

ANOSMIA



*"My Sweet Rose", (Detail) oil on canvas, c. 1903. John William Waterhouse.*

*Roses have tantalized, seduced, and intoxicated people more than any other flower. They've captivated homeowners, swains, flower addicts, and sensuists since the ancients in Damascus and Persia, people used to buy jars of unopened rosebuds in the garden and dig them up on special occasions to use in cooking-the flowers would open dramatically on the plates. In Jean Cocteau's film version of the fairy tale Beauty and the Beast, all the mischief and magic begins when a man picks a rose for his daughter, her sole desire among a sea chest of riches. Long ago, Europeans raised a tough mongrel rose that was loud, obvious, and very hardy, and whose fragrance could embalm a statue. But, in the 1800s, they began importing elegant Chinese tea roses, which smelled like fresh tea leaves when crushed, and also frost-delicate, ever blooming Chinese hybrids with bright yellow to red flowers. Breeding the hybrid Chinas with the European roses as carefully as racehorses, they produced endless array of colors, shapes, and scents. They call them "hybrid tea roses". Since then, over twenty thousand varieties have been bred, and at one time the rose's fragrance was nearly lost through over breeding. Fragrance seems to be a recessive trait in roses, and two deeply fragrant parents may produce a petal-perfect but smell-less offspring. Now the trend is toward perfumed roses, thank heavens. The most popular hybrid tea in the world is "Peace," a stunning multicolored pastel with sunset hues that shriek at noon, grow muted at sunset, and record all the other phantoms of light during the day. Its egg-shaped buds open into large, pale-yellow ruffles with translucent tips that are often flushed with pink and it smells like sugared leather dipped in honey.*

*Of all my roses "Peace" seems to have an almost human complexion and human moods depending on the moisture and light of each day. An experimental rose, it was named on May 2, 1945 (the day Berlin fell), at the Pacific Rose Society in Pasadena, because "this greatest new rose of our time should be named for the world's greatest desire - Peace". Many presidents have had roses named after them (Lincoln's is blood red, John Kennedy's pure white), and there are wittily named roses to honor movie stars or celebrities (Dolly Parton's is flamboyantly pungent, with knockout-sized blossoms). Though roses symbolize beauty and love, their colors, textures, shapes, and smells are difficult to describe. "Sutter's Gold," one of my favorite hybrid tea roses, produces a flat ruffled flower of yellow petals tinged in apricot, fuchsia, and pink, with a fragrance like sweet wet feathers. The floribundas, thoroughly modern roses, cascade with flowers all summer long. "The Fairy" has hardly scent, but is a constant explosion of dainty pink flowers from spring until winter, despite light snowfalls. Roses were already considered ancient when the Greek botanist Theophrastus wrote about "the hundred-petaled rose" in 270 B.C. Fossilized wild roses have been dated as far back as forty million years ago. The Egyptian rose was what we now call the cabbage rose, renowned for its many petals. When Cleopatra welcomed Mark Antony to her bedroom, the floor was covered in a foot and a half of such petals. Did they use the floor, and make love in a swamp of soft, fragrant, shimmying petals? Or did they use the bed, as if they were on a raft floating in a scented ocean?*

*Cleopatra knew her guest. Few people have been as obsessed with roses as the ancient Romans. Roses were strewn at public ceremonies and banquets; rose water bubbled through the emperor's fountains and the public baths surged with it; in the public amphitheaters, crowds sat under sun awnings steeped in rose perfume; rose petals were used as pillow stuffings; people wore garlands of roses in their hair; they ate rose pudding; their medicines, love potions and aphrodisiacs all contained roses. No*

*bacchanalia, the Romans' official orgy, was complete without an excess of roses. They created a holiday, Rosalia, to formally consummate their passion for the flower...*

