

CORRELATION BETWEEN ANXIETY, DEPRESSION AND BURNING MOUTH SYNDROME

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SUMMARY – The aim of the study was to determine the level of anxiety and depression in patients with and without burning mouth syndrome, and to assess the possible association between the intensity of burning mouth and incidence of depression and anxiety. The study was conducted in a sample of 120 randomly chosen adult patients from two dentist offices in Nova Gradiška (Croatia). Patient data were collected by use of a questionnaire that consisted of four parts: history questionnaire, Beck's anxiety inventory (BAI), Zung's self-evaluation scale for rating depression, and visual analogue scale (VAS) for estimating the intensity of burning mouth syndrome. The presence of the symptoms of burning mouth syndrome was recorded in 35% of 120 subjects. A statistically more significant mean level of depression and anxiety was detected in the group of subjects with the symptoms of burning mouth syndrome. The association between the burning mouth syndrome, anxiety and depression was tested by Pearson correlation. The levels of burning mouth syndrome, anxiety and depression in subjects showed positive correlation. Study results indicated the level of anxiety and the level of depression to be higher in the group of subjects with the burning mouth syndrome. The intensity of the symptoms of anxiety and depression also was in positive correlation with the intensity of the burning mouth syndrome. This clearly points to the role of psychogenic factors, anxiety and depression in the etiology of the burning mouth syndrome, which should be taken in consideration when treating patients with the burning mouth syndrome.

Key words: *Mouth diseases – psychology; Burning mouth syndrome – etiology; Burning mouth syndrome – drug therapy; Burning mouth syndrome – physiopathology*

Introduction

The burning mouth syndrome (BMS) is defined as the sensation of burning and pain in oral mucosa and tongue in the absence of clinical and laboratory pathologic findings¹. Most often it affects the tongue area, mucosa under prosthetic appliances, the palate, lips and cheeks². Besides burning and pain, patients with BMS may also have other symptoms like dryness of the mouth and a changed sense of taste.

The highest prevalence of BMS is recorded in postmenopausal women³. Some authors report on the oral

mucosa burning in as many as 10%-40 % of women seeking treatment for menopause symptoms⁴. In more than half of patients, pain occurs spontaneously without a clear provoking factor, while one third of patients report the onset of burning and pain after dental surgery, recent disease or drug therapy⁵. The pain and burning most often disappear during the night, their severity is mild to moderate in the morning, then growing progressively during the day. The highest pain intensity occurs late in the afternoon and in the evening. Patients often say that burning and pain cause them difficulties while going to sleep. They tend to have frequent mood swings, anxiety and depression because of the lack of sleep and constant presence of pain⁶. It is for this reason that some authors point to the psychogenic character of the disorder. However, psychological dysfunction is very common

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among patients with chronic pain, so it is possible that it occurs as a consequence of constant pain rather than as its cause⁷.

Depression is the most common psychiatric disorder in BMS patients, although anxiety is also present very often^{8,9}. Several studies emphasize the role of stressful life events and long-lasting socioeconomic problems as the possible factors in the etiology of BMS. However, there is little research on this association^{10,11}.

The aim of the present study was to determine the level of anxiety and the level of depression in patients with and without BMS symptoms, and to assess the possible association between the severity of BMS and the incidence of depression and anxiety.

Subjects and Methods

Subjects

This study included a sample of 120 subjects randomly chosen among adult patients visiting two dentist offices in Nova Gradiška (Croatia). The mean age of subjects was 44 ± 15.8 (range 18-84) years. The subject sociodemographic data are shown in Table 1.

Table 1. Sociodemographic characteristics of study subjects

Demographic characteristic	Subjects (N)	%
Sex		
M	47	39.2
F	73	60.8
Education		
Primary school	34	28.3
High school	63	52.5
College	8	6.7
University	15	12.5
Residence		
Rural	48	40.0
Urban	72	60.0
Marital status		
Married	72	60.0
Divorced	8	6.7
Widow/widower	5	4.2
Single	21	17.5
Other	14	11.6
Employment		
Employed	57	47.5
Unemployed and retired	63	52.5

Procedures and diagnostic methods

Patient data were collected by use of a questionnaire that consisted of four parts: history questionnaire, anxiety inventory according to Beck (BAI)¹², Zung's self-evaluation scale for rating depression¹³, and visual analogue scale (VAS) for estimating BMS severity¹⁴. The history questionnaire contained questions on age, sex, marital status, number of children and employment.

