Olfactory Disorders

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Olfactory dysfunction can affect patient's safety, nutritional status, quality of life. 
- anosmias increase use of sugar and seasonings (detrimental in diabetes, salt-sensitive hypertension). 
- considerable risk for food poisoning, gas poisoning. 
- Veterans Administration awards 10% whole body disability for total anosmia (American Medical Association - only 3%).

Whole-mouth taste function is much more resilient to alterations than is olfactory function, in large part because taste buds have redundant innervation (i.e. CN VII, IX, X). Complaint of taste loss usually reflects olfactory epithelium has occurred.

**CLASSIFICATION**

Olfactory dysfunction can be **BILATERAL** or **UNILATERAL** (sometimes termed **NASAL** or **UNNASAL**).

**ETIOLOGY**

**DEFINITIONS**

**HYPOSIA (MICROSOMIA)** - diminished ability to smell. 
N.B. olfactory acuity varies enormously from person to person (sometimes 1000-fold); olfactory sensitivity normally declines with age > 1% / year.

- ability to smell decreases with cumulative smoking dose (smoking cessation can improve olfactory function over time).

**ANOSIA** - loss of ability to smell:
- **GENERAL (TOTAL) ANOSIA** - all odors on both sides. 
- **PARTIAL ANOSIA** - all - alternative meanings: 
  a) **Specific anosmia** - anosmia to specific odorants with otherwise normal sense of smell.
  b) **General hyposmia** - decreased sensitivity to all odorants.

**DYSOSMIA** - perverted smell perception: 
- **PAROSMIA (CACHOSMIA)** - "rose smells more like garbage" (e.g. in "uncal fits").
- **PHANTOSMIA (OLFACTORY HALLUCINATION)** - medicine-like smell in absence of odor stimulation.

- frequent during olfactory epileptical degeneration / regeneration.

N.B. differentiate from foul odors produced within nasal cavity (e.g. infections) or within body proper (e.g. altered metabolism).

**HYPEROSMIA** - abnormally acute smell function (e.g. in some epileptics prior to onset of ictal activity); most commonly idiopathic.

**ETIOLOGY**

1. Alterations in ability to smell - first signs of Alzheimer’s disease, idiopathic Parkinson’s disease (but patients are unaware!)
2. Head trauma (anosmia / hyposmia is frequently the only residual neurological impairment)
3. CNS tumors 
   e.g. tumors in olfactory groove or sphenoid ridge (e.g. meningiomas) can cause Foster Kennedy syndrome (ipsilateral anosmia, ipsilateral optic atrophy, contralateral papilledema).
5. Smoking, chemical exposure 
6. Metabolic disease (esp. dysosmia) - diabetes, hepatic / renal diseases, hypothyroidism, etc.
7. Epilepsy - unc or temporal lobe foci that induce dysosmic / hyperosmic auras.
8. Psychiatric disorders (esp. dysosmia)
9. Allergies
10. Kallmann syndrome (anosmia)

- because of bilateral cortico - subcortical representation of olfactory function, unilateral lesions at this level generally do not cause clinically meaningful olfactory dysfunction!

**DIAGNOSIS**

University of Pennsylvania Smell Identification Test (UPSIT): see p. D1

Olfactory evoked potentials can be measured accurately, but is very expensive (> $100,000).

- trains of well-defined odorant pulses, with steep-onset gradients, are imbedded in humidified continuous airstream that is flowed through nose in manner that does not evoke somatosensory afferents.
- recording is from Cz referred to Al.
- NI wave is obtained at 306-455 ms and P1 wave at 349-455 ms.
- useful in detecting malinge.

**TREATMENT**

- rarely successful (very depends on etiology).
- unilateral dysosmia - olfactory epithelium ablation.
- sensorineural hyposmia / anosmia - zinc & vitamin therapies (evidence of efficacy is lacking); reassurance & education are very useful.
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