10-MINUTE CONSULTATION

Anosmia and loss of smell in the era of covid-19

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What you need to know

• Half of patients with covid-19 may lose sense of smell; guidance states that a new change or loss in sense of smell should prompt a period of self-isolation.

• Nine in 10 patients can expect substantial improvement in their sense of smell within four weeks.

• Most patients with loss of smell do not require further investigations or referral, although their covid-19 status should be established if possible.

• Treatment involves reassurance, olfactory training, safety advice, and topical corticosteroids—but oral prednisolone should be avoided where acute covid-19 infection is suspected.

A 46 year old ophthalmologist presents with a two week history of loss of sense of smell and taste. He believes he may have been exposed to covid-19 but, at the time, did not meet the criteria for testing.

With the discovery of covid-19 and as the clinical syndromes associated with this virus have been defined, many areas of practice require updating.

What you should cover

Olfactory dysfunction is common: estimates of point prevalence in the general population before the covid-19 pandemic suggest that 19.1% of adults (80% in people over 75) suffer from complete or partial loss of smell.

Causes can be broadly subdivided into conductive (physical barriers to odorants reaching the olfactory system) and sensorineural (failure of the olfactory system to detect odorants). Causes are outlined in table 1, with the more common causes in the top half of the table and less common causes in the bottom half. A comprehensive history is invaluable, especially if consultations are performed remotely.

Table 1 | Causes of loss of smell

<table>
<thead>
<tr>
<th>Conductive</th>
<th>Sensorineural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common causes</td>
<td>Post-viral</td>
</tr>
<tr>
<td>Allergic rhinitis</td>
<td>Neurodegenerative disorders including Parkinson’s, Alzheimer’s diseases</td>
</tr>
<tr>
<td>Rhinosinusitis with or without nasal polyposis</td>
<td>Psychiatric disorders (depression, bipolar disorder, schizophrenia)</td>
</tr>
<tr>
<td>Ilicit drugs including cocaine</td>
<td>Head injury</td>
</tr>
<tr>
<td>Septal deviation (causing complete loss of smell is rare, would typically associate with unilateral nasal obstruction)</td>
<td></td>
</tr>
<tr>
<td>Less common causes</td>
<td>Central space occupying lesion</td>
</tr>
<tr>
<td>Systemic diseases with nasal manifestations, eg, granulomatous with polyangiitis</td>
<td>Heavy metals and solvents (cadmium, iron, zinc, ammonia)</td>
</tr>
<tr>
<td>Lateral (nasal surgery, laryngectomy, medication)</td>
<td>Congenital (Kallmann syndrome)</td>
</tr>
</tbody>
</table>

Points to consider include:

Does the person have symptoms that suggest covid-19 infection? (see specific information below).

Is their sense of smell alone affected, or is taste also affected? Ask the patient to try smelling and tasting foods such as herbs, spices, and coffee and to record their ability to smell and taste in a format such as the home assessment test suggested by AbScent®; this can be repeated after six months to track progress.

Many patients with loss of smell will also report loss of taste, however this usually reflects loss of flavour perception as a function of smell, rather than true taste disturbance. Asking patients if they can tell if the food is salty, sweet, or bitter may help to differentiate taste which is a function of gustation, as opposed to flavour which is a function of retronasal olfaction. Gustatory dysfunction is also reported to be common in covid-19, and is thought to occur in 42% of patients. However, there is insufficient evidence to currently conclude to what extent this is influenced by co-existing olfactory loss or whether it is a genuine independent sequela of covid-19. At present, evidence suggests that most patients suffer impaired gustation as a consequence of a diminished sense of olfaction and as such, the focus of assessment and treatment is directed largely towards the nose.

