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## STATE AND TRAIT ANXIETY IN WOMEN AFFECTED BY ALLERGIC AND VASOMOTOR RHINITIS

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**Abstract**—It is still debatable whether anxiety and depression in patients affected by rhinitis could play a role in the genesis of the disease, whether they are a consequence of the symptoms. The aim of this study was to evaluate anxiety levels in both state and trait forms, and depression, in patients affected by allergic (AR) and vasomotor rhinitis (VMR). A total of 45 women, 24 AR and 21 VMR were compared with 64 healthy nonallergic women matched for age and sociodemographic characteristics. All subjects were administered the State and Trait Anxiety Inventory (STAI) and the Zung self-rating depression scale. The percentage of subjects with high levels of state anxiety was significantly higher in AR ( $p < 0.005$ ) and VMR ( $p < 0.01$ ) with respect to controls. The percentage of subjects with high levels of trait anxiety was significantly higher in AR ( $p < 0.001$ ) and VMR ( $p < 0.05$ ) than controls. There was no significant difference in depression between AR and VMR and controls. No significant difference was found in state anxiety, trait anxiety, or depression between AR and VMR. In conclusion, anxiety in patients with rhinitis is present both as a state and as a trait, at least when measured with the STAI. © 1999 Elsevier Science Inc.

**Keywords:** Allergic rhinitis; Vasomotor rhinitis; State anxiety; Trait anxiety; Depression.

### INTRODUCTION

There are many controversies concerning the role played by psychological disorders, such as anxiety and depression, in patients affected by allergic rhinitis [1–7]. Although some investigators maintain that these psychological factors could play a key role in the genesis of allergic rhinitis [1–4], others claim that anxiety and depression could be a consequence of the debilitating symptoms of this chronic disease on the psychological condition of these patients [5]. On this point, we recently showed that, in patients with chronic diseases, such as coeliac disease [8], Crohn's disease, and ulcerative colitis [9, 10]—often blamed on psychological factors—anxiety and depression were related to the disabling symptoms and malnutrition, whereas the personality trait of anxiety did not played an important role, at least when measured with the State and Trait Anxiety Inventory (STAI). On the other hand, again using

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the STAI test, we recently found that patients with food allergy showed levels of state anxiety, trait anxiety, and depression very similar to those of patients with irritable bowel syndrome, in which the importance of psychosomatic factors is well known [11, 12]. In this connection there are presently no studies on patients affected by allergic rhinitis who have utilized validated psychometric instruments able to distinguish state and trait forms of anxiety. Moreover there is a form of rhinitis, vasomotor rhinitis, with similar symptomatology, reduction in quality of life, and final pathogenetic mechanisms of allergic form, in which the etiology is still unknown [13, 14], but in these patients also there are no studies investigating the role of anxiety and depression.

The aim of this study, therefore, was to evaluate state and trait anxiety and depression in patients affected by allergic (AR) and vasomotor rhinitis (VMR), both compared with a group of healthy volunteers.

## METHOD

### *Patients and controls*

Of all the patients with a generic nasal pathology referred to our University Clinic of Otorhinolaryngology (from June 1997 to June 1998), 45 consecutive women not receiving steroid therapy, with a case history and a specialist's objective examination indicative of rhinitis (allergic or vasomotor), were enrolled in the study. There were 24 subjects with AR (mean age 32.4 years, range 18–66 years) and 21 with VMR (mean age 37.8 years; range 19–79 years). Patients receiving steroid therapy were excluded due to the possible influence that this factor could have on mood [15, 16]. According to Gauci *et al.* [1], only women were selected in order to avoid confusing factors due to the gender differences in psychological findings. Patients affected by asthma in association with rhinitis pathology were excluded to obtain as homogeneous a sample population of rhinitis as possible. The symptoms reported by selected patients were, with varying frequency and intensity, nasal obstruction, hyrorrhinorea, sneezing, nasal itching, hyposmia, rhinopharyngeal secretion, and a feeling of tension in the nasal and paranasal regions.

The patients were divided into AR and VMR by skin-prick test, PRIST, and by dosage of specific IgE antibodies with the RAST method. In particular, the selection criteria of the patients affected by VMR included: presence of nasal symptoms (such as nasal obstruction, rhinorea, sneezing, etc.) for more than 1 year; negative allergodiagnostic tests (prick test, PRIST, RAST); absence of significant anatomical nasal anomalies; absence of rhinosinus disorders (such as nasal polyposis, sinusopathies, rhinosinus infections, etc.); and absence of significant systemic diseases.

A group of 64 healthy nonallergic women (mean age 33 years, range 19–58 years) without any organic condition [17] or behavior [18, 19] that could be related to and/or influence psychological disorders, selected to match probands on the basis of age, residence, marital status, socioeconomic status, and employment, were studied and compared with the patients.

### *Psychological assessment*

All subjects were given a questionnaire requesting information on their level of education and socioeconomic status, and containing two different self-rating psychometric tests: one for anxiety and the other for depression. For anxiety assessment we used the State and Trait Anxiety Inventory (STAI), made up of two axes (y1 for state anxiety and y2 for trait anxiety), both consisting of 20 multiple-choice items in which a score of >40 is considered high [20]; based on the difference between "state" and "trait" anxiety this test makes it possible to distinguish between existing anxiety and the availability of the anxiety reaction as a personality characteristic [10]. This theory is based on the conceptual distinction between anxiety as a transitory state and anxiety as a relatively stable personality trait. The subjects evaluated were grouped as high anxious and low anxious, and a median value of 40 was used to distinguish the two groups, as previously described [10].

In regard to depression assessment, we used the Zung self-rating depression scale [21], consisting of 20 multiple-choice items in which a score  $\geq 49$  is considered high. This test constitutes an effective screening instrument for current depression in a clinical setting [22], and the positive predictive value of a diagnosis of depression is between 88.7% and 92.3% [23].

### *Statistical analysis*

The chi-square analysis was utilized to compare the percentage of subjects with high levels of anxiety and depression and to check for differences between groups in demographic variables. Student's *t*-test was used to compare point scores.  $p < 0.05$  was considered significant.

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