

# Sexual dysfunction in patients with allergic rhinoconjunctivitis

Cengiz Kirmaz, MD\*; Omer Aydemir, MD†; Papatya Bayrak, MD\*; Hasan Yuksel, MD‡; Ozlem Ozenturk, MD§; and Sedat Degirmenci, MD§

**Background:** Sexual dysfunction in chronic diseases has recently attracted attention owing to its impact on quality of life (QoL). Allergic rhinoconjunctivitis (ARC) affects QoL, causing limitations in many areas. However, there has not been research on changes in sexual function in patients with ARC.

**Objective:** To report the effect of ARC and its treatment on sexual function in men and women.

**Methods:** Forty-three sexually active patients with seasonal ARC aged 22 to 49 years were included in the study. The control group was composed of 40 healthy individuals aged 22 to 46 years. Conjunctival symptom scores (CSSs) and nasal symptom scores (NSSs) of patients with symptomatic ARC were determined, as were sexual function scores (SFSs) using the Female Sexual Function Index and the International Index of Erectile Function during allergen exposure in the pollination period and after treatment with oral desloratadine, 5 mg/d, for 30 days. The SFSs were evaluated in the control group.

**Results:** The CSSs and NSSs significantly improved in treated ARC ( $P < .001$ ). In women, Female Sexual Function Index results in symptomatic ARC were significantly lower than in treated ARC and controls ( $P = .003$ ). In men, International Index of Erectile Function results in treated ARC ( $P = .001$ ) and controls ( $P < .001$ ) were significantly higher than in symptomatic ARC. Furthermore, correlation between improvement in CSSs and NSSs and that of SFSs was determined ( $P = .007$  for women;  $P = .001$  for men).

**Conclusion:** Improvement in sexual function as a variable of QoL may accompany the treatment of symptoms in patients with ARC.

*Ann Allergy Asthma Immunol.* 2005;95:525–529.

## INTRODUCTION

Decrease or loss of sexual function in many chronic diseases has recently attracted significant attention owing to its impact on quality of life (QoL).<sup>1–3</sup> Generic and disease-specific QoL questionnaires measure changes in work, school, social life, and emotional status regarding the disease and its treatment. There are also surveys designed to evaluate changes in sexuality and sexual function.<sup>4,5</sup> Allergic rhinoconjunctivitis (ARC) is a disease that affects QoL, limiting many areas, including work, school, and social life.<sup>4,5</sup> However, there has been no research on changes in sexual function in patients with ARC. This study was designed to investigate the effect of ARC and its treatment on sexual function.

## METHODS

Sexually active patients with ARC were included in this study. The exclusion criteria were as follows: the presence of a chronic disease, such as diabetes mellitus or chronic renal

failure; diseases that present with atherosclerotic changes; active psychiatric diseases, such as depression; chronic medical treatment for a disease or a physiologic regulation in the patient history; and refusal to complete the questionnaire or to enter the study by the patient. Considering these criteria, 43 patients (27 women and 16 men) aged 22 to 49 years were included in the study. The control group was composed of 40 individuals (20 women and 20 men) aged 22 to 46 years without any disease, including allergic states, in their history. Allergic disease was excluded in controls with negative skin prick test (SPT) results as well.

The SPT was performed according to European Academy of Allergology and Clinical Immunology guidelines to support the diagnosis of allergy and to determine the allergen or allergens in the etiology of the disease.<sup>6</sup> Grasses (*Hulcus lanatus*, *Lolium perenne*, *Festuca pratensis*, *Phleum pratense*, *Poa pratensis*, and *Dactylis glomerata*), cereals (*Hordeum vulgare*, *Avena sativa*, *Secale cereale*, and *Triticum sativum*), weeds (*Artemisia vulgaris*, *Urtica dioica*, *Taraxacum vulgare*, and *Plantago lanceolata*), tree pollens (*Olea europaea*, *Fraxinus excelsior*, *Ulmus scabra*, *Alnus glutinosa*, and *Quercus robur*), and *Dermatophagoides farinae* and *Dermatophagoides pteronyssinus* allergen extracts were used in the SPT. Standardized histamine (1.7 mg/mL) and standard negative prick solution (sodium chloride, 9 mg/mL; phenole, 4 mg/mL; and gliserol, 563 mg/mL) (Allergopharma Ltd, Reinbek, Germany) were used as positive and negative controls, respectively. A wheal measuring 3 mm or more in

\* Division of Allergy and Immunology, Department of Internal Medicine, Celal Bayar University Medical Faculty, Manisa, Turkey.

