Oral halitosis

Definitions: Breath malodor, defined as the foul or offensive odor of expired air, may be caused by several factors, both intra-oral & extra-oral (gingivitis/ periodontitis, nasal inflammation, chronic sinusitis, diabetes mellitus, liver insufficiency etc.,) & can be linked to more serious underlying medical problems including primary biliary cirrhosis, uremia, lung carcinoma, decompensated liver cirrhosis & trimethylaminuria.

Pathologic Halitosis should not be confused with the generally temporary oral odour caused by certain foods, tobacco, or medications.

Classification

- Genuine halitosis
    - Physiologic halitosis
    - Pathologic halitosis
- Pseudo halitosis
- Halitophobia.

<u>Genuine halitosis</u>

• Physiological halitosis

– Morning breath odour, tobacco smoking & certain foods & medications.

• Pathological halitosis

– intra oral or extra oral origin

– 90% of patients → oral cavity – Bacteria, volatile sulphur compounds.

• Intra oral origin

– poor oral hygiene, dental caries, periodontal diseases in particular NUG, NUP, periodontitis, pericoronitis, dry socket, other oral infections, tongue coating & oral carcinoma.

• The role of tongue coatings in the aetiology of oral malodour has been extensively documented.

• Tongue coatings include desquamated epithelial cells, food debris, bacteria and salivary proteins and provide an ideal environment for the generation of VSCs and other compounds that contribute to malodour

• Extra oral origin

– 10-20% – gastrointestinal diseases

– infections or malignancy in the respiratory tract

– Chronic sinusitis and tonsillitis

– stomach, intestine, liver or kidney affected by systemic diseases

Examples of systemic pathological conditions that cause halitosis are Systemic condition • Diabetes mellitus • Renal failure • Liver failure • Tuberculosis/ lung abscess , Leukaemias
• Internal hemorrhage/ blood disorders • Fever,

• Pseudo halitosis – Healthy individuals

• Haltophobia – exaggerated fear of having halitosis

– also referred as delusional halitosis

– considered variant of monosymptomatic hypochondrial psychosis.

Etiology:

• Halitosis generally arises as a result of the bacterial decomposition of food particles, cells, blood and some chemical compounds of the saliva.

• Volatile sulphur compounds

• Non - sulphur containing substances

Role of volatile sulphur compounds in the pathogenesis of halitosis :

• It increases the permeability of oral mucosa and crevicular epithelium. It impairs oxygen utilization by host cells, and reacts with cellular proteins, and interferes with collagen maturation.

• It also increases the collagen solubility.

• It decrease the DNA synthesis.

• It increases the secretion of collagenases, prostaglandins from fibroblasts.

• VSC reduce the intracellular pH; inhibit cell growth, and periodontal cell migration.

Correlation between the presence of a pathogenic microflora in the subgingival microbiota and halitosis:

• odor scores were significantly correlated with the concentration of overall bacterial populations and that higher levels of crevicular bacteria were associated with greater odor scores.

Diagnosis

Fill history

Examination

Self assessment tests (subjective test)

- Whole mouth malodor (Cupped breath) The subjects are instructed to smell the odor emanating from their entire mouth by cupping their hands over their mouth and breathing through the nose. The presence or absence of malodor can be evaluated by the patient himself/herself.
- Wrist lick test :Subjects are asked to extend their tongue and lick their wrist in a perpendicular fashion. The presence of odor is judged by smelling the wrist after 5 seconds at a distance of about 3 cm.
- Spoon test :Plastic spoon is used to scrape and scoop material from the back region of the tongue. The odor is judged by smelling the spoon after 5 seconds at a distance of about 5 cm organoleptically.
- Dental floss test Unwaxed floss is passed through interproximal contacts.
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- Saliva odor test Involves having the subject expectorate approx. 1-2 ml of saliva into a petridish. The dish is covered immediately, incubated at 370 C for five minutes and then presented for odor evaluation at a distance of 4 cm from the examiner's nose.

Objective tests

- Organoleptic measurement
- Gas chromatography (GC)
- Sulphide monitoring
- Electronic nose
- BANA test
- Tongue costing index
- Dark Field or Phase Contrast Microscopy
- Saliva Incubation
- Halimeter

Preventive measures:

Preventive measures rather than curative aspects are highly recommended.

– Visit dentist regularly

– Periodical tooth cleaning by dental professional.

– Brushing of teeth twice daily with appropriate brushing techniques and for a duration of 2-3 mins.
– Use of a tongue scraper to get rid of the lurking odour causing bacteria in the tongue surface.

– Flossing after brushing to remove food particles stuck in between the tooth surfaces.
– Limit intake of strong odour species.

– Limit sugar and caffeine intake. –

Drink plenty of liquids. –

Chew sugar free gum for a minute when mouth feels dry.

– Eat fresh fibrous vegetables such as carrots.

Management:
(i) Mechanical reduction of intraoral nutrients and micro- organisms

(ii)Chemical reduction of oral microbial load

(iii) Rendering malodorous gases nonvolatile

(iv) Masking the malodor.

1. Mechanical reduction of intraoral nutrients and micro-organisms

- Tongue cleaning

- Tooth brush - Inter-dental cleaning

- Professional periodontal therapy

- Chewing gum

2. Chemical reduction of oral microbial load

- Chlorhexidine

- Essential oils

- Chlorine dioxide

- Two-phase oil

- water rinse

- Triclosan

- Aminefluoride/ Stannous fluoride

- Hydrogen peroxide

- Oxidising lozenges

3.Conversion of volatile sulfide compounds

- Metal salt solutions

- Toothpastes

- Chewing gum

4. Masking the malodor

-Rinses

-Mouth sprays

-Lozenges containing volatiles

-Chewing gum