

HALITOSIS SYNDROME IN CLINICAL PRACTICE

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Halitosis (from the Latin “halitus” — breath and Greek — “osis”) — bad breath; synonyms — ozostomy, stomatologic, fetor oris, fetor ex ore [1, 3]. The medical term "halitosis" is most often used in dentistry, but the causes of halitosis often lie not only in problems in the oral cavity, but also in the pathology of internal organs.

The term "halitosis" was coined to promote Listerine as a mouthwash in 1920.

The stages of diagnostic search for halitosis are presented in box 1.

Box 1. Stages of diagnostic search upon halitosis

- Halitosis verification
 - ✓ true halitosis
 - ✓ halitophobia
- Intra-syndromic diagnosis
 - ✓ physiological halitosis
 - *starvation*
 - *children under 6 years old*
 - *speakers*
 - *stress*
 - *eating onions, garlic*
 - ✓ pathological halitosis
 - *oral diseases*
 - *pathology of upper respiratory tract*
 - *diseases of the digestive system*
 - *respiratory diseases*
 - *metabolic disorders (endocrine diseases, kidney disease)*
 - *alcohol, smoking*
- Nosological diagnosis
 - *stomatitis, oral candidiasis, gingivitis, glossitis, periodontitis, parotitis, etc.*

- *sinusitis, rhinitis, tonsillitis, etc.*
- *gastroesophageal reflux disease, esophageal candidiasis, esophageal diverticula, achalasia cardia, cancer of the esophagus, pyloric stomach, Helicobacter pylori infection (?), bacterial overgrowth syndrome (BOS)*
- *suppurative diseases of lungs (bronchiectasis, lung abscess)*
- *diabetes, obesity*
- *renal, liver failure*
- *alcohol, drugs causing dry mouth (M-anticholinergics), etc.*
- *smoking*
- *menstruation*
- *excessive protein food*

Halitosis verification

15–30% of various specialties who applied to doctors complain of bad breath. About a quarter of patients with such a complaint actually only fear the possibility of bad breath. It seems to them that when they speak, they turn away from them, close their nose; even opening of windows for airing by other people is interpreted as a consequence of halitosis. Perhaps he really was with them in childhood or many years ago, and, possibly, was with relatives. The result was a fear of halitosis.

The complaint of bad breath must be supported by evidence of who smells the smell, because the patient himself, as a rule, does not feel it. Only with the confirmation of the "witness" can we talk about true halitosis.

Intra-syndromic diagnosis

When determining the specific cause of bad breath, physiological halitosis should be excluded. Its causes include fasting, recurrent odor from the mouth in children under 6 years old in the absence of the disease (box 1). Halitosis develops with dry mouth due to sloughing of the mucous epithelium and reducing its Ig production, which leads to excessive bacterial growth in the oral cavity: in lecturers, speakers, stress and anxiety (they lead to increased breathing, dry mouth). Dry mouth can be in patients who sleep with an open mouth. In these cases, this is morning halitosis. In cases of dry mouth due to halitosis, it is recommended to drink a lot (at least 2 liters per day).

Naturally cause peculiar smell from the mouth of onions and garlic. They irritate the oral mucosa, are slowly evacuated from the stomach, in the intestine form metabolites with a strong odor.

Pathological halitosis is most often caused by oral pathology (80–90%): stomatitis, oral candidiasis, gingivitis, glossitis, periodontitis, diseases of the salivary glands, etc. the plan leaves other complaints (pain, bleeding, speech and swallowing disorders, etc.).

The main processes in the mouth that cause halitosis are listed in box 2. Most often, an unpleasant odor occurs when digesting food debris localized between the teeth; degradation of the epithelium, which is excessively exfoliated; due to nasal discharge flowing into the oral cavity. An unpleasant smell is associated with the formation of metabolic products of amino acids, proteins and glycoproteins: with an excess of sulfur-containing substances; microbial degradation products of methionine and cysteine; tryptophan (indole and skatole); lysine (cadaverine).

Box 2. *The main processes in the oral cavity*

- Digestion of food residues
- Oral epithelium
- Nasal discharge (accumulation at the root of the tongue)
- Halitosis substances
 - ✓ amino acids, proteins and glycoproteins
 - *sulfur, hydrogen sulfide, methyl mercaptan*
 - *microbial degradation products of methionine and cysteine*
 - *indole and skatole — tryptophan*
 - *cadaverine — lysine*

The pathology of the nose and its paranasal sinuses accounts for 5–8% of the causes of halitosis: sinusitis, rhinitis, tonsillitis, etc. Tonsillitis is the cause of bad breath in 3% of cases. The remaining reasons given in Box 1 are much less common.

