ORIGINAL ARTICLE

The incidence of nasal septal deviation and its relation with chronic rhinosinusitis in patients undergoing functional endoscopic sinus surgery

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Abstract

Objective: To investigate the correlation of nasal septal deviations and chronic rhinosinusitis.

Methods: The study was conducted at Department of Otolaryngology, Head and Neck Surgery, Boali Hospital, Sari, Iran from January 2012 to September 2014 and comprised subjects aged from 5 to 68 years who had undergone elective functional endoscopic sinus surgery for chronic rhinosinusitis. SPSS 17 was used for statistical analysis.

Results: Of the 60 subjects in the study, 41(68.3%) were males and 19(31.7%) females with overall median age of 27. Nasal septal deviation was found in 49(81.7%) subjects; 11(18.3%) had it in both right and left sides, 16(26.7%) in right alone and 22(36.7%) in the left side. The commonest type of septal deviations in the left side were posteroinferior 10(16.66%) and anteroinferior 7(11.7%). In the right side, the corresponding numbers were 9(15%) and 7(11.7%).

Conclusion: Nasal septal deviations are of particular interest in majority of patients with chronic rhinosinusitis.

Keywords: Chronic rhinosinusitis, Functional endoscopic sinus surgery, Septal deviation, Variation. (JPMA 65: 612; 2015)

Introduction

Chronic rhinosinusitis (CRS) is a common disease which decreases the quality of life and affects up to two per cent of the world population.[1-5] According to an analysis of the 2008 National Health Interview Survey information, rhinosinusitis affected nearly 1 in 7 adults.[6]

Several researches have investigated the correlation of sinonasal anatomic variants and the incidence of CRS.[7-10] Two anatomic variants have been recognised, including the middle turbinate concha bullosa and nasal septal deviation. The incidence of positive reports of computed tomography (CT) for concha bullosa has been elucidated from 14% to 53% and the correlation of concha bullosa and septal deviation with paranasal sinus diseases were subject of different studies.[11,12] Congenital and normal anatomical variants in this site can be important as cause of hard operation and development of chronic inflammation.[13] In this regard, there is not enough data and information in the literature about the possible role of these variations in CRS.

Therefore, the current study was planned to examine the variations in septal deviations in patients suffering from CRS who underwent functional endoscopic sinus surgery (FESS).

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Patients and Methods

The study was conducted at Department of Otolaryngology, Head and Neck Surgery, Boali Hospital, Sari, Iran from January 2012 to September 2014 after approval from the ethics committee of the Mazandaran University of Medical Sciences, Sari, Iran,. It comprised subjects whose age ranged from 5 to 68 years and who underwent elective FESS for CRS. Those below 5 years of age, with history of coronary artery disease (CAD), bleeding disorders and those using anti-hypertensive medications were excluded. All patients were selected according to criteria for CRS as described by the Sinus and Allergy Health Partnership.[1]

Statistical analysis was performed with SPSS 17. Results were expressed as median, mean and standard deviation. Chi square, student t test and Fischer exact test were used for data analysis. P value less than 0.05 was considered statistically significant.

Results

There were 60 patients in the study; 41(68.3%) males and 19(31.7%) females with a mean age of 29.13±15.21 years (Table-1). There were 13(21.6%) patients in the 15-20 years age group followed by 8(13.3%) each in the 25-30 and 30-35 years groups.

Among the subjects, 49(81.7%) had anatomical variation and septal deviation was not observed in 11(18.3%). Overall, 11 (18.3%) patients had septal deviation in both right and left sides, 16(26.7%) had in the right side and 22(36.7%) had in the left side (Table-2).

Table-1: Demographic data.

N	Age (Years)	Duration of chronic rhinosinusitis(month)
Mean	29.13	53.53
Standard deviation	15.21	55.35
Median	27	36
Range	5-68	176
Minimum	5	4
Maximum	68	180

Table-2: Distribution of left and right septal deviation.

Variation	Left septal deviation Number (%)	Right septal deviation Number (%)
Posterosuperior	4(6.7%)	2(3.3%)
Posteroinferior	10(16.66%)	9(15%)
Anterosuperior	4(6.7%)	1(1.7%)
Anteroinferior	7(11.7%)	7(11.7%)
Medioanterior	1(1.7%)	3(5%)
Mediosuperior	1(1.7%)	1(1.7%)
Medioposterior	1(1.7%)	0
Medioinferior	2(3.3%)	1(1.7%)
Mediomedial	0	2(3.3%)
Caudal end of septum nasi	3(5.0%)	1(1.7%)
Septal deviation(total)	33(55%)	27(45%)

Table-3: Clinical information and other features.