The anxiety inventory according to Beck has 21 questions on anxiety symptoms. Answers are rated from 0 to 3, depending on the severity of symptoms. Zung's self-evaluation scale for rating depression contains 20 questions: 10 questions on the symptoms of depression and 10 questions on the subject's vitality, balance and general state of mind. Answers are rated from 0 to 4 points. VAS is a numeric scale from 0 to 10. The subjects encircle appropriate number, depending on the evaluation of the severity of burning and pricking symptoms in the mouth. The presence of BMS was recorded in 35% of 120 subjects. Table 2 shows distribution of BMS in study subjects according to severity.

The subjects were divided into two groups: group 1 including patients free from BMS symptoms (65%) and group 2 including patients that reported the presence of BMS symptoms rating their intensity from 1 do 10 (35%).

Statistics

On statistical processing of the data obtained, the methods of descriptive statistics were used in description of sociodemographic variables. These variables were shown as frequency (N) and percentage (%), except for

Table 2. Severity of burning mouth syndrome symptoms in study subjects

Severity of symptoms	N	%
0	78	65
1	10	8.3
2	12	10.0
3	7	5.8
4	7	5.8
5	2	1.7
6	1	0.8
7	2	1.7
8	0	0
9	0	0
10	1	0.8

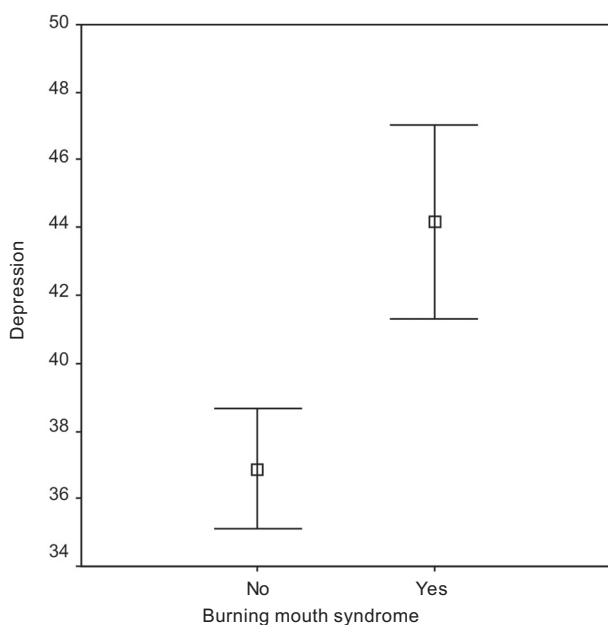


Fig. 1. Level of depression in study subjects.

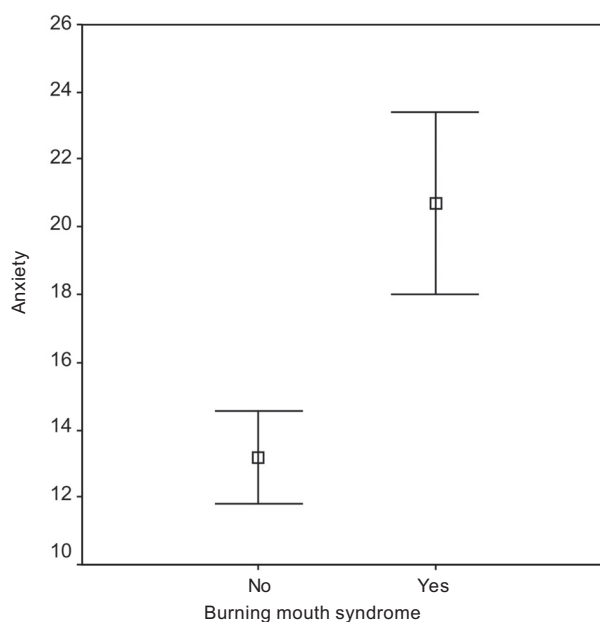


Fig. 2. Level of anxiety in study subjects.

the age variable, which was shown as a mean value and standard deviation (mean \pm SD). Statistical difference in the incidence of anxiety and depression between the patients with and without BMS symptoms was assessed by Student's t-test at the level of significance of 1%. Correlation analysis was carried out by use of Pearson correlation, at the level of significance of 1%.

Results

According to the Zung's self-evaluation scale score, the mean level of depression (mean \pm SD) in the group with BMS was 44.17 ± 7.87 . The difference was statistically significant ($t=4.544$; $P<0.01$). The level of depression and standard deviation in both groups are graphically presented in Figure 1.

The mean level of anxiety (mean \pm SD) was statistically significantly higher in the group with BMS ($t=5.475$; $P<0.01$). The level of anxiety and standard deviation in both groups are graphically shown in Figure 2.

The association between BMS, anxiety and depression was tested by Pearson correlation. The levels of BMS, anxiety and depression showed positive correlation. The correlation between BMS and depression was $r=0.475$ (Fig. 3), between BMS and anxiety $r=0.547$ (Fig. 4) and between anxiety and depression $r=0.632$ (Fig. 5), all yielding a statistically significant difference ($P<0.01$ all).