To determine the pathology leading to halitosis, it is necessary to conduct a direct study of the patient. Already the analysis of complaints allows us to target the disease of the oral cavity, ENT-organs, etc.

When studying the history of the disease, it is necessary to establish the duration and severity of halitosis, the adequacy of oral hygiene, dental prostheses by

the patient, and the relationship of bad breath to food. For example, with gastroesophageal reflux disease, bad breath occurs after eating, and after a while it diminishes and disappears. When the diverticula of the esophagus, achalasia of the cardia, halitosis is associated with dysphagia.

When examining organs and systems, one should look for symptoms of causative disorders, including nasal discharge, as well as facial or headache (sinusitis, foreign body in the nose), cough and fever (pulmonary infection) and regurgitation of undigested food in the prone position or on stooping (diverticulum Zenker). It should be noted predisposing factors, such as dry mouth, dry eyes (Sjogren syndrome).

When collecting the history of life, you need to ask about the duration and amount of alcohol and tobacco consumed. It is important to clarify whether drugs have been used that may cause dry mouth (for example, with anticholinergic effects).

On physical examination, it is necessary to measure the patient's body temperature (fever?).

The nose is checked for secretions and foreign body.

The mouth is examined for signs of periodontal disease, dental infection and cancer. Signs of tolerable dryness are noted (for example, whether the mucosa is dry, sticky, or wet; saliva is frothy, viscous, or normal in appearance).

The pharynx is checked for signs of infection and cancer.

It is advisable to study the tonsils with a spoon. Pressing on them will determine the presence of pus in the gaps. Scraping with a spoon (turning the convex side up) from the root of the tongue will allow you to understand whether there is a flowing discharge from the nose or sinuses. The study spoon is also used when conducting the olfactory test (see below).

Conduct an olfactory test of exhaled air. Basically, oral-related causes lead to a putrid, pungent odor, while systemic causes lead to a more subtle, but abnormal smell. Ideally, the patient should avoid consuming garlic or onions for 48 hours before the test and the patient should refrain from eating, chewing, drinking, gargling, washing or smoking for 2 hours before the test. The patient exhales at a distance of 10 cm from the examiner's nose, first through the mouth, and then with the mouth

closed. If the unpleasant smell is stronger than the mouth, an oral etiology of its occurrence is suggested; an unpleasant smell, mostly from the nose, suggests a nasal or sinus etiology. A similar unpleasant smell from both the nose and mouth may indicate systemic (diabetes, renal failure, etc.), pulmonary cause, or the association of halitosis with the pathology of the digestive system. If the origin of the smell is unclear, carry out scraping from the back of the tongue with a spoon. After 5 with a spoon sniff, placing 5 cm from the nose of the researcher; an unpleasant smell suggests that it is caused by bacteria on the tongue.

It is very important to determine the nature of the smell, which in severe cases comes not only from the mouth, but from the patient's entire body. In some cases, a special smell allows you to determine not only which organ system is affected, but also to make a nosological diagnosis [1].

The odious smell is the smell of urine, more precisely ammonia, emanating from severe renal patients in a state of uremia. This smell becomes especially distinct if you smell the air exhaled by such a patient. It is also observed in patients with urinary incontinence and in untidy or mentally ill patients, in whom it comes from clothing and linen due to decaying urine.

The smell of acetone, reminiscent of the smell of immature apples, clearly emanating from diabetic patients who are in a precomatose or comatose state.

“The smell of rheumatics” is a peculiar, peculiar, sour, peculiar smell specific for patients with articular rheumatism, due to excessive perspiration.

The smell of rotten hay is observed in benign forms of pulmonary tuberculosis (F. G. Yanovsky).

A special rotten-sugary smell of exhaled air in patients with abscess and especially lung gangrene. This smell often makes it impossible to stay in the ward of other patients.

Extremely unpleasant odor from the nose. This smell happens upon ozena.

Musty smell, sometimes rotten eggs in patients with obstructions to gastric emptying. This smell is felt during the belching that occurs in the patient. Usually the

smell of rotten eggs is observed in patients with pyloric stenosis, combined with achilia.