Septal deviation	Urban	Rural	Total
Yes	27(55.1%)	22(44.9%)	49(100%)
No	8(72.7%)	3(27.3%)	11(100%)
Total	35(58.3%)	25(41.7%)	60(100%)
Septal deviation	**Male**	**Female**	**Total**
Yes	35(71.4%)	14(28.6%)	49(100%)
No	6(54.5%)	5(45.5%)	11(100%)
Total	41(68.3%)	19(31.7%)	60(100%)
Septal deviation	**Allergy (yes)**	**Allergy(no)**	**Total**
Yes	15(30.6%)	34(69.4%)	49(100%)
No	4(36.4%)	7(63.6%)	11(100%)
Total	19(31.7%)	41(68.3%)	60(100%)
Septal deviation	**Polyp(yes)**	**Polyp(no)**	**Total**
Yes	8(16.3%)	41(83.7%)	49(100%)
No	3(27.3%)	8(72.7%)	11(100%)
Total	11(18.3%)	49(81.7%)	60(100%)
Septal deviation	**Cyst(yes)**	**Cyst(no)**	**Total**
Yes	5(10.2%)	44(89.8%)	49(100%)
No	1(9.1%)	10(90.9%)	11(100%)
Total	6(10%)	54(90%)	60(100%)
Septal deviation	**Tumour(yes)**	**Tumour(no)**	**Total**
Yes	2(4.1%)	47(95.9%)	49(100%)
No	1(9.1%)	10(90.9%)	11(100%)
Total	3(5%)	57(95%)	60(100%)

The commonest type of septal deviations in the left side were posteroinferior 10(16.66%) and anteroinferior 7(11.7%). In the right side, the corresponding numbers were 9(15%) and 7(11.7%). Posteroinferior septal deviation was a significant variation in the right side (p=0.003) and left side (p=0.021).

There was no significant change in the age of patients with septal deviation in comparison to patients without deviation (p=0.44). Likewise, no significant alteration was found neither in the duration of the disease in the two groups nor on the basis of rural or urban, cyst, polyp and tumour (p>0.05 each) (Table-3).

Discussion

There is great interest among otorhinolaryngologists and researchers in the exploration of paranasal region's anatomy, its variations and correlation of these variants with CRS.[14]

Advances in operational methods have resulted in better findings with less complication in the paranasal sinus area. We made use of FESS to determine these variants and interpret the probable association between nasal septal deviations and CRS.

Some studies have reported nasal septal deviation in 20-31% of the community and also revealed that severe deviation predisposed the individuals to rhinosinusitis.[15-17] In this regard, one study indicated that there is a probable association between concha bullosa or septal deviation and rhinosinusitis.[18] In contrast, another study showed there was no significant relationship between septal deviation and rhinosinusitis.[19]

One study[20] reported that 73% subjects with concha bullosa suffered from paranasal sinus inflammatory disease; but 78% subjects without concha bullosa also indicated some forms of inflammatory disease.

One set of researchers[21] studied the CT scans of 63 patients who underwent revision FESS. It reported 15.9% subjects had significant deviation of the nasal septum.

One study[22] examined 65 children with CRS and revealed no correlation between anatomical variants in the nose and paranasal sinuses with CRS in children on sinus CT scanning.

In our series, 49(81.7%) subjects had anatomical variants and septal deviation was not reported in 11(18.3%). Eleven (18.3%) participants had septal deviation in both right and left sides, 16(26.7%) patients had it in the right side and 22(36.7%) in the left side. In our study, the most particular types of septal deviation in left side were posteroinferior (16.66%) and anteroinferior (11.7%). In the right side, the most common types were posteroinferior (15%) and anteroinferior (11.7%). In

contrast to earlier investigations, our study had the most prevalence of septal deviation in CRS patients and revealed there a strong association between nasal septal deviation and CRS.

It has been supposed that nasal septal deviations predispose patients to development of CRS but there are few published studies to support this notion.[9,23-25]

Conclusion

Nasal septal deviations were common variants in patients with CRS. Characterisation of anatomic variants in CRS needs further studies.

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