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Symptom and Disease Severity Differences Between Nasal Septal Deviation and Chronic Rhinosinusitis

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OBJECTIVE: To determine whether patients with chronic rhinosinusitis (CRS) exhibit more severe sinonasal symptom scores as compared with patients with nasal septal deviation (NSD) alone.

METHODS: Two patient cohorts were prospectively identified: patients undergoing surgery for NSD alone and those undergoing endoscopic sinus surgery for CRS without NSD. Patients in the NSD group were required to have normal paranasal sinus CT scans, whereas patients in the CRS group were required to have radiographic evidence of CRS. All patients completed the Rhinosinusitis Symptom Inventory (RSI). Statistical comparisons were conducted between cohorts with respect to RSI symptom domains and medical resource utilization.

RESULTS: A total of 42 patients were identified in the NSD group (mean age, 40.8 years) and 155 patients were identified in the CRS group (mean age, 44.9). Patients with CRS demonstrated higher severity scores for the nasal symptom domains (60.3 [CRS] versus 53.9 [NSD], $P = 0.037$). Oropharyngeal symptoms and total symptoms were also worse for the CRS group versus the NSD group (29.8 versus 23.1, $P = 0.014$ and 43.0 versus 37.0, $P = 0.030$). Facial and systemic symptom scores did not differ between groups. Patients with CRS demonstrated significantly higher utilization rates for topical nasal steroids (21.2 versus 12.2 weeks, $P = 0.006$) and oral antibiotics (7.9 weeks versus 2.1 weeks, $P < 0.001$), but not for oral antihistamines ($P = 0.420$).

CONCLUSIONS: Although patients with CRS manifest higher sinonasal symptom scores than patients with NSD alone, differentiating these 2 diagnoses on the basis of symptoms alone is difficult. These data suggest that as a disease process, CRS confers a significant disease burden with more significant negative symptom impact.

Diseases of the nose and paranasal sinuses affect a substantial portion of the United States population, with an estimated 30 million Americans suffering from allergic rhinitis, chronic rhinitis, or chronic rhinosinusitis.[1,2] Significant advances have been made in the medical and surgical management of many of these disorders, but many unanswered questions remain as to the optimal methods of diagnosis, assessment and treatment of patients with rhinologic disease.

Traditionally, chronic rhinosinusitis (CRS) has been considered a more severe disease when compared with allergic rhinitis, chronic rhinitis, and septal deviation. More aggressive medical management options, typically including extended course of antibiotics, are usually offered for patients with chronic rhinosinusitis as opposed to those with allergic rhinitis or nasal septal deviation (NSD).[3] It also is commonly believed that patients with CRS have more severe symptom scores and health-related quality-of-life impact due to CRS than do similar patients with chronic rhinitis or NSD alone. In addition, with the advent of widespread availability of high-resolution computed tomography of the paranasal sinuses and fiberoptic nasal endoscopy, more patients with CRS are being appropriately identified and treated as true cases of CRS rather than along the lines of allergic rhinitis or NSD alone.

However, the differences in symptom scores, medication usage, and quality of life impact among patients with CRS versus those patients with NSD alone have received limited attention in the literature. Therefore, the current study was undertaken to determine whether indeed patients with CRS exhibit more severe symptom scores and consume more medical resources than patients with NSD alone.

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Table 1
Rhinosinusitus symptom inventory symptom domain scores for patients with CRS versus those with NSD alone

Symptom domain	NSD alone		CRS alone		
	Score	SD	Score	SD	*P* value
Nasal	53.9	19.0	60.3	25.3	0.037
Facial	45.2	27.7	50.5	27.4	0.087
Oropharyngeal	23.1	21.8	29.8	21.2	0.014
Systemic	26.4	21.0	32.0	25.2	0.061
Total	37.0	17.4	43.0	20.1	0.030

METHODS

The study was approved by our hospital's Committee on Clinical Investigations; all data were collected in compliance with the Health Information Privacy and Portability Act. From a consecutive series of patients undergoing sinus or nasal surgery, 2 cohorts were derived. The 1st cohort consisted of patients with refractory nasal symptoms attributed to NSD who were undergoing nasal septoplasty and turbinate reduction after failure of maximum medical management (NSD group). All patients were treated with and failed a combination of topical nasal steroids, oral nonsedating antihistamines, and systemic decongestants before consideration for surgery. A second cohort (CRS group) consisted of patients undergoing endoscopic sinus surgery (ESS) for medically refractory CRS. All patients in the CRS group had failed rigorous medical management including combined topical nasal steroids, decongestants or antihistamines when indicated, and at least one 3- to 6-week course of broad-spectrum antibiotics.

In each cohort, patients were asked to complete the Rhinosinusitis Symptom Inventory (RSI), which catalogs the major and minor symptoms associated with chronic rhinosinusitis on a 6-point Likert scale ranging from 0 (absence of symptoms) to 5 (maximally severe symptoms).[4,5] In addition, the RSI records patient-reported medication usage for topical steroids, nonsedating antihistamines, and antibiotics as well as physicians' office visits and workdays missed because of nasal disease. This instrument previously has demonstrated reliability and validity and has been used elsewhere to study several cohorts with nasal disorders.[6-8] For patients in each group, CT scans were obtained, reviewed, and staged according to the Lund-MacKay system. All patients in the CRS cohort were required to fulfill previously published criteria for the radiographic diagnosis of CRS to be included in this cohort, and patients with NSD alone were required to have a normal or near-normal CT scan.[9] In addition, patients with septal deviation significant enough to warrant correction of the time of ESS were excluded from the CRS cohort. This was done in an effort to provide the truest possible comparison between patients with NSD alone and patients with CRS alone, eliminating septal deviation symptom overlap between groups. Patients were excluded from consideration from either group if incomplete data were available for RSI symptom domains. Thus, 2 cohorts were compared: a group with chronic rhinitis and NSD alone and a 2nd group with CRS (without NSD).

Comparisons were conducted between the 2 groups with respect to the nasal, facial, oropharyngeal, systemic, and total-symptom domains of the RSI, testing to see whether CRS patients manifested a higher symptom-domains course. In addition, medication utilization and health care resource consumption were compared between the NSD and CRS groups. Statistical comparisons were conducted with the Mann-Whitney U test, with 1-tailed statistical significance at $P = 0.05$.

RESULTS

A total of 155 patients were identified in the CRS group, with an average age of 44.9 years. The mean Lund score for the CRS group was 11.6. Forty-two patients were identified in the NSD group, with an average age of 40.8 years and a mean Lund score of 0.88. Per inclusion criteria, all patients in the NSD group had a Lund score of 2 or less. Table 1 displays the results for the RSI symptom domains for each cohort with statistical comparison. Table 2 displays the results for medication utilization and economic factors com-

Table 2
Rhinosinusitis symptom inventory medication and economic resource utilization for CRS versus NSD alone

Parameter	NSD alone		CRS alone		
	Score	SD	Score	SD	*P* value
Total steroid use (wk)	12.2	17.7	21.2	24.9	0.006
Total antihistamine use (wk)	13.5	19.0	16.1	21.5	0.420
Mean number of antibiotic courses	1.4	2.0	3.3	2.4	<0.001
Mean number of weeks on antibiotics	2.1	2.6	7.9	9.5	<0.001
Mean workdays missed	1.8	2.7	6.9	13.8	0.023
Mean physicians visits	2.8	2.3	5.4	6.7	0.008