

Diagnosis of exclusion in Burning Mouth Syndrome (BMS)

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ABSTRACT

Internationally, relatively few studies have been undertaken regarding research on non-specific oral burning pain, especially regarding the identification of possible causal factors. Knowledge in this field from a physiopathological and therapeutic perspective is recent, which supports the need for further study and the definition of the disease as an interdisciplinary syndrome. Deepening the research on the etiopathogenesis of burning mouth syndrome (BMS) would be beneficial to medical practice, as it would allow for appropriate therapy and an increased healing rate.

Keywords: burning mouth syndrome (BMS), glossodynia, facial pain, clinical diagnosis, laboratory analysis, paraclinical tests, oral medicine

INTRODUCTION

The diagnosis of BMS is essentially one of exclusion [1,2]. It is based on the patient's medical history, including physiological and pathological backgrounds, the evolution of the suffering for which they seek specialized medical consultation and a very thorough general and local clinical examination [1-4]. Oral mucosal conditions may indicate the presence of severe systemic diseases (autoimmune diseases, haematological conditions, etc.) [5-8]. For this reason, physicians from other medical and surgical specialties (dermatology, ENT etc.) may be familiar with oral mucosal conditions to establish an early diagnosis of any pre-existing or associated condition.

RESULTS

The contribution of the general clinical examination to the diagnosis of BMS

The diagnosis of BMS requires careful investigation of each patient's medical history. Significant in this regard is the presence of pre-existing oral mucosal conditions, nutritional deficiencies, cerebral dysfunctions, or adverse drug reactions [9,10].

During the first dental visit, patients often report pre-existing conditions already diagnosed and under treatment. If the medical history suggests the presence of an undiagnosed condition, the patient is advised to seek consultation with a specialist in that field. The general clinical examination is indicated in clinical situations where the local examination does not reveal any pathological signs in the oral cavity (mucosa, teeth). In such cases, where the objective examination does not show signs of local oral cavity affliction, it is reasonable to suspect that the intraoral burning sensation may be an indicator of a systemic disorder [10].

Identifying the possibility of associated or even causative systemic diseases responsible for the onset of BMS is achieved through the general clinical examination and by conducting laboratory or paraclinical tests (Table 1).

The role of the local clinical examination in establishing the diagnosis of BMS

The local clinical examination often does not reveal any changes. Sometimes, the clinical examination may detect minor variations or variants of normal, such as fissured tongue, migratory glossitis, atrophy of the tongue due to various causes, and saburral or hairy tongue [11].

TABLE 1. Laboratory and paraclinical tests useful in the diagnosis of Burning Mouth Syndrome (BMS) [1, modified]

Laboratory tests	Hematological tests	- Complete Blood Count (CBC) - Erythrocyte Sedimentation Rate (ESR)
	Biochemical tests	- Serum Iron Levels - Serum Ferritin Concentration - Iron-Binding Capacity - Circulating levels of folic acid, vitamin B12, zinc, etc. - Blood Glucose Levels - Hormonal assays
	Microbiological and fungal tests	- Presence of <i>H. pylori</i> in fecal samples - Presence of <i>Candida albicans</i> in the oral cavity
	Immunological tests	- Measurement of circulating levels of anti-Helicobacter pylori antibodies, autoantibodies in Sjögren's syndrome
Paraclinical tests		- Sialometry tests - Investigations aimed at identifying the presence of systemic diseases - Tests for identifying atopic conditions and potential allergens, such as allergic patch tests - Magnetic Resonance Imaging (MRI)
Pain assessment scale		Unidimensional pain scales: a) Visual Analog Scale (VAS) b) Numeric Rating Scale (NRS) c) Verbal Rating Scale (VRS) Multidimensional pain questionnaires: a) McGill Pain Questionnaire (MPQ) b) Wisconsin Brief Pain Questionnaire (BPQ).

Laboratory and paraclinical investigations

In most cases, patients with oral burning and normal oral mucosa present normal values for biological constants [1]. Nevertheless, it is recommended to determine certain laboratory parameters as a mandatory condition for all patients with oral pain, who have clinically normal oral mucosa, to identify possible secondary forms of BMS.

DISCUSSIONS

Highlighting the pathological changes associated with the results of the performed tests requires further investigation in specialized clinics. Therefore, in the presence of anaemia, it is essential to determine the clinical form (microcytic-hypochromic, normocytic, macrocytic) and its aetiology. Except for the normocytic-normochromic form, the other two types of anaemia can lead to the development of BMS.

Although the exact mechanism of BMS onset is not certain, the presence of glossitis (Plummer-Winson syndrome) may play a significant role, where an enzyme called cytochrome oxidase is involved. In cases of iron deficiency (and consequently, iron-deficiency anaemia), the lack of cytochrome oxidase, an iron-linked enzyme, likely induces functional changes in the buco-oesophageal epithelium. Cytochrome oxidase is part of the iron-containing enzymes in the respiratory chain, with a role in generating local organic acids, vasoactive amines, and electrolyte changes (especially K⁺), which are also substrates of pain perception [12].

Identifying systemic diseases (diabetes mellitus, iron-deficiency anaemia, peripheral or central neuropathy, hypothyroidism, etc.) through the results of these laboratory tests necessitates the institution of appropriate therapy, which may lead to the disappearance/improvement of non-specific oral burning symptoms.

Regarding the utility of pain assessment scales in BMS, the patient's self-report remains the most effective indicator of its intensity [13]. Pain perception can be influenced by various factors such as the expectation of a painful experience, previous similar painful experiences, emotional status, and cognitive processes dependent on the patient's education level. These subjective factors can interfere, altering the characteristics of pain intensity and its perception, making the role of pain scales indicative [12]. Hence, it is essential to emphasize their indicative value.

Evaluating oral sensory functions does not usually reveal changes in tactile, gustatory, thermal, or epicritic discrimination sensations in the majority of cases. However, the pain tolerance threshold in these patients is significantly lower compared to normal individuals. These sensory aspects (tactile, gustatory, thermal) can influence the pain tolerance threshold, essentially the threshold of perceiving excitation as pain.

In pain perception, the intensity of the pain threshold is of particular importance because a low threshold value means that even a low-intensity stimulus generates pain. In other words, a low threshold value makes pain perceived as intense (severe)/seems more intense. The same applies in reverse: a

high threshold value means that pain is perceived as milder [11].

CONCLUSIONS

The diagnosis of BMS, especially in its primary form, is the responsibility of both the dentist and the general practitioner. Ignorance or neglect of BMS symptoms can lead to delayed diagnosis and the initiation of appropriate treatment strategies.

Despite the progress in BMS research, diagnosis, and treatment remain challenging at times. It is important for medical professionals to collaborate and identify patients with BMS to provide personalized therapeutic approaches.

We share the idea that all patients suffering from glossodynia, especially in cases of an apparently normal local examination, require screening through laboratory and paraclinical tests (sialometry, allergic patch tests, MRI).

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