Suggested Parameters in the Assessment of Stomatopyrosis

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Summary

Stomatopyrosis is a state characterized by a burning sensation in the oral cavity. Various etiological factors contribute to the occurrence of stomatopyrosis. They may be local, systemic and psychogenic. As it was not feasible to gain any accurate and detailed diagnostic and therapeutic effect, and due to the differences in the definition of stomatopyrosis as a disease, we designed a questionnaire which can help to solve the problem. Our research was conducted on 60 subjects, 30 suffering from stomatopyrosis and 30 in a control group, with no clinical pathological oral finding. Members of both groups were persons of the same age. With regard to sex, both groups included a female population. The testing was conducted by means of a questionnaire, which, apart from general data on the subjects, included subjective and objective assessments of the symptoms present in the oral cavity. General data required referred to the subjects age, sex and occupation. Objective assessment comprised localization of symptoms, their description, intensity of symptoms, their frequency, the time of their occurrence, factors intensifying symptoms, change in taste, etc. Subjective assessment was conducted by means of thermoestesiometric measurement and visual analogue scale (VAS-scale). The findings showed that stomatopyrosis occurs in older subjects, primarily female. The localization of symptoms was confined mostly to lips. Description of the symptoms showed that the burning sensation was the most frequent symptom occurring within the oral cavity. The intensity of the symptoms in the mouth cavity was reported to be unbearable and as far as the frequency of the symptoms is concerned, it was said to be of a continuous nature. The symptoms occur in the daytime, and factors contributing to intensification of the symptoms are anxiety and dentures. The subjects taste was also reported to be changed. Visual analogue scale showed a high subjective assessment of the intensity of the symptoms, while thermoestesiometry did not reveal any inflammatory changes in the oral cavity.

These findings suggest that our questionnaire can contribute to better diagnostic and therapeutic effects and help to establish an accurate definition of stomatopyrosis and its occurrence.

Key words: *stomatopyrosis, subjective assessment of stomatopyrosis, objective assessment of stomatopyrosis.*

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Introduction

Stomatopyrosis is, according to its definition, a condition characterized by the sense of burning and heating in the oral cavity with a normal oral mucosa. (1) Due to the absence of diagnostic criteria, reliability of the efficiency of the treatment is decreased. The "burning mouth syndrome" is today known under various names, stomatodynia, glossodynia, glossopyrosis, idiopathic orolingual pain, etc. being some of them. The possible confusion is due to the fact that actual localization of the symptom cannot be positively determined and to the variable description of symptoms, because of which there are different names for one and the same condition.

Gruscha (2) and Dobrenić (3) claim that the tongue is the most frequent site of the symptoms in the mouth cavity. Gruden-Pokupec (4), Basket (5) and Lamey (6) have in their research concluded that the burning sensation is the most frequent of the symptoms in the mouth cavity. Visual analogue scale, VAS, conducted by means of numerical scales, was used to objectivize the subjective stomatopyrosis symptoms. Basket and his colleagues (5) distinguished two forms of stomatopyrosis: a mildly moderate and a severe form. Thermoestesiometric measurement has shown that there is possibility for the change in temperature in the area where symptoms are intense, indicating the possibility for the inflammatory change in the oral mucosa. Harun and his colleagues (7) have established the existence of different temperatures in particular regions within the mouth cavity. Due to the difference in the existence of symptoms, the accurate definition of stomatopyrosis is not possible, additional obstacles being different types of symptoms, the timing of their emergence, as well as their intensity and frequency of their occurrence.

There are various etiological factors influencing the emergence of stomatopyrosis; they may be local, systemic and psychogenic.

Local and systemic etiological factors are the cause of stomatopyrosis. Nater and his colleagues (8) established an increased presence of *Candida* among patients suffering from stomatopyrosis. Brooke and his colleagues have shown that over 50% of people with stomatopyrosis suffer from iron deficiency.