† Department of Psychiatry, Celal Bayar University Medical Faculty, Manisa, Turkey.

‡ Division of Pediatric Allergy, Department of Pediatrics, Celal Bayar University Medical Faculty, Manisa, Turkey.

§ Department of Internal Medicine, Celal Bayar University Medical Faculty, Manisa, Turkey.

Received for publication November 22, 2005.

Accepted for publication in revised form March 7, 2005.

the areas of histamine and allergen extract application was accepted as a positive SPT result. The SPT reactivity in all patients was positive only against allergens with seasonal pollination (grass and cereal extracts, weed extract, and tree pollen extract) that lead to seasonal ARC.

Conjunctival symptom scores (CSSs) (0 = absent and 1 = present for burning or itching, lacrimation, and hyperemia of the eye; total values of 0 to 3) and nasal symptom scores (NSSs) (0 = absent, 1 = mild, 2 = moderate, and 3 = severe for sneezing, nasal obstruction, nasal itching, and watery discharge; total values of 0 to 12) of patients with symptomatic ARC were determined during the appropriate pollination period of the allergens causing disease (first visit = pretreatment symptomatic period).

Sexual functional scores (SFSs) were evaluated using the International Index of Erectile Function (IIEF)<sup>7</sup> in men and the Female Sexual Function Index (FSFI)<sup>8</sup> in women at the first visit. The IIEF is a self-administered measure of erectile function comprising 5 domains: erectile function (6 questions with a maximum score of 30), intercourse satisfaction (3 questions with a maximum score of 15), orgasmic function, sexual desire, and overall satisfaction (2 questions each with maximum scores of 10). The FSFI is a self-administered measure of sexual function comprising 6 domains: desire (2 questions with a maximum score of 10), subjective arousal, lubrication (4 questions each with maximum scores of 20), orgasm, satisfaction, and pain (3 questions each with maximum scores of 15). Higher scores indicate better function on both scales. The FSFI and the IIEF take approximately 15 minutes to administer. Control group patients completed the same scoring forms during the same period.

All the patients with ARC received oral desloratadine (Aerius tablet; Schering-Plough Corp, Heist-op-den-Berg, Belgium), 5 mg/d, for 30 days. They were invited for the second visit (treated period) after 30 days of treatment. The CSSs and NSSs were reevaluated at the second visit. At the same time, the FSFI and the IIEF were completed again to evaluate SFSs.

Basal SFSs of the patients with symptomatic ARC before treatment were compared with the SFSs obtained from the control patients using the Mann-Whitney *U* test, separately for men and women. The Wilcoxon test was used to compare the CSS, NSS, and SFS results among women and among men after the first and second visits. Furthermore, for men and women, correlations between improvement in total SFSs and improvement in NSSs and CSSs were evaluated using the Spearman rho test. *P* < .05 was considered statistically significant in all evaluations. Informed consent for the described procedures was obtained from all the patients. Approval for the study was given by the ethics committee of the Celal Bayar University Hospital, Manisa, Turkey.

## RESULTS

All the patients who received medical treatment completed the study. Comparison of CSSs and NSSs obtained at the first and second visits revealed significant improvements in both

(*P* < .001 for both in women and in men) (Fig 1). Probable treatment-associated adverse effects (sleepiness, concentration defects, attention deficit, etc) were not reported during the study.

The SFSs obtained from the FSFI applied to the female patients and controls are summarized in Table 1. Total FSFI results obtained from the women during the symptomatic period were significantly lower than those of the control group. Furthermore, the SFSs for all the FSFI domains except

