HALITOSIS

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Introduction

- Halitosis in general means bad breath, and is also known as oral malodor

- Halitosis is a term denoting unpleasant breath arising from physiological and pathological causes from oral and systemic sources

DEFINITION:

- According to **Grant,** distinction does not seem to be important and the term halitosis is used for any kind of bad breath.

- According to **Glickman,** Halitosis also termed Fetor ex ore or Fetor oris is foul or offensive odour emanating from the oral cavity.

- The term halitosis originated from the Latin word *halitus,* breath, and the Greek – *osis*, meaning abnormal condition Oral malodor is a common complaint that may periodically affect people of all age groups.

- Majority of adult population have had it at some point in time! Up to ¼ on a regular basis.

- Very subjective ***"it's a perception rather than a real thing,".***

- The term oral malodor is a generic descriptor for foul smells emanating from the mouth which encompasses ozostomia, stomatodysodia, halitosis (either pathological and physiological, fetor oris or fetor ex ore). The latter term denotes local or systemic production of malodor

History

- Bad breath has been recorded in the literature for thousands of years.
- In the **Bible,** the book of Genesis mentions about bad breath.
- **Parsley** was used as a cure for bad breath in **Italy**. Likewise cloves in **Iraq**, guava peels in **Thailand** and eggshells in **China** were used

- The modern literature on bad breath dates back to a monograph published of **Joseph Howe** (physician) in 19th century

- The pre-eminent research in this field has been carried out by **Dr Joseph Tonzetich** of the University of British, Columbia. He described that oral malodor is associated with the presence of ***volatile sulphur compounds primarily hydrogen sulfide and methyl mercaptan.***

- First international workshop on oral malodor was conducted in Herzilya Israel in April 1993 followed by second in Lewnen Belgium in October 1995

Classifications

(A) Dominic et al (1982) categorized halitosis as follows:

a. Halitosis due to local factors of pathologic origin.

b. Halitosis due to local factors of non-pathologic origin.

c. Halitosis due to systemic factors of non-pathologic origin

d. Halitosis due to systemic factors of pathologic origin.

e. Halitosis due to systemic administration of drugs

f. Halitosis due to xerostomia.

(B) Bogdasarian (1986) classification based on etiology:

a. Normal breath of physiologic mouth odor

b. Odors from oral conditions.

c. Odors from nasopharynx, pharynx and lungs.

d. Odors excreted via the lungs.

- **(C) Dayan et al (1982) divided foul odour into three groups namely:**

a. Odor emanating within the oral cavity.

b. Odor emanating from regions immediately adjacent to oral cavity.

c. Odor emanating from lungs.

Etiology:

- Halitosis, a condition that causes a severe social handicap to those who suffer from it has a multi factorial etiology

ETIOLOGIC FACTORS CAUSING HALITOSIS

- **Halitosis due to local factors of pathologic origin**:

Ø Poor oral hygiene

Ø Extensive caries

Ø Gingivitis

Ø Periodontitis

Ø Open contact allowing food impaction

Ø Vincent's disease

- Hairy or coated tongue
- Infectious malignant neoplasm's of the oral and pharyngeal cavities,
- Healing extraction wounds
- Necrotic tissue from ulceration
- Dentigerous cyst
- Increase in gram negative filamentous organisms.
- Increase in plaque ph to 7.2, formation of indoles and amines in the oral cavity.

- Other causes such as:
  - chronic sinusitis,
  - rhinitis, lethal granuloma,
  - pharangitis, tonsillitis
  - syphilitic ulcers,
  - cancrum oris,

- tumors of the nose,
- dental abscess,
- cancerous tumors of trachea bronchi,
- chronic fetid bronchitis etc

- **Halitosis due to local factors of non pathologic origin:**

- Stagnation of saliva associated with food debris
- Dentures
- Excessive smoking
- Diet and dietary habits
- Endodontic patients

- **Halitosis due to systemic factors of pathologic origin:**

Ø Diabetes mellitus

Ø Liver failure

Ø Acute rheumatic fever

Ø Lung abscess, tuberculosis, bronchiectasis

ø Uremia, kidney failure

Ø Blood dyscrasias

Ø Syphilis

- Scurvy
- Non-lipid Reticuloendotheliosis disorder e.g. eosinophilic granuloma, Letterer-Siwe disease & Hand-Schuller-Christian disease.
- Inborn errors of metabolism e.g. Trimethylaminuria
- Cancer
- Acidosis