Recently, increased attention has been given to the psychogenic factors as the cause of stomatopyrosis. This happens in war and post-war situations, when the whole organism is exposed to environmental psychical traumas, the basic compounds of which are: depression, anxiety, inability to adapt and emotional instability. Today it is widely recognized that different mental conditions and states, as for example stress, neuroses and psychoses are, cause disturbances in the oral cavity, primarily on the basis of the vegetative nervous system, which leads to the sensation of dryness and burning in the oral cavity. Hammeren and Hugoson (9) established that the majority of respondents suffering from stomatopyrosis exhibit stressful situations which are the cause of the burning sensation in the oral cavity. Van der Ploeg and his colleagues (10), conducted a study using various psychological questionnaires, and established that persons suffering from stomatopyrosis exhibit an increased degree of depression.

This is the reason why we conducted our research: our aim was to establish whether psychogenic factors are the cause or the consequence of stomatopyrosis, to establish better diagnostic and therapeutic effects. We applied our own questionnaire, which consists of general data and both subjective and objective assessment of stomatopyrosis. This questionnaire provided very important data on the respondents'condition, helping us thus to assess the symptoms occurring within the oral cavity and to conduct appropriate therapy while treating the symptoms in the oral cavity.

Aim of the study

As an accurate assessment of the symptoms present in the oral cavity was not feasible, and because of the occurrence of stomatopyrosis, the time, intensity and frequency of its occurrence, it was impossible for us to make an accurate diagnosis and to establish appropriate therapy. For this reason a questionnaire was developed, to provide a detailed assessment of the symptoms present in the oral cavity. Accurate assessment of the symptoms, alongside known systemic, local and psychogenic etiological factors, will enable a better diagnostic and therapeutic approach to patients.

Methods and materials

The study was conducted by means of a questionnaire containing general data and oral symptoms.

The study included 60 subjects, of which 30 were persons suffering from stomatopyrosis and 30 in a control group. The average age in beth troups ranged from 60 to 70 years, which is shown in Figure 1. Figure 2 shows that subjectst inn both groups were predominantly women. With regard to occupation subjects were mostly retired persons, which is presented in Figure 3. Apart from general data, diagnoses of systemic diseases were also recorded, according to International Disease Classification 10 (IDC 10).

The objective assessment of symptoms referred to the following parameters:

I. *Localization of symptoms* was established according to Reed Peterson (11) and the World Health Organization (WHO), having divided the mouth cavity into regions and marking them with numbers 13 through 56.

II. *Subjective description of symptoms* was shown as the subjective sensation of the symptoms a person was experiencing, trying to describe what that particular person was sensing and feeling. Assessment was conducted accord-ing to 6 expected parameters:
    1. Pain
    2. Burning
    3. Pricking
    4. Itching
    5. Numbness
    6. Dryness

III. *Assessment of the intensity of symptoms* indicated the bearableness of the symptoms. The intensity of symptoms was divided into 5 possible degrees of intensity:
    1. Without any subjective difficulties
    2. Bearable
    3. Moderately strong
    4. Strong
    5. Unbearable

IV. *Frequency of the occurrence of symptoms* was assessed according to parameters in connection with the occurrence of symptoms. They was divided into 4 groups, according to the possible frequency:
    1. Very rarely
    2. Rarely
    3. Frequently
    4. Continuously

V. *The time when the symptoms occur* refers to the part of the day when the symptoms are most intense. We proposed 5 parameters:
    1. In the morning
    2. During the day
    3. In the evening
    4. At night
    5. Night and day

VI. *Factors intensifying the symptoms* were registered as:
    1. Anxiety
    2. Weakness
    3. Denture
    4. Hot food

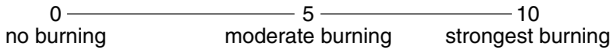
VII. *Subjective assessment of symptoms* refers to a possible change in taste. The following pathological tastes were anticipated:
    1. Bitter
    2. Metal taste
    3. Sour
    4. Weaker taste
    5. Stronger taste

It is very difficult to scientifically evaluate objectivization of subjective assessment of stomatopyrosis. This is why this study formulates known techniques which can objectivize the symptom of stomatopyrosis so that an increase in development of symptoms and treatment could be observed. We recommend the application of thermoestesiometric measurement and VAS-scale whenever possible.