*Islamic cultures found the rose a more spiritual symbol, one that, according to the thirteenth-century mystic Yunus Emre, is supposed to sigh "Allah, Allah!" each time one smells it. Mohammed, a great devotee of perfume, once said that the excellence of the extract of violets above all the flowers was like his own excellence above all other men. Nonetheless, it was rose water that went into the mortar for his temples. Roses mix unusually well with water, making fine sherbets and pastries, so the flower has become a delicate staple in Islamic cooking as well as being much used to scent apparel. Hospitality still demands that a guest in an Islamic household be sprinkled with rose water as soon as she or he arrives.*

*Rosaries originally consisted of 165 dried, carefully rolled up rose petals (some of which were darkened with the lampblack as a preservative) and the rose was the symbol of the Virgin Mary. When the crusaders returned to Europe, their senses sated by the exotic indulgences they discovered among the infidels, they brought attar of roses with them, along with sandalwood, pomander balls, and other rich spices and scents, plus a memory of harem women, sensual and languorous, who awaited a man's pleasure. The scented oils the knights returned with became instantly fashionable, suggesting all the wicked pleasures of the East, as seductive and irresistible as they were forbidden.*

*Diane Ackerman, "A Natural History of the Senses", 1990.*

*One of the most tragic things I know about human nature is that all of us tend to put off living. We are all dreaming of some magical rose garden over the horizon instead of enjoying the roses that are blooming outside our windows today. (Dale Carnegie)*

*In life one needs to make time to simply stop pause and "smell the roses"- unless of course you happen to have anosmia....*



*"The Briar Rose", oil on canvas, 1871, Sir Edward Burne-Jones.*

## ANOSMIA

### Introduction

**Anosmia** refers to the *complete* loss of the sense of smell.

**Hyposmia** is a *partial* loss of the sense of smell

Complete loss of the sense of smell is fairly rare.

Loss of smell can be temporary or permanent, depending on the cause.

The cause may be benign and reversible or potentially serious.

Loss of the sense of smell can also lead to a **secondary diminution in the sense of taste**.

### Terminology

**Anosmia** refers to the *complete* loss of the sense of smell.

**Hyposmia** is a *partial* loss of the sense of smell

*Other terminology includes:*

**Hyperosmia:** enhanced smell sensitivity

**Dysosmia:** distortion in odour perception (includes parosmia and phantosmia).

**Parosmia:** distortion of perception of external stimulus.

**Phantosmia:** smell perception with no external stimulus

### Physiology

The exact mechanisms behind the sense of smell remains uncertain.

Odour molecules in the air are breathed into the nose, and funneled inside the nasal cavity to the olfactory epithelium (tissue).

This small cluster of cells, located within the roof of the nasal cavity, is covered with tiny cilia and a thin layer of mucus.

Each cell is connected to an olfactory neuron, or nerve cell.

The cilia trap the inhaled odour molecules.

The information on the molecules is then transmitted to the olfactory neurons, then relayed via them to the brain, where the smell is processed and experienced.

**Women tend to have a more acute sense of smell than men.**

**There is also some evidence that smell sensitivity may be inherited, to a degree.**

### Pathophysiology

#### *The relationship of the sense of smell to taste:*

It is commonly thought that the flavour of food is experienced solely by specialized sensory cells on the tongue; but in fact, the mouth distinguishes only rudimentary information concerning sweetness, saltiness, sourness and bitterness.

Odour molecules from food rise to the olfactory epithelium and supplement the sensory information from the tongue.

This is why food tastes bland when you have an upper respiratory tract infection; the olfactory epithelium is inflamed and there is excess mucus which interferes with olfactory function.

### Causes

The causes of **anosmia** include:

1. Mucous membrane inflammation:

Anosmia can be caused by inflammation of the mucous membranes lining the nasal cavity.

These causes are usually transient and benign, and may include:

- Infections:
  - ♥ Acute/ chronic sinusitis
  - ♥ Upper respiratory tract viral infection in general
- Allergic rhinitis
- Non-allergic rhinitis
  - ♥ This may be induced by a wide range of industrial chemicals, including heavy metals, inorganic and organic compounds, acids and pollutants.