Discussion

The results obtained in the present study indicated the levels of anxiety and depression to be higher in subjects with BMS symptoms. In addition, the severity of anxiety and depression symptoms showed positive correlation with the severity of BMS symptoms. This clearly

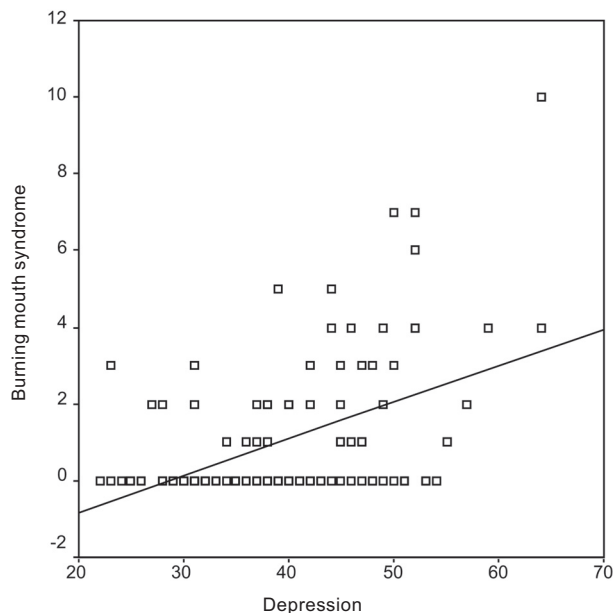


Fig. 3. Correlation between burning mouth syndrome and depression.

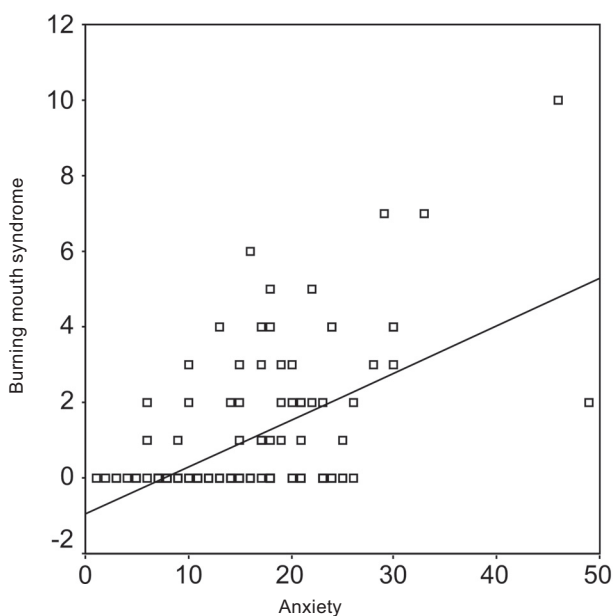


Fig. 4. Correlation between burning mouth syndrome and anxiety.

points to the role of psychogenic factors, anxiety and depression, in the etiology of BMS. In this study, no less than one third of subjects (35%) reported the existence of burning and pricking symptoms in the mouth. In their study, Richter and Vidas¹⁵ recorded the existence of BMS symptoms in 10.6% of subjects, whereas Dobrenić *et al.* report on the existence of BMS symptoms in 18.6% of subjects¹⁶. This variation in the results was probably due

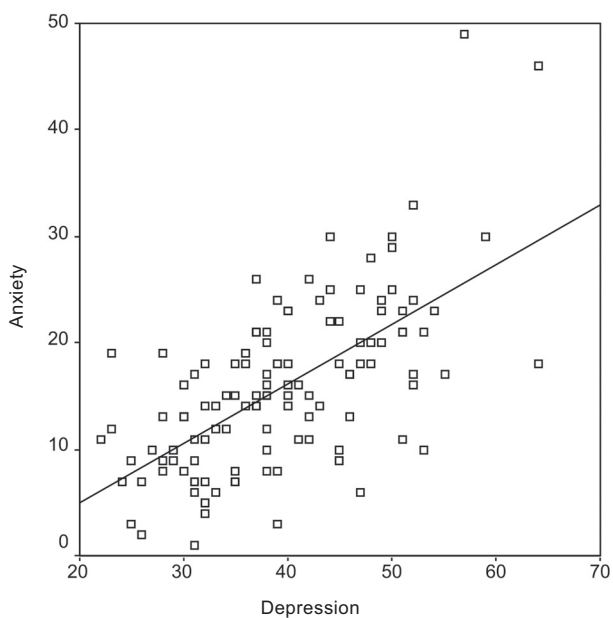


Fig. 5. Correlation between anxiety and depression.

to difficult life conditions in the inhabitants of the Nova Gradiška area, where they were exposed to war and post-war socioeconomic problems.

