

CLINICAL EVOLUTION AND OUTCOME OF PATIENTS WITH BURNING MOUTH SYNDROME

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ABSTRACT

Aim of the study: To assess the evolution in time for the oral symptoms in patients diagnosed with burning mouth syndrome (BMS). **Materials and methods:** A cohort of BMS patients underwent telephone interviews to assess symptom evolution. Based on their responses, they were classified into four categories: persistent symptoms, moderate improvement, symptom worsening, and complete remission. **Results:** 45 BMS patients were enrolled. The results indicated a statistically significant association between age group and the type of clinical outcome at a mean monitoring period of 27 ± 7.50 months ($p = 0.038$). **Conclusions:** In our assessment of symptom evolution in 45 BMS patients during a mean time of 27 months, we found that complete remission appeared to be more common among patients younger than 50 and those aged from 61 to 70.

Key words: burning mouth syndrome, evolutive study.

INTRODUCTION

Burning mouth syndrome (BMS) is a chronic painful disturbing condition of the oral mucosa that has a complex, multifactorial etiology (neuropathic, hormonal, psychosocial, systemic diseases associated, etc.) [1]. World Health Organization characterised BMS in 2019 as a "chronic orofacial pain with an intraoral burning or dysaesthetic sensation that recurs for more than two hours per day on 50 % of the days over more than three months, without evident causative lesions on clinical investigation and examination" [2]. The International Headache Society described the diagnostic criteria for BMS in the third edition of the hierarchical classification of headache disorders, entitled International Classification of Headache Disorders [3]. Thus, BMS is a sensation of

burning or dysesthesia, felt superficially present more than 2 hours daily for at least 3 months in the presence of normal appearance of the oral mucosa [3].

A global pooled prevalence of 1.73% in the general population and 7.72% in clinical patients was found in a recent meta-analysis of BMS prevalence estimates [4]. The prevalence of BMS was shown to be higher in people over 50 years of age, and women experience it at a larger incidence than men (1.15% vs. 0.38% in the general population). Currently, no effective treatment option for BMS is available, and there is a wide variation in the forms of treatments available and delivery methods [5]. Despite evidence of the benefits of topical oral clonazepam and capsaicin, cognitive behavioural therapy, and neuroprotective medications, long-term studies on the advantages and disadvantages of

each treatment are still missing

Because of its poorly known pathophysiology and limited response to therapy, diagnosing and treating patients with BMS continues to be a challenge for general dental practitioners and other medical specialists (ENT, dermatology).

The temporal course of BMS symptoms is variable, with possible outcomes including symptom worsening, staying the same, partial, or complete remission. Spontaneous remission of BMS has been documented in the literature. Momin (2012) reported that symptoms resolved without treatment in 30% to 50% of patients within a period of 2 to 3 years[6]. In the majority of BMS patients, symptoms tend to persist for several years or even throughout life[7]. While some patients appreciate regular follow-up, others may refuse the continued monitoring [8]. Evaluation of treatments is also challenging due to issues with the lack of a consistent treatment plan for every patient.

The current study investigates how BMS symptoms have changed over time in a cohort of patients.

MATERIALS AND METHODS

For the present research, a retrospective chart review of BMS patients was conducted between March 2024 to May 2025 in the Department of Oral Pathology, Faculty of Dentistry, Carol Davila University of Medicine and Pharmacy. The diagnosis was established following the WHO description of BMS [2] and diagnostic criteria of the International Headache Society [3]. After selecting the medical charts, several patients were contacted via telephone to enquire about the progression of their symptoms. The demographic data on age, gender, level of education (school, high school, university, post-university education), rural or urban setting, and the date of the initial consultation were retrieved from the medical charts. The inclusion criteria was complete medical

records, with detailed anamnestic data on description of the BMS main symptoms (burning sensation, pain, stinging sensation, puncture sensation), presence of other symptoms such as dry mouth or altered taste, the onset period (under 6 months, between 6 months and 1 year, between 1 and 3 years, over 3 years), presence or absence of associated factors such as dental or medical treatment stressful events in the family, affected oral sites, symmetrical involvement, initial Visual Analogue Scale(VAS) value that measured the pain's intensity. The associated comorbidities (cardiovascular diseases, gastroesophageal reflux, thyroidian diseases, diabetes) were also extracted. No oral lesions or obvious diseases that might account for the symptoms were identified during the clinical examination of the oral mucosa. Oral candidiasis investigations were negative. The results of the biological tests (full blood count, anaemia investigations, vitamin B12 and folate levels, glucose, and thyroid hormones) were within normal ranges. Based on telephone interviews, the responders were classified into four groups: persistence of BMS symptoms, moderate improvement, worsening, and complete remission. It was recorded how long it took from the initial consultation to the phone assessment. In the current study, we do not address the treatment options because each patient's therapy was unique and mostly determined by a multidisciplinary team, including a neurologist and a psychiatrist; in certain situations, no treatment was provided.

Statistical analysis was performed using the Statistical Package for the Social Sciences software (SPSS version 20.0). For categorical variables, the chi-squared test (χ^2 test) was used to evaluate group differences. When $p < 0.050$, the results were considered statistically significant.

All participants gave written informed consent, and the study was authorised by Carol Davila University's scientific research ethics

council (Approval number 20740/21.07.2023).

RESULTS AND DISCUSSIONS

The present research included 45 BMS patients diagnosed between 2019 and 2023.

Demographic and comorbidities data

As reported in most BMS clinical studies, the present cohort had a predominance of female patients - 84.44% (n=38) versus 15.6% (n=7) male patients.