The fecal smell proceeding from a mouth confirms intestinal obstruction. It also occurs in patients with fecal incontinence, partly in patients with prolapse of the rectum, in untidy or mentally ill patients in whom it comes from the laundry, in cases of fistula between the stomach and the transverse colon, and is usually observed with belching.

The smell of fish saliva, urine and sweat is characteristic of trimethylaminuria (hereditary disease).

Nosological diagnosis

Since pathological halitosis is caused primarily by diseases of the teeth, oral cavity, ENT organs, all patients should consult the relevant specialists.

Alcohol, especially beer, contributes to damage to the oral cavity, excessive bacterial growth in it, sometimes even fungal damage to the oral cavity.

Obesity can also cause halitosis due to excessive bacterial growth and the formation of trimethylamine oxide in the intestine.

Menstruation may be accompanied by coincident periodic halitosis.

A large amount of protein foods contributes to the formation of a large number of relevant metabolites (box 2). In such patients, it is necessary to adjust the diet, try to switch from animal protein to vegetable.

Halitosis may be associated with *Helicobacter pylori* infection, as evidenced by the results of several studies [2, 3]. However, a fully proven link between halitosis and *Helicobacter pylori* cannot be considered. In any case, eradication therapy is indicated.

BOS in the intestine may cause halitosis due to the absorption of the waste products of bacteria into the blood and subsequent excretion with exhaled air.

Treatment. Of course, it is important to treat the disease that causes halitosis.

Important oral hygiene, dentures, deep rinsing the back of the tongue. It is useful to enrich the diet with dietary fibers (fresh vegetables, fruits), which the patient

must chew and, thus, they help clean the gaps between the teeth and the mouth from the remnants of protein foods. In some cases, effective chewing gum, which increases salivation. It is important to avoid alcohol, smoking, strong coffee. It is necessary to increase fluid intake, especially with dry mouth.

In case of insufficient results, rinses are prescribed with a 0.2% chlorhexidine solution 2 times a day for 7 days. Apply the drug Parsley — oil extract obtained from dry parsley seeds, which consists of essential substances, unsaturated and saturated fatty acids, tocopherols. Petrusha is used as a refreshing agent to eliminate bad breath: from alcohol, garlic, onion, etc.

In some cases, it is advisable to prescribe systemic broad-spectrum antibiotics, which are also shown in dental diseases and in the pathology of the upper respiratory tract, with BOS in the intestine.

References:

1. Губергриц А. Я. Непосредственное исследование больного. Москва: Медицина, 1972. 375 с.
2. Полевая Н., Елисеева Н. Галитоз: диагностика, лечение, профилактика. *Стоматолог*. 2005. № 3. С. 33–37.
3. Хитров В. Ю., Заболотный А. И. Галитоз — медицинская и социальная проблема. *Практическая медицина*. 2009. № 1. С. 12.

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Definition of the medical term “halitosis” is presented in the article, historical aspects of its appearance are reviewed, probable prevalence of halitosis in the general population is indicated. Classification of halitosis with the allocation of its subtypes depending on the conditions of occurrence is given, the reasons for the development of true and false, physiological and pathological halitosis are analyzed. Various nosologies and pathological conditions are listed, the course of which may be accompanied by the appearance of bad breath. The influence of the emotional background on the occurrence of halitosis is described. The main substances, which metabolism is accompanied by the appearance of stomatodisodia, are named, the nature of unpleasant odors associated with the most common somatic diseases is indicated. The role of *Helicobacter pylori*, bacterial overgrowth and obesity syndrome in the development of halitosis is considered. The importance of a detailed collection of anamnesis and a thorough objective examination, as well as the exclusion of dental and otorhinolaryngological pathology in the implementation of a diagnostic search, were emphasized. The tactics of the doctor’s actions while treating patients with halitosis is outlined, the features of the intra-syndromic and nosological diagnostics are considered, the methods for performing the olfactory test, taking scrapings from the tonsils and the back of the tongue are described. The main directions of non-pharmacological and pharmacological treatment of halitosis are listed, hygiene of oral cavity and dentures, modification of the usual diet are emphasized, the appropriateness of timely application of combined antiseptic solutions and the possibility of systemic antibacterial therapy are stressed.