There are numerous studies demonstrating an association between BMS and psychical disorders. Using the Hamilton Rating Scale for Depression, Rojo *et al.* showed the majority of patients with burning mouth symptoms to have depression as a dominant disorder¹⁷, which was confirmed by a number of previous studies^{8,18-20}. Al Quran points to the existence of different psychological characteristics in subjects with BMS, i.e. a higher incidence of neurotic disorders, anxiety and depression in particular, in comparison to control group free from burning mouth symptoms¹⁸. Based on their study results, Gorsky *et al.*²¹ and Lamb *et al.*²² found psychological factors to be the most common and the major etiologic factors in BMS. Hammaren and Hugoson¹⁰, Jontell *et al.*¹¹, Van Der Ploeg *et al.*²⁰, Feinmann and Harris²³, and Main and Basket²⁴ found close association between anxiety, depression, tension and long lasting problems, while Lamey and Lamb¹⁹, Lamb *et al.*²², and Main and Basket²⁴ point to anxiety, depression and cancerphobia as the most important etiologic factors. Shoemberg *et al.*²⁵ report on the role of association between a stress factor that occurs in case of death of or separation from a close person, and development of BMS. Stress had certainly been present for a long period in our study population due to the war in the area.

Numerous factors have been postulated in the etiology of BMS^{8,17,19,21,22,24,26-31}. Due to the multifactorial nature of the disease, it is important to discover which causative factor is present in every single patient with BMS, to allow for appropriate therapeutic procedures to use. If dentists or general practitioners are not capable of solving the problems of patients with BMS, then it is absolutely necessary to refer these patients to a specialist. The specialist will assess the psychological factors by use of reliable methods and, if necessary, introduce psychotherapeutic procedures to eliminate the existing mental problems^{18,32-39}.

Based on our study results, we conclude that it is of utmost importance to take the socioeconomic and psychological factors as well the possible mental disorders in consideration when making the diagnosis and treating patients with BMS. Considering the higher incidence of anxiety and depression in BMS patients, a multidisciplinary approach in the disease management is also very important. Besides dentist, to whom the patient will first complain of BMS symptoms, it should include

an oral medicine specialist to exclude other possible pathologic findings of oral mucosa, and a psychiatrist to assess the existence of the aforementioned mental disorders and to prescribe appropriate treatment. Based on our results and many other literature reports, additional studies are needed to evaluate the efficacy of psychotherapy and psychopharmacotherapy in the management of BMS patients.

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Sažetak

POVEZANOST INTENZITETA ANKSIOZNOSTI, DEPRESIJE I SINDROMA PEČENJA USTA

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Svrha ovoga istraživanja bila je utvrditi razinu anksioznosti i razinu depresivnosti kod bolesnika sa simptomima pečenja usta i bez njih te ispitati moguću povezanost intenziteta simptoma pečenja u ustima s učestalosti pojave depresije i anksioznosti. Istraživanje je provedeno na uzorku od 120 nasumice odabranih punoljetnih bolesnika iz dvije stomatološke ordinacije u Novoj Gradiški (Hrvatska). Podaci o bolesnicima su prikupljeni pomoću anketnih listova koji su se sastojali od četiri dijela: anamnestičkog upitnika, testa anksioznosti po Becku (BAI), Zungove samoocjenke ljestvice za procjenu depresije i vizualne analogne ljestvice za procjenu intenziteta stomatopiroze (VAS). Od 120 ispitanika prisutnost simptoma stomatopiroze utvrđena je kod 35% ispitanika. Unutar skupine ispitanika kod kojih su bili prisutni simptomi stomatopiroze zapažena je statistički značajno veća srednja razina depresije kao i anksioznosti. Povezanost sindroma pečenja usta, anksioznosti i depresije ispitana je Pearsonovom korelacijom. Razine stomatopiroze, anksioznosti i depresivnosti kod ispitanika bile su u međusobnoj pozitivnoj korelaciji. Na osnovi dobivenih rezultata ovoga istraživanja može se zaključiti kako je razina anksioznosti kao i razina depresije viša u skupini ispitanika sa simptomima pečenja usta. Isto tako, intenzitet simptoma anksioznosti i depresivnosti u pozitivnoj je korelaciji s intenzitetom simptoma pečenja usta. To jasno upućuje na važnost psihogenih čimbenika, anksioznosti i depresije u etiologiji sindroma pečenja usta, o čemu treba voditi računa pri liječenju bolesnika sa sindromom pečenja usta.

Ključne riječi: Bolesti usne šupljine – psihologija; Sindrom pečenja usta – etiologija; Sindrom pečenja usta – terapija lijekovima; Sindrom pečenja usta – patofiziologija