2. Local anatomical anomalies or pathologies of the nose:

- Significant bony deformity
- Nasal polyps

- Tumors

3. Lesions to the Olfactory nerve:

These causes are more serious due to the underlying nature of the causative lesion:

- Trauma:
  - ♥ This is the commonest identified cause.
  - ♥ To the anterior cranial fossa, with direct injury to the olfactory nerves
- Space occupying lesions within the nasal cavity or anterior cranial fossa
  - ♥ Tumours

*Rarely:*

  - ♥ Aneurysms
  - ♥ Abscesses
- Mononeuritis:
  - ♥ Various causes of mononeuritis, such as diabetes or toxins, microvascular disease, paraneoplastic disease, connective tissue diseases, infectious diseases, HIV, Lyme disease, syphilis.
- Venoms:
  - ♥ Snake bite envenomation is an uncommon, but well documented, cause of anosmia.<sup>2,3,4</sup>

*Anecdotally* most cases of anosmia caused by snake bite seem to resolve within weeks to months, however in some cases it may persist.<sup>2</sup>
- Idiopathic:
  - ♥ In a number of cases no clear cause will be found.

4. Central cerebral lesions:

- MS

- Degenerative conditions: Alzheimer's, Parkinson's Disease, Korsakoff syndrome.
  - Tumours
  - Traumatic brain injury.
5. Ageing
  6. Smoking
  7. Drugs:
    - Some drugs may alter the sense of smell in some individuals
    - These can include vasoconstrictors in nasal sprays and cocaine
  8. Endocrine disorders:
    - Diabetes, Cushing's syndrome and hypothyroidism have all been implicated in the development of anosmia.
  9. Seizure activity.
    - May result in altered *perception* of the sense of smell.
  10. Adaption:

If you smell an odour for long enough, you eventually stop noticing it. This is because prolonged exposure to a strong smell is believed to saturate the olfactory epithelium with odour molecules to the point where information is no longer delivered to the brain.

Loss in smell sensitivity is only temporary and is particular to that "over-smelled" odour. Recovering from adaptation will occur after removal from the smell. The timing depends on the individual but for most it is a quickly reversible phenomenon.

## **Clinical Assessment**

### **Important points of history:**

Enquire about:

1. Any symptoms of URTI
2. Medications
3. Smoking

4. Symptoms of a possible intracranial space occupying lesion
5. Past history of trauma to the base of the skull/ anterior cranial fossa

#### Important points of examination:

If a patient complains specifically of anosmia without an obvious cause, then a neurologist may test the sense formally using a series of bottles containing a range of familiar smells, such as coffee, vanilla and peppermint (a traditional favourite, however less sensitive than the others).

Particularly pungent odours, such as ammonia, are not used, first because they are unpleasant to the patient, and second because noxious stimuli of this intensity can also be picked up by sensory fibers of the Fifth (Trigeminal) nerve. <sup>1</sup>

If anosmia is suspected, other signs of an intracranial space occupying lesion, as well as signs of frontal lobe dysfunction should be sought.

Loss of the sense of smell can also lead to a secondary diminution in the sense of taste.

#### Investigations

**The type and extent of investigation will depend on the degree of suspicion for any given pathology.**

The following may be considered:

#### Blood tests

1. FBE
2. U&Es/ glucose
3. CRP

#### CT Scan/ CT angiogram

For delineation of pathologies of:

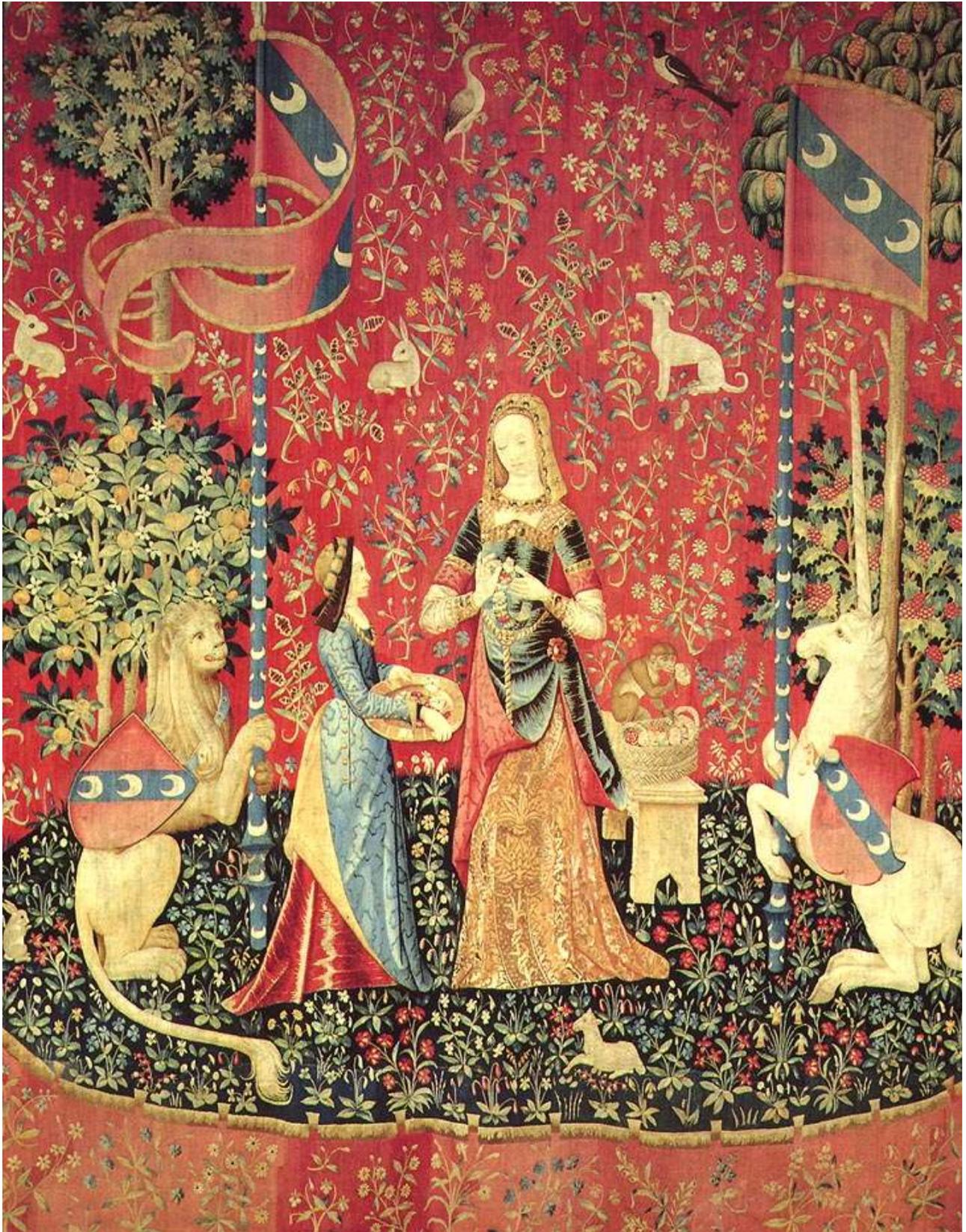
- The nasal cavity.
- The brain
- Mass lesions of the anterior cranial fossa causing a compression or destruction of the olfactory nerve
- Vascular lesions

### MRI

This is the most specific and sensitive imaging investigation for suspected lesions affecting the brain and olfactory nerve.

### Management

Management is directed at the cause, where this can be established



*“The Sense of Smell”, La Dame a la Licorne, (from The Lady and the Unicorn Tapestries), Late 15<sup>th</sup> Century Flemish Tapestry in wool and silk, Musée Nationale du Moyen Age, Paris.*

## References

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