nasal septum (DNS) 88.2 % followed with concha bullosa 76.4%, followed by paradoxical center turbinate 9%, agger nasi 7%.

Keywords: Anatomical variations, Paranasal sinuses, Sinusitis, Computed tomography.

Introduction

Chronic sinusitis being a common disease, it is one of the commonest cause of disease among all age group of individuals. It's analysis depends on clinical assessment based on vague bodily presentation along with guidance of anterior and posterior rhinoscopic examination. Paranasal sinuses usually associated with inter and intra subject variations.

At present, CT is the screening tool for evaluation of paranasal sinuses, nasal fossae and their anatomical framework and its variations. These versions result in osteal obstruction and thus preventing the drainage of mucus and causing persistent rhinosinusitis. Anatomical Variations and CT findings of sinusal illness appearing on the ipsilateral side offers evidence of its chance of interference with the mucus drainage technique.

Computed tomography gives specified study of anatomical versions.

Materials and Methods

This study was done in the Department of Otorhinolaryngology, Rajah Muthiah medical college and research institute, Annamalai University from 1/1/2014 to 1/1/2015 including 85 patients who were clinically and radiologically recognized as having continual rhinosinusitis and have been evaluated with (computed tomography) CT scan Paranasal sinuses and with the aid of nasal endoscopy.

Exclusion criteria: Acute sinusitis or malignant involvement or previous nasal or sinus surgical treatment.



CT test PNS (coronal view) showing-bilateral concha bullosa

Observations and Results

Eighty five patients of persistent rhinosinusitis had been examined. Presence of various anatomical variants in relation to chronic rhinosinusitis were determined. Out of eighty five patients 58 had been males and 27 have been ladies with male female ratio being 2.1:1. The diverse instances of persistent rhinosinusitis are divided into five age groups and most patients have found to be included in the age group 21-30, then followed by patients in 10-20 years of age and least among 50years of population (Figs. 1,2). Of the 85 patients of the study population; DNS was present in 75 either to left/right/bilateral side,

concha bullosa was present in 65 and 54 with prominent ethmoidal bulla. The atypical uncinata process was present in 9 cases. 7 cases were found with pneumatization of bony nasal septum, 6 agger nasi cells and 3 had Haller cells and 1 affected person had onodi cell (Table 1).

The above table shows that the maximum anatomical variants encountered in association with persistent rhinosinusitis in CT scan evaluation have been DNS (88.2%) followed by using concha bullosa (76.4%) and distinguished bulla (63.5%).

Table 1 CT test assessment anatomic variation in persistent sinusitis

Anatomical variants	No. of patients	Percentage
Concha bullosa	65	76.4
DNS	75	88.2
Paradoxical middle turbinate	9	10.5
Prominent bulla	54	63.5
Agger nasi	6	7
Haller cells	3	3.5
Abnormal uncinata	9	10.5
Onodi cells	1	1.6
Septum pneumatization	7	8.2
Others	3	3.5

Discussion

Gold widespread: Computerized tomographic imaging of sinonasal framework. Its potential to accurately map out the bony and other soft tissue anatomy of the paranasal sinuses has proven to be beneficial to the endoscopic surgeons from their diagnostic workup.

Standard of Care: Endoscopic examination along side with CT has verified to be an ideal aggregate in latest years.

Anatomic variations are nasal septal deviation, spurs, paradoxical middle turbinate, agger nasi cells, uncinata bulla, medially or laterally bent uncinata process, concha bullosa, oversized ethmoidal bulla etc. These impinge on the patency

of already narrowed ostiomeatal channels, and predispose to sinusitis by way of interfering with mucociliary clearance of ostiomeatal area^[1].

A prospective cross sectional study performed in the Department of Otorhinolaryngology, Rajah Muthiah Medical University and Hospital, Annamalai University from 1/1/2014 to at least one/1/2015 including 85 individuals suffering with chronic rhinosinusitis. The percent of concha bullosa in our study accounts to 76.4%. The occurrence of concha bullosa varies from five to fifty 3% indentified in nine % of the 1,000 lateral nasal specimens tested^[2]. As in keeping with Turner^[3] it is 20 %. Bolger et al.^[4] determined the prevalence to be 53.6% and Maru et al.^[5] discovered it out to be 41.3% whereas only 15% was discovered out by Bharathi et al.^[6]

The occurrence of nasal septum deviation varies from 18 to 80% in consistent with various research observations. Deviation of nasal septum was found out to be 65% through Bharathi et al.^[6], 55.7 % with the aid of Maru et al.^[5], 18.8 % through Bolger et al.^[4], 44% by Dua et al.^[7] Llyod^[9] determined it in 15% of the patients of control population and discovered that the variable factor is depending upon the level of coronal CT segment. Earwaker^[10] discovered it in 25% of the instances and in our observation it turned out to be 9%. The occurrence of agger nasi cells in sufferers with continual sinusitis on coronal CT findings, Bolger et al.^[4] pronounced it to be 98.5%, and Zinreich^[11] found these cells in almost all patients, at the same time as Llyod^[9] defined it in 3%. It changed into 7% in our observation. 3.5% haller cells were present in our observation, Bolger et al.^[4] mentioned Haller's cells in 45.1% of the instances. The 45.1% occurrence of Haller's cells mentioned by means of Bolger et al. is remarkably better than that stated by means of Zinreich^[11] that is 10%. Prominent ethmoidal bulla was found in 63.5 % in our examine.

Conclusion

Chronic rhinosinusitis is reasonably a common ailment affecting preferably the population from

21 and 40 years of age. Combination of CT experiment PNS and fiber optic diagnostic nasal endoscopy is notable for particular assessment of nasal hollow space. Concha bullosa and deviated nasal septum are the two maximally encountered variations in anatomy of patients with persistent rhinosinusitis. The sole detection of variation in anatomy itself does not rule out of sinus illness; earlier the proposal of a causal coincidence between the anatomical variant and the sinusopathy, these observations are to be considered in conjunction with the clinical scenario.

It observed from the above study that when a unilateral concha bullosa is present, there's no statistical correlation with any sinus illness. However there is a definite relationship between the presence of unilateral concha and contralateral nasal septal deviation.

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