Thermoestesiometric measuring was conducted on the basis of temperature testing in the area where the burning sensation was particularly intense. The measurement was conducted by means of a digital thermoestesiometer with temperature range between 35° and 40°C (8,9).

VAS-scale of visual analogue scale was enumerated as a line marked from 0 (for no burning sensation) to 10 (the strongest burning sensation). The subject assessed the subjective sensation of the

symptom and objectivized the symptom, marking it on the enumerated scale (7).



Subjects were subjected to psychological tests, in order to establish their mental state.

Results

Testing of the recommended parameters conducted on groups of subjects with and without stomatopyrosis, resulted in the following findings:

Localization of symptoms, according to our findings, was confined primarily to the lips (50%), followed by the tongue (16.7%), cheek (13.3%), and palate (10%). The control group subjects showed the occurrence of symptoms on the tongue and palate only, other symptoms being rare. These findings are presented in Table 1: Presentation of the localization of symptoms.

Description of the symptoms can be related to the diagnosis of the disease, which in 100% of cases show the presence of a burning sensation in the oral cavity. The control group subjects showed a considerably lower percentage of burning sensation - only 5 reported a burning sensation. Apart from the burning sensation, there is another symptom - dryness, reported by 26.7% of the subjects suffering from stomatopyrosis, while none of subjects in the control group exhibited this symptom. Other symptoms were absent.

As far as the *intensity of the burning sensation* is concerned, the findings shoved the highest percentage of unbearableness (33.3%), while 30% of the subjects reported their sensation as being bearable, 20% reported having a strong sensation and 16.7% moderately strong sensation. The control group displayed a reversed order, in which the highest percentage reported the absence of any difficulties (83.3%).

Findings referring to the *frequency of the occurrence of symptoms* showed mostly continuous characteristics (56.7%), followed by frequent occurrence (43.3%). The control group had no symptoms at all, in 83.3% of cases while parameters frequently (13.3%) and rarely (only one subjects) showed statistical significance.

As far as *timing of the symptom occurrence* is concerned, the findings showed that in 73.3% of the cases symptoms occur during the day, while in 26.7% of the cases the symptoms occur in the evening. 33.3% of the subjects reported their symptoms occurring at night, while in the control group only one subject reported his symptom occurring during the day, which can be also said for symptoms that occur in the evening. The control group not report any occurrence of symptoms at night.

Factors which intensify symptoms showed the following findings: in 86.7% of the cases symptoms were intensified by anxiety, in 50% by the denture and in 56.7% by hot food.

Assessment of the symptoms related to taste showed that 80% of the subjects reported the presence of a general change in taste, as opposed to the control group, where such data was not registered. Other parameters of subjective change in taste were experienced by two subjects.

Visual analogue scale showed that in the group of subjects there was a subjective assessment of symptom intensity and its average was 7 cm, as opposed to the control group, amounting to on average 1 cm, which shows statistical significance.

Thermoestesiometric measurement shown that none of the subjects exhibited a change in temperature, which means that there was no inflammatory change in their oral mucosa.

Discussion

Clinical parameters refer to the diagnosis of the disease and the localization of symptoms. In the diagnosis of the disease in the group of subjects, burning was presents as a symptom in all subjects and this symptom is a prerequisite for implementation of the recommended clinical assessments.

Stomatopyrosis may be expected in all areas of the mouth.

Findings of this study related to localization showed that the most frequent sites of the symptoms are the lips, tongue, cheek, palate, gingiva and the entire oral cavity.

These findings correspond with the findings of Gruscha and Sessle although they claim that the most frequent localization is the tongue (2).