Do they have accompanying nasal symptoms? Conductive causes of loss of smell are usually accompanied by other nasal symptoms, such as blockage and anterior nasal discharge (table 2). These symptoms (including loss of smell) may fluctuate in severity.
Table 2 | Nasal symptoms that may accompany loss of smell

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Classification</th>
<th>Other associated signs and symptoms</th>
<th>Relevance to patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your nose feel blocked on both sides, and can the most affected side alternate?</td>
<td>Allergic</td>
<td>Sneezing, itching, watery rhinorrhea, temporal association with allergen</td>
<td>Allergy avoidance and medical therapy with antihistamines and nasal steroids may offer relief</td>
</tr>
<tr>
<td>Does your nose feel consistently blocked on one side?</td>
<td>Structural</td>
<td>External deformity</td>
<td>A history of an adult with new unilateral blockade without preceding trauma should prompt face-to-face examination</td>
</tr>
<tr>
<td>Does your nose feel consistently blocked on both sides?</td>
<td>Rhinosinusitis</td>
<td>Rhinorrhea, facial pain, asthma</td>
<td>Intranasal steroids and saline douche are an appropriate first line treatment</td>
</tr>
<tr>
<td>Can you detect a foul smell within your nose?</td>
<td>Cacosmia</td>
<td>Purulent discharge, foul smell apparent to others, dental disease</td>
<td>May represent underlying dental disease and should be directed concurrently for dental and ear, nose, and throat review</td>
</tr>
<tr>
<td>If you blow your nose, do you get streaks of blood mixed in with the mucus from both sides of the nose?</td>
<td>Epistaxis</td>
<td>Evidence of digital trauma or substance abuse, bruising to minor trauma</td>
<td>Avoid local trauma (eg, nose picking), common anticoagulant and antiplatelet agents are associated with epistaxis</td>
</tr>
<tr>
<td>If you blow your nose, do you get streaks of blood from the nostril that feels persistently bloated?</td>
<td>Urgent suspected cancer</td>
<td>Numbness of the face, loose dentition, visible mass</td>
<td>Patient should be informed that sinonasal malignancy is an uncommon but important differential</td>
</tr>
<tr>
<td>Do you have a new neck lump?</td>
<td>Urgent suspected cancer</td>
<td>Numbness of the face, visible mass, nasopharyngeal cancer most common in people of southern Chinese descent</td>
<td>Patient should be informed that nasopharyngeal malignancy is an uncommon but important differential</td>
</tr>
</tbody>
</table>

**Does the person have any unexplained neurological symptoms?** Signs of raised intracranial pressure may indicate a central lesion, although this is an infrequent cause of anosmia. However, common neurodegenerative disorders such as Alzheimer’s and Parkinson’s diseases have a well known association with loss of smell.

**Is the loss of smell isolated?** If yes, a sensorineural cause is most likely, and of these, a substantial proportion will be post-viral (caused by pathogens other than covid-19); the loss of smell does not change from day to day, and may be profound.

**Covid-19 testing**

In May 2020 anosmia was recognised as a symptom of covid-19 in light of accumulating evidence, including a meta-analysis which showed a loss of smell in 55% (95% confidence interval 38% to 70%) of patients with covid-19. A large online questionnaire based survey found that, in covid-19, loss of smell is usually severe and sudden in onset, but transient in most patients, although 10.6% (95% CI, 5.6 to 17.8) of patients showed no improvement at one month. It is advisable, therefore, to test for covid-19 infection—either with reverse transcription polymerase chain reaction (RT-PCR) (if presenting within 7-10 days of symptom onset) or serology (if presenting after 10 days)—in any patients with sudden onset loss of smell for whom there is no obvious alternative explanation (eg, obstructing nasal mass, severe allergic rhinitis) and where the SARS-CoV-2 virus is active locally. Most patients with loss of smell and covid-19 infection will report other symptoms, although 16% of patients may have anosmia as an isolated symptom.

**What you should do**

Most patients with loss of smell can be managed successfully in primary care and will improve without further investigation. A key exception is patients who present with loss of smell and unexplained neurological symptoms or those with more than six weeks of loss of smell. Investigate these patients urgently to exclude central pathology, although the detection rate is very low. For example, meningiomas of the olfactory groove represent approximately 10% of all meningiomas, while primary tumours of the olfactory neuroepithelium (olfactory neuroblastomas) have an incidence of approximately 0.4 cases per million population.

If the patient is suspected or confirmed to have covid-19

Patients who have been referred for RT-PCR testing should be advised to follow UK government advice on self-isolation until results are available. In patients who are suspected to have or who test positive for current or recent covid-19 infection, ENT UK guidance is that covid-19 should be assumed as the cause of the loss of smell.