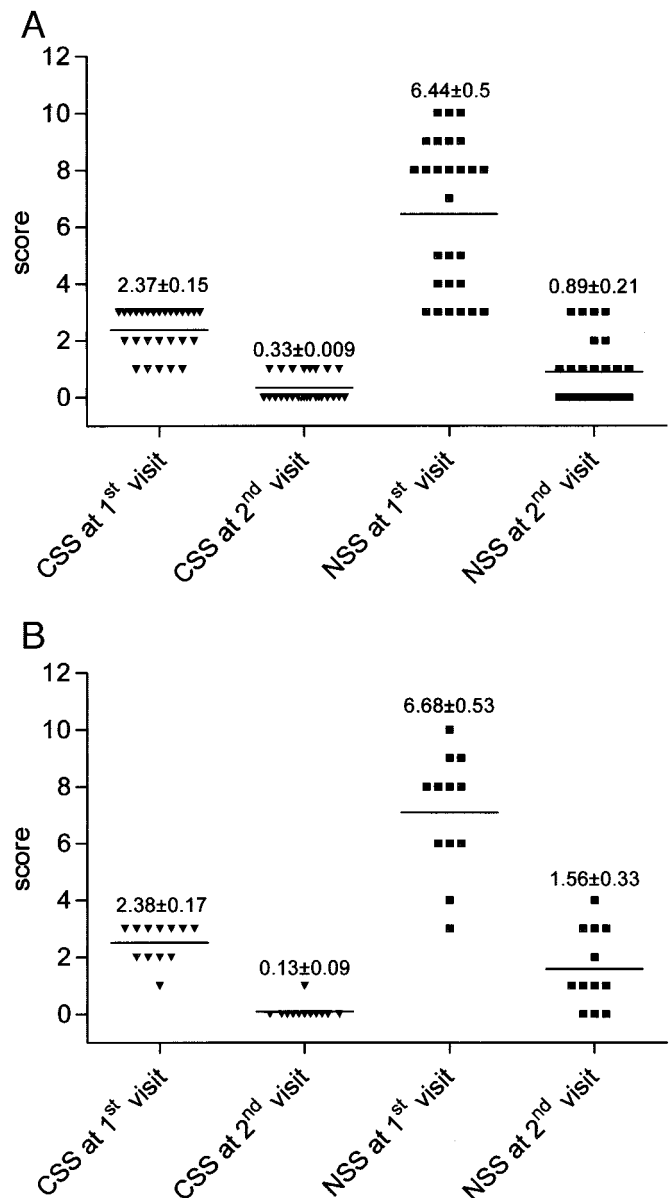


Figure 1. Conjunctival symptom scores (CSSs) and nasal symptom scores (NSSs) in women (A) and men (B) with allergic rhinoconjunctivitis at the first and second visits. All the data are given as mean ± SEM. Horizontal bars indicate means.

Table 1. Sexual Function Scores Obtained From the Female Sexual Function Index Applied to the Female Patients and Controls

|                          | Theoretical score, range | Domain score, mean $\pm$ SD         |                                    |                                   | P value      |                            |                        |
|--------------------------|--------------------------|-------------------------------------|------------------------------------|-----------------------------------|--------------|----------------------------|------------------------|
|                          |                          | Symptomatic ARC                     | Treated ARC                        | Controls                          | Within group | Symptomatic ARC vs control | Treated ARC vs control |
| Sexual desire            | 2–10                     | 6.25 $\pm$ 1.5                      | 7.19 $\pm$ 0.92                    | 6.9 $\pm$ 1.02                    | .001         | .004                       | .23                    |
| Subjective arousal       | 0–20                     | 13.72 $\pm$ 3.35                    | 14.22 $\pm$ 2.21                   | 15.8 $\pm$ 2.19                   | .004         | <.001                      | .09                    |
| Lubrication              | 0–20                     | 15.74 $\pm$ 3.36                    | 16.04 $\pm$ 1.48                   | 16.65 $\pm$ 2.52                  | .29          | .17                        | .34                    |
| Orgasmic function        | 0–15                     | 11.61 $\pm$ 2.21                    | 12.22 $\pm$ 1.4                    | 12.5 $\pm$ 1.76                   | .01          | .03                        | .36                    |
| Intercourse satisfaction | 2–15                     | 12.38 $\pm$ 2.33                    | 12.67 $\pm$ 1.49                   | 13.3 $\pm$ 1.92                   | .09          | .02                        | .08                    |
| Pain                     | 0–15                     | 12.4 $\pm$ 2.53                     | 12.55 $\pm$ 1.97                   | 13.15 $\pm$ 1.73                  | .18          | .20                        | .23                    |
| <b>Total</b>             | <b>4–95</b>              | <b>72.13 <math>\pm</math> 12.09</b> | <b>74.89 <math>\pm</math> 6.52</b> | <b>78.3 <math>\pm</math> 8.43</b> | .003         | .003                       | .10                    |

Abbreviation: ARC, allergic rhinoconjunctivitis.

lubrication and pain were lower in patients with ARC during the symptomatic period compared with controls. The SFSs for sexual desire, subjective arousal, and orgasmic function increased significantly in women with ARC during the treated period compared with those during the symptomatic period; however, the SFSs for lubrication, intercourse satisfaction, and pain did not change significantly. In addition, all FSFI domain and total scores did not statistically differ in the treated period of ARC vs controls.