- THE CHARACTERISTIC ODORS RELATED TO THE SYSTEMIC DISEASE CAPABLE OF PRODUCING HALITOSIS IS GIVEN IN TABLE :

DISEASES	CHARACTERISTIC ODOR
Diabetes mellitus or impending Diabetic coma	Acetone, fruity (not detected in well controlled patients)
Liver failure (terminal stage)	Sweetish musty, feculent "amine" odour resembling a fresh cadaver known as "fetor hepaticus
Acute rheumatic fever	Acid, sweet
Lung abscess, tuberculosis, bronchiectasis	Foul, putrefactive

Blood dyscrasias	Resembling decomposed blood of a healing surgical extraction wound
Uremia, kidney failure	Ammonia or urine
Fever, dehydration, Macroglobulinemia (with salivary gland involvement).Sjogrens syndrome	Odor mainly due to Xerostomia with poor oral hygiene and / or toxic waste byproducts accumulated in the body.
Syphilis, exanthematous disease, granuloma venereum	Fetid
Scurvy	Patients have a typical foul breath of persons with fusospirochetal stomatitis

- **Halitosis Due to systemic factors of non pathologic origin :**

- **Metabolites from ingested food that are excreted through the lungs can cause halitosis.**

- **A vegetarian has fewer tendencies to produce halitosis than an excessive meat eater because there is fewer degraded waste by products of protenacious substance in vegetables.**

- **Garlic, onion, leeks, alcohol etc impart odors to the breath by being absorbed into the circulatory system.**

- **Excessive alcohol drinking**

- **Halitosis Due to systemic administration of drugs:**
- The drugs capable of producing halitosis are given in table

Drug	Main therapeutic use
Ethyl alcohol	Anginal therapy, sedation
Medications containing iodine	Mucolytic expectorant
Antihistamines	Allergy, sedation
Diuretics	Antihypertension, antiedematic
Insosorbide dinitrate	Anginal therapy

- **HALITOSIS DUE TO XEROSTOMIA :**

- Xerostomia means decreased or absence of salivation, which can cause halitosis.

- It is seen in conditions like Sjogrens syndrome, salivary gland aplasia, Mikulicz's diseases, radiation therapy exceeding 800 rads, macroglobulinemia with salivary gland involvement, Hereford's disease, diabetes, systemic and metabolic disease with high fever and dehydration, emotional disturbances and poor oral hygiene.

Types of oral odors:

- **Morning breath**

Oral malodor is common on awakening (morning breath) usually as a consequence of low salivary flow and stagnation of saliva during sleep.

Morning breath rarely has any significance

Can be readily rectified by eating, tongue brushing, tooth brushing and also by rinsing the mouth with fresh water.

- **Exogenous malodor**

  Halitosis at other times of the day is often the consequence of eating various foods such as garlic, onion or spices (in curries), durian, cabbage, brussels sprouts, cauliflower, radish or habits such as smoking or drinking alcohol. Avoidance of these foods and habits is the best means of prevention.

- **True oral malodor (Endogenous malodor)**

  Halitosis that is not due to the above simple causes is most often a consequence of oral bacterial activity typically arising from anaerobes arising is due to:

Ø Poor oral hygiene

- Gingivitis (ANUG)
- Periodontal disease
- Infected extraction sockets
- Oral sepsis
- Residual blood post operatively
- Debris under fixes or removable appliances
- Ulcers

- Dry mouth
- putrefaction of postnasal mucus drip stagnating on the tongue
- The micro-organisms implicated are predominantly gram-negative anaerobes and includes:

Porphyromonas gingivalis,
Prevotella intermedia
Fusibacteriumnucleatum,
Bacteroides forsythus,
Treponema denticola

- **Psychogenic malodor:**

This is a group of patients who are by no means has no evidence of halitosis can be detected even with objective testing and the halitosis may be attributable to a form of delusion of mono-symptomatic hypochondriasis (self-halitosis; halitophobia).

Many of these patients will adopt a behavior to minimize their perceived problem i.e.