The mean age in the responder group at the first consultation was 59.24 years (range 35–79 years, standard deviation 10.80). The distribution of the cohort across the age groups is presented in Table 1.

Regarding the smoking status, 38 BMS patients were non-smokers, 6 were current smokers, and 1 former smoker. A total of 38 patients resided in urban areas, whereas 7 patients lived in rural settings.

Of the patients, 48.88% (n=22) had a high school education, 28.88% (n=13) had attained a university degree, 6 had completed secondary school, and 3 had pursued post-university studies. Our findings contrast with those of Adamo et al., who reported a lower level of education in patients with BMS [9].

Cardiovascular diseases were the most commonly reported comorbidity, affecting 44.44% of patients (n = 20), followed by gastroesophageal reflux disease (n = 13), thyroid disorders (n = 12), and diabetes (n = 7). These data are in line with previous studies [10].

Clinical symptoms

A burning sensation was the most commonly reported symptom, noted in 68.88% of patients (n = 31), followed by a stinging sensation in 22.22% (n = 10), pain in 6.66% (n = 3), and a puncture sensation in 2.22% (n = 1). A total of 13 patients reported experiencing two symptoms, while 4 patients reported three concurrent symptoms.

The onset of symptoms may occur with or

without precipitating factors or triggering events. In this cohort, 7 patients (15.55%) reported symptom onset following dental procedures, 6 (13.33%) following medical investigations or treatments, and 5 (11.11%) in connection with personal stressful events. In comparison with earlier studies, the percentage of patients reporting symptom onset following dental procedures was lower in our cohort (15.55%) than that reported by Grushka (33%) [11] and Van der Ploeg et al. (40%) [12].

The tongue was the primary site affected in most patients (86.66%, n = 39). However, 11 of these patients also reported symptoms at an additional oral site. These data are in line with previous reported studies [7,8, 13,14].

Symmetrical presentation of symptoms was observed in the majority of cases, with 33 out of 45 patients reporting bilateral involvement.

The mean value reported on the Visual Analogue Scale (VAS), used to measure pain in BMS patients, was 6.6, considered as moderate pain. VAS scores ranged from 2 to 10 at the initial consultation. These data are in line with the previous reported studies [14].

Table 1. Distribution of the patients based on gender and age groups

Age groups	Under 30 years (N=9)	Between 31-50 years (N=13)	Between 51-60 years (N=16)	Over 71 years (N=7)
Female	89%	77%	81%	100%
Male	11%	23%	19%	0%

Clinical outcome

In our cohort, 46.7% of patients experienced complete remission of symptoms, 22.2% reported partial improvement, 26.7% noted no change, and 4.4% reported symptom worsening during a mean period of 27 months. A chi-square test of independence was performed to examine the relationship

between age group and clinical outcome in patients with BMS. We stratified the patients into four groups based on their age: <50 (20%); 51-60 (29%); 61-70 (35%); >70 (16%). The results indicated a statistically significant association between age group and the type of clinical outcome at a mean monitoring period of 27 ± 7.50 months ($n=45$), $\chi^2 = 17.75$, $p = 0.038$ (Table 2). Complete remission of BMS symptoms appeared to be more common among patients younger than 50 and those aged from 61 to 70.

No other significant associations were found between the clinical outcome and other clinical characteristics, including: symptoms ($\chi^2=7.119$; $p=0.625$), factors associated with disease ($\chi^2=14.866$; $p=0.461$), localization ($\chi^2=6.065$; $p=0.733$), cardiovascular diseases ($\chi^2=3.613$; $p=0.306$), thyroid diseases ($\chi^2=4.249$; $p=0.236$), gastroesophageal reflux disease ($\chi^2=1.387$; $p=0.709$).

Prior studies examining BMS symptoms have reported variable findings[15-

17]. In a study of 53 BMS patients with a mean follow-up duration of 56 months, Sardella et al.[15] observed no change in oral symptoms in 49% of patients, moderate improvement in 28%, symptom worsening in 19%, and complete remission in 4%.

Kim et al. (2022), in a cohort of 202 BMS patients, found that long-term outcomes remained stable following treatment cessation and identified xerostomia and taste alterations as potential predictors of symptom relapse [16]. In a study of 91 BMS patients from Barcelona [17], oral symptoms did not improve in 41 patients, 35 reported partial improvement, 12 experienced worsening of symptoms, and only 3 patients achieved complete remission.

Although the patient sample in our study is limited, these findings underscore the need for further research involving larger cohorts and extended follow-up periods.

Table 2. Relationship between age group and clinical outcome in patients with BMS (Chi-square test).

	Clinical outcome (N=45)				Significance
	Worsening (n=2)	Persistence of symptoms (n=12)	Improvement (n=10)	Complete remission (n=21)	
Age groups (N,%)	<50 (0; 0.0%) 51-60 (2; 100%) 61-70 (0; 0.0%) >70 (0; 0.0%)	<50 (1; 8.3%) 51-60 (3; 25%) 61-70 (3; 25%) >70 (5; 41.7%)	<50 (1; 10%) 51-60 (3; 30%) 61-70 (6; 60%) >70 (0; 0.0%)	<50 (7; 33.3%) 51-60 (5; 23.8%) 61-70 (7; 33.3%) >70 (2; 9.6%)	$p=0.038$; $\chi^2=17.753$

CONCLUSIONS

Burning mouth syndrome is a multifactorial, complex condition with an unpredictable course over time. In our assessment of symptom evolution in 45 BMS patients during a mean time of 27 months, we found that complete remission appeared to be more common among patients younger than 50 and those aged between 61 and 70.

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