The SFSs obtained from the IIEF applied to the male patients and controls are summarized in Table 2. Total IIEF scores of men with ARC during the symptomatic period was significantly lower than those of controls. All IIEF domain scores in male patients except orgasmic function were lower than those of controls during this period. All SFSs for the IIEF domains except orgasmic function, which was not different from controls at the beginning, and overall satisfaction in men with ARC increased significantly during the treated period. Furthermore, all IIEF domain and total scores were not statistically different in the treated period of ARC vs controls. In addition, after treatment, there was a strong correlation between improvement in total symptom scores (CSS + NSS) and improvement in SFSs in women (correlation coefficient = 0.509;  $P$  = .007) and men (correlation coefficient = 0.734;  $P$  = .001) with ARC (Fig 2).

## DISCUSSION

Studies of QoL have recently revealed that many chronic diseases lead to loss of sexual function based on either organic or psychological reasons.<sup>9–12</sup> Results of research on QoL in patients with ARC using either disease-specific or generic questionnaires, such as the 36-Item Short Form Health Survey, revealed that work, school, and social life, as well as emotional role limitations, were present in these patients.<sup>13–15</sup> However, there has been no research evaluating sexual function in patients with ARC. We observed that SFSs of men and women, which were lower during the symptomatic period compared with controls, improved during the asymptomatic period after treatment. These results are interesting as the results of the first research on this issue.

When evaluated according to allergic symptoms, at the second visit, which corresponds to the posttreatment period, CSSs and NSSs in men and women decreased significantly compared with those in the pretreatment period. It is known that desloratadine treatment at a daily dose of 5 mg orally improves the conjunctival and nasal symptoms of patients with ARC.<sup>16–18</sup> The improvement observed in our study seems to correlate with the findings reported in the literature. Furthermore, Satish et al<sup>19</sup> reported that general determinants of QoL are improved by desloratadine treatment in patients

Table 2. Sexual Function Scores Obtained From the International Index of Erectile Function Applied to the Male Patients and Controls

|                          | Theoretical score, range | Domain score, mean $\pm$ SD         |                                    |                                    | P value      |                            |                        |
|--------------------------|--------------------------|-------------------------------------|------------------------------------|------------------------------------|--------------|----------------------------|------------------------|
|                          |                          | Symptomatic ARC                     | Treated ARC                        | Controls                           | Within group | Symptomatic ARC vs control | Treated ARC vs control |
| Erectile function        | 1–30                     | 20.69 $\pm$ 5.58                    | 25.06 $\pm$ 4.15                   | 27.2 $\pm$ 2.91                    | .001         | <.001                      | .09                    |
| Intercourse satisfaction | 0–15                     | 10.94 $\pm$ 3.34                    | 13.13 $\pm$ 2.13                   | 13.3 $\pm$ 1.81                    | .003         | .02                        | .46                    |
| Orgasmic function        | 0–10                     | 7.5 $\pm$ 2.25                      | 8.44 $\pm$ 1.71                    | 8.85 $\pm$ 1.04                    | .10          | .06                        | .14                    |
| Sexual desire            | 2–10                     | 7.06 $\pm$ 1.98                     | 8.25 $\pm$ 1.39                    | 8.5 $\pm$ 1.1                      | .004         | .01                        | .12                    |
| Overall satisfaction     | 2–10                     | 7.69 $\pm$ 2.3                      | 8.38 $\pm$ 1.71                    | 9.2 $\pm$ 0.83                     | .15          | .01                        | .07                    |
| <b>Total</b>             | <b>5–75</b>              | <b>53.88 <math>\pm</math> 13.87</b> | <b>63.19 <math>\pm</math> 9.79</b> | <b>67.05 <math>\pm</math> 6.04</b> | .001         | <.001                      | .16                    |

Abbreviation: ARC, allergic rhinoconjunctivitis.