- Using chewing gum, mints, mouthwash or sprays.
- Covering their mouth while talking.
- Avoiding or keeping a distance from other people.
- Avoiding Social situations

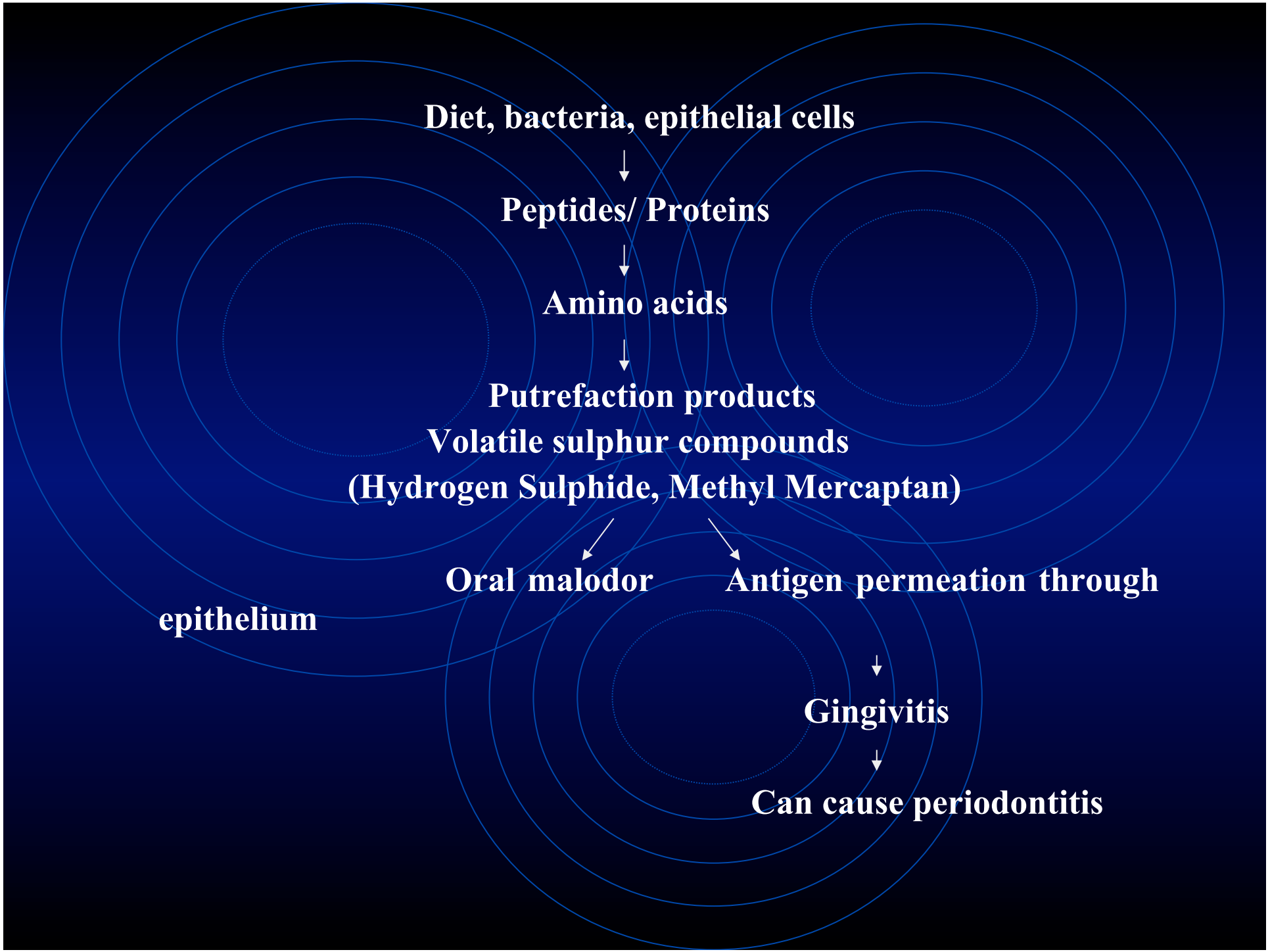
- Medical help may be required to manage these and other patients with the systemic background to their complaint.

Pathogenesis

Amino acids are metabolized via oxidation-reduction, deamination, decarboxylation, desulphydration and demethylation reactions to yield indole, skatole, cadaverine, mercaptors, sulphide and other compounds.

- The major cause of oral malodor is due to the presence of methyl mercaptan and hydrogen sulphide.[4]

- ORAL BACTERIAL PUTREFACTION AND IT'S RELATION TO ORAL MALODOR AND GINGIVITIS-PERIODONTITIS :

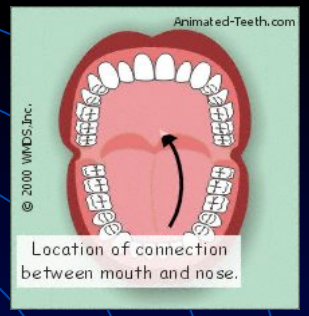

Diet, bacteria, epithelial cells
Peptides/ Proteins
Amino acids
Putrefaction products
Volatile sulphur compounds
(Hydrogen Sulphide, Methyl Mercaptan)
Oral malodor
Antigen permeation through epithelium
Gingivitis
Can cause periodontitis

MOST WANTED LIST

- Compounds commonly produced by mouth bacteria and their odours.