The description of the symptoms showed that subjects primarily feel burning and dryness, while pain, pricking and numbness were reported by only a few subjects. Glass and his colleagues (12) established that the sense of burning was a predominant sensation in their group of subjects.

Assessment of the intensity of burning resulted in findings which showed that the order ranges from unbearable, bearable, strong to moderately strong intensity.

Anneroth and Bergdahl (1) consider that the majority of subjects find the intensity of their symptoms to be bearable, which does not correspond with or findings.

Gruden-Pokupec (4), on the other hand, claims that the majority of subjects with stomatopyrosis report their symptom to be unbearable, which agrees with our findings.

According to the frequency of the symptom occurrence, the findings show that continuous states are more frequent, and are followed by the frequent ones.

In their research Gruscha and Sessle (2) established that their subjects suffering from stomatopyrosis most frequently reported the continual feature of the symptoms, probably because these were patients who usually seek help.

As far as the findings regarding timing were concerned, the time when the symptoms occur is primarily daytime, followed by evening, night, day and night, while no-one mentioned mornings.

Gruscha and Sessle (2) demonstrated that the symptoms may occur early in the evening, which again does not correspond with our findings.

According to the findings related to the intensification of symptoms, symptoms are intensified by anxiety, dentures and hot food.

Van der Ploeg and his colleagues (10) established intensification of already existing symptoms in neurotic and neuro-unstable persons who are often exposed to anxiety.

Findings related to the change in taste showed only the fact that taste was changed, any specific taste being absent, which agreas with the findings of other authors (5,6).

Visual analogue scale results showed that subjective assessment of symptoms can be objectivized. Our findings showed that subjective assessment of the symptoms amounted 7 to 8 cm, which is a high burning sensation level. These findings proved the usefulness of implementing VAS scale while assessing, since the majority of subjects reported the unabearableness of their burning symptoms, which was proved by numerical values on the VAS scale.

Anneroth and Bergdahl (1) established that the mean value of the visual analogue scale was 8 cm.

Thermoestesiometric measurement did not establish the presence of any inflammation, proving that inflammation cannot be the cause of stomatopyrosis, which does not agree with the findings of Cekić et al. (13), who established the presence of increased temperature.

Conclusion

In the assessment of the parameters of the symptoms of stomatopyrosis in scientific and professional investigations, it is necessary to use all the elements which are comparable. For this purpose, bearing in mind the established findings, we recommend the following parameters:

I. Objective assessment of symptoms
- Localization of symptoms
- Description of symptoms
- Intensity of symptoms
- Frequency of symptoms
- Time of the occurrence of symptoms
- Factors intensifying symptoms
- Assessment of taste

II. Subjective assessment of symptoms
- VAS-scale
- Thermoestesiometry

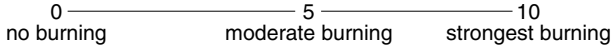
QUESTIONNAIRE ON STOMATOPYROSIS

I. OBJECTIVE ASSESSMENT OF SYMPTOMS

1. Localization of the symptoms according to the World Health Organization and Read Peterson
2. Description of symptoms:
   1. pain
   2. burning
   3. pricking
   4. itching
   5. numbness
   6. dryness
3. Intensity of symptoms:
   1. without subjective difficulties
   2. bearable
   3. moderately strong
   4. strong
   5. unbearable
4. Frequency of symptom occurrence:
   1. very rarely
   2. rarely
   3. frequently
   4. continuously
5. Time of symptom occurrence:
   1. in the morning
   2. during the day
   3. in the evening
   4. at night
   5. day and night
6. Factors intensifying the symptoms:
   1. anxiety
   2. weakness
   3. denture
   4. hot food
7. Assessment of taste:
   1. bitter
   2. metal taste
   3. sour
   4. weaker taste
   5. stronger taste
   6. changed taste

II. SUBJECTIVE ASSESSMENT OF SYMPTOMS:

1. Visual analogue scale



2. Thermoestesiometry: temperature results