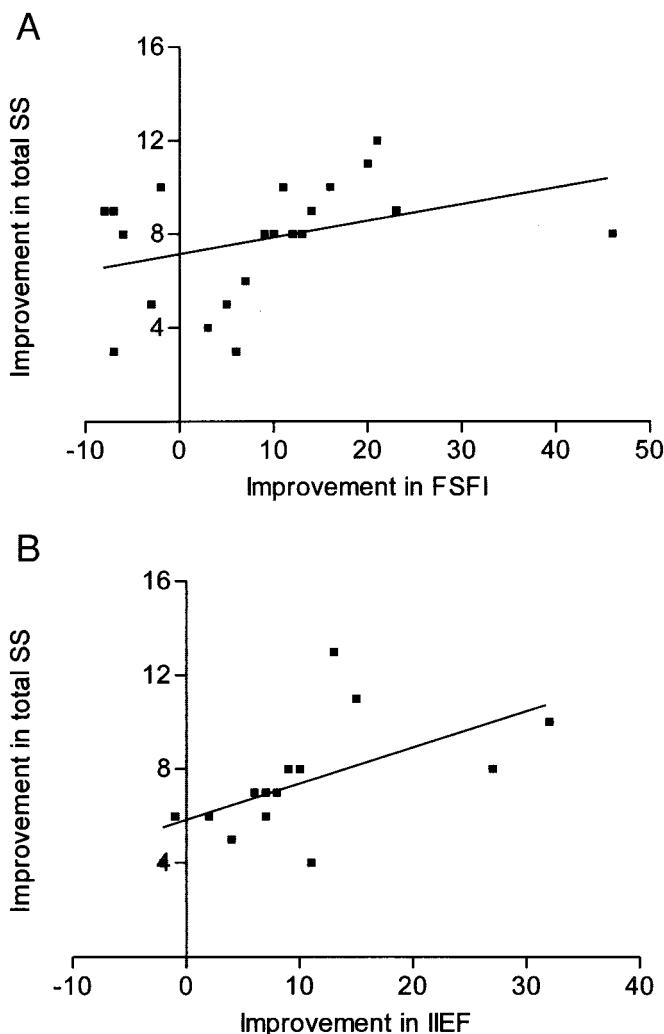


Figure 2. Correlations between the improvement in total allergic symptom scores (SSs) and the improvements in Female Sexual Function Index (FSFI) scores in women (A) and International Index of Erectile Function (IIEF) scores in men (B).

with ARC. However, we have not encountered research in the medical literature evaluating SFSs in patients with ARC during the symptomatic and posttreatment asymptomatic periods.

Tight correlation between the changes in total SFSs and allergic symptom scores during the posttreatment period compared with the pretreatment period implies that an improvement in sexual function accompanies the symptomatic improvement in patients with ARC. Sexual function in patients with ARC is lower than that of controls in the symptomatic period. Improvement in sexual function during the asymptomatic period and the tight correlation of this improvement with that of symptoms implies that sexual function may be disturbed in patients with active symptoms of ARC. Lack of change in the lubrication and pain domains in women

after treatment is not unexpected considering that these domains were not different from those of the controls at the beginning. The nonsignificance of the change in intercourse satisfaction with treatment in women with ARC might be due to the dependence of this domain on many different factors and the sexual partner, as has been suggested in previous studies.<sup>20,21</sup> The similarity in orgasmic function between symptomatic men with ARC and controls suggests that this factor is much more protected than the other domains. The nonsignificance of the increase in the scores of this domain may support this hypothesis. In addition, nonsignificant improvement in overall satisfaction in men after treatment may be overlooked owing to the significant improvement in the other domains and the total SFS.

In conclusion, sexual function is an important aspect of QoL. The impact of allergic symptoms on the sexual functioning of our patients has been underappreciated. Appropriate treatment of allergic symptoms may improve our patients' sexual satisfaction. Furthermore, it is important to evaluate sexual function while trying to improve QoL with treatment in patients with ARC.

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- Requests for reprints should be addressed to:*  
Cengiz Kirmaz, MD  
275/8 sokak No:16 K:3 D:9 Hazal Apt.  
Bornova 35030  
Izmir, Turkey  
E-mail: ckirmaz@yahoo.com
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