Hydrogen Sulphide	Rotten Eggs
Methyl mecaptan	Faeces
Skatole	Faeces
Cadaverine	Corpses
Putrescine	Decaying meat
Isovaleric acid	Sweaty Feet

DIAGNOSIS



- Proper diagnosis is essential to intelligent treatment.
- An accurate diagnosis can be achieved by analyzing the data collected from the patient's history, clinical examination and interpretation of any laboratory tests.
- The patient should be instructed to refrain from drinking, eating, chewing, rinsing, gargling, for at least two hours before the appointment. Before going on for a diagnosis, a thorough case history must be recorded which includes chief complaint, medical and dental history etc.

- **Chief complaint :**
  - It is important to determine initially whether the complaint of bad breath is a reason for seeking help or it is one of the several complaints that brings patient to the clinician.
  - self-reports of halitosis are more subjective
- **Medical history :**
  - Medical history can be obtained by standard self reported health questionnaires.
  - Emphasis should be made thorough history on nose, nasopharyngeal, sinus disease and psychological condition of the patient.

- **Dental History** :
  - Dental history can be used to evaluate past dental treatment and oral care.
  - A detailed history of oral hygiene habits is useful information for improving oral care and to assess patient's education, ability and commitment to the maintenance of oral hygiene.
  - Patient's frequency of brushing, flossing, use of mouthwash, types of tooth brushes and tooth paste is useful tool in improving oral care.

- **Examination:**
- Try to distinguish oral from non-oral.
  - Compare smell coming from mouth with that exiting the nose.
- Examination of nose, post nasal space & all mucosal surfaces of pharynx.
- Examine oral cavity, dentition, look for tonsilloliths, dentures etc.
- Can take scraping from posterior dorsum of tongue.
- ***"Dangerous to assume dental, periodontal, dietary causes. Early oral & oropharyngeal carcinomas have few symptoms".***

Lab investigations or additional diagnostic tools

- The proper diagnosis of any disease or condition requires certain specific test or laboratory investigations. Additional information leading to a diagnosis can be acquired through analyzing appropriate lab test or diagnostic studies **such as:**
- CULTURE AND SENSITIVITY TESTS :
- ➢ Infections in the oral cavity can be due to various microorganisms. e.g. spirochetes in case of ANUG, such infections are a common cause of oral malodor.

Culture and sensitivity tests help in identifying various infections in the oral cavity or those infections not responding to initial antimicrobial therapy in compliant patient where prior culture and sensitivity studies were not performed.

- PSYCHOLOGICAL FACTORS:

Very often patients complain of malodor, but on physical examination and as well as through various diagnostic tests, it exhibits a negative result. Such patients may be suffering from psychological disorder called as halitophobia.

- INSTRUMENTAL ANALYSIS LIKE LEVEL OF INTRA ORAL VOLATILE SULPHUR COMPOUNDS :

  Level of intra oral Volatile Sulphur Compounds can be estimated using portable sulphide monitors. Concentration of VSC's correlate well with level of malodour reported by observers.[

  - Portable volatile sulfide moniter{Halimeter}
  - Gas Chromatography
- SALIVA INCUBATION TEST
- ELECTRONIC NOSE;

Organoleptic Rating

Score	Odor
0	No Odor
1	Barely noticeable odor
2	Slightly but clearly noticeable odor
3	Moderate odor
4	Strong offensive odor
5	Extremely foul odor

MANAGEMENT

- Identify & eliminate obvious causes.
- Cheapest/ most effective option is improvement of oral hygiene.
- Referral to dentist for full oral/dental examination and provision of education (brushing, flossing, mouthwash use – 0.2 % chlorhexidine gluconate).
- Chlorhexidene/ hydrogen peroxide mouthwashes reduce concentrations of VSC's measured quantitatively & by level of malodour reported by observer.

- THIS IS THE FOLLOWING GENERAL TREATMENT STRATEGIES CAN BE APPLIED :-

1. Mechanical reduction of intraoral nutrients and microorganisms.
2. Chemical reduction of oral microbial load
3. Rendering malodorous gases nonvital
4. Masking the malodor

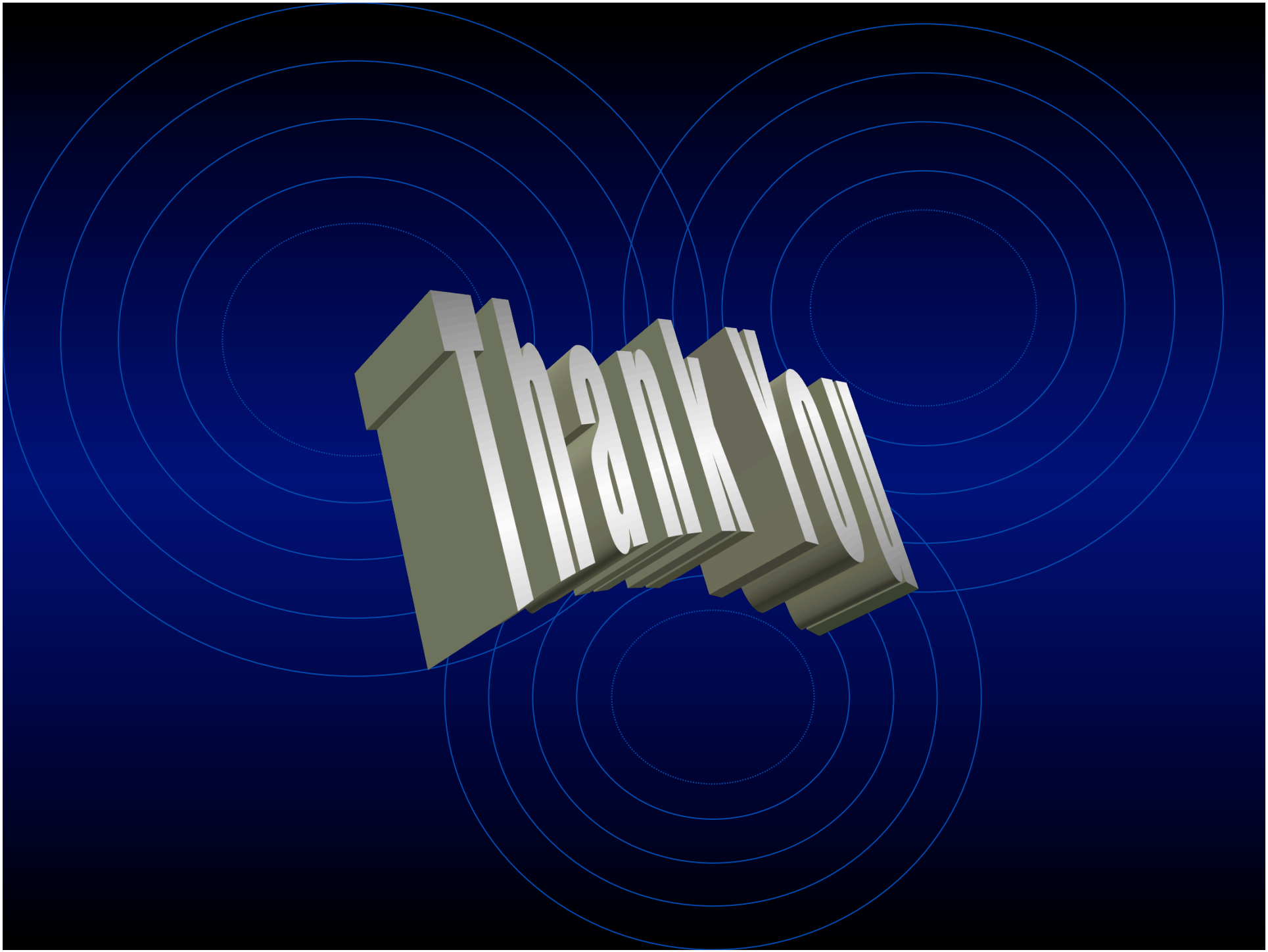
Summary

- Halitosis in general means bad breath and is also known as oral malodor.
- It’s a common complaint that may periodically affect most of the population.
- Oral malodor is an important clinical sign and symptom that has many etiologies which include local and systemic factors.
- It is often difficult for the clinician to rule out the underlying pathologies.

- Although consultation and treatment may result in dramatic reduction in bad breath, patients may find it difficult to sense the improvement themselves.

- This problem can be addressed with the help of the confident; who can help to monitor change over the period of time.

- In those cases where the odor persists, patient should be referred to a physician for further assistance and to rule out any underlying pathologies


Thank You