If there is no suspicion for covid-19 or the patient tests negative

Common conditions such as allergic rhinitis are capably recognised and treated by primary care physicians (table 1), although a GP may wish to consider referral of atypical presentations or patients who do not respond to first line therapy.

**Interventions to consider for all patients with loss of smell**

“Olfactory training” is a self-management strategy that involves a regular programme of using strong odours or essential oils to trigger recovery of the olfactory system. Although evidence is incomplete, a systematic review of 10 interventional studies (of which one was a randomised crossover design, eight were prospective cohort studies, and one was a retrospective case series) was supportive of its utility in recovering sensorineural loss of smell. Suggested protocols for olfactory training are well described online (box 1).

**Box 1: Support for olfactory training**

- Fifth Sense (www.fifthsense.org.uk)
- AbScent (www.abscent.org)
- ENT UK advice for patients (https://www.entuk.org/loss-smell-video-interview-professor-claire-hopkins)

Use of corticosteroids in loss of smell is controversial, and there are many arguments for and against. The expert working group advice from ENT UK can be summarised as follows:

- Consider topical corticosteroid drops (fluticasone nasule or betamethasone drops) in patients with loss of smell lasting longer than two weeks
Offer topical corticosteroid sprays to patients with associated nasal obstruction

Do not offer oral steroids to patients in the first two weeks after covid-19 diagnosis or suspicion (because of likelihood of spontaneous recovery, and risk of side effects and delayed viral clearance)

Make personalised patient-centred decisions for a short course of oral steroids in patients with a persistent loss of smell not related to covid-19 and in those patients with persistent loss of sense of smell following covid-19 after at least two weeks since diagnosis, and discuss with the patient the risks and benefits.

Significant risks include elevated blood glucose, altered mood, psychosis, and avascular necrosis of the femoral head.

Onward referral

A guide to managing loss of smell from ENT UK suggests considering referral when symptoms persist beyond 4-6 weeks in those who are covid-19 negative, and no other cause has been identified, or beyond three months for those who are covid-19 positive. A detailed flowchart to guide the process of initial assessment and management is reproduced from ENT UK in figure 1. Patients should be encouraged to continue first line measures such as topical corticosteroid sprays or olfactory training while they await review from ear, nose, and throat specialists.

FOR ALL PATIENTS

Establish covid-19 status through history/PCR/serology in all patients if possible

Offer advice sheet to patients if possible, and direct them to AbScent and Fifth Sense for further support

Olfactory training is RECOMMENDED for patients with loss of sense of smell >2 weeks

Check covid-19 Status

Check for duration of anosmia >4-6 weeks?

Refer for ENT assessment. If symptoms have persisted for more than 3 months a face to face consultation should be CONSIDERED and MRI(brain) is RECOMMENDED if endoscopy is normal in a patient with a covid-19 negative test on PCR and/or serology

If endoscopy is normal, further imaging may be CONSIDERED (either MRI or CT) if patients have additional persistent symptoms. Imaging is not required for persistent isolated anosmia in a confirmed covid-19 case

ENT referral is RECOMMENDED Endoscopy findings should direct decisions regarding further imaging if possible

INCS sprays is RECOMMENDED Topical steroid drops or rinses are OPTIONAL

Check for duration of symptoms >4-6 weeks?

Check for associated nasal symptoms (blockage/congestion)

Check for additional neurological symptoms

MRI (brain) is RECOMMENDED for all patients with anosmia >6 weeks with additional neurological symptoms regardless of covid-19 status

Check for other symptoms of covid-19

OCS is OPTIONAL if no symptoms of covid-19 or after full resolution of symptoms

Omega-3 supplements are OPTIONAL if no covid-19 or after full resolution of symptoms

Check for duration of anosmia >4-6 weeks?

Check associated nasal symptoms (blockage/congestion)

Check for additional neurological symptoms

Fig 1 | ENT UK flowchart for management of loss of smell. INCS=intranasal corticosteroids

Patient-centred care

Patients with loss of smell suffer significant detriment to their quality of life, and a description of one patient’s experience is captured in box 2. In addition, people with covid-19 associated anosmia may report anger at having been exposed to infection, frustration at inability to access testing at the time of onset, and guilt at spreading infection to others. Consider some of the key messages in box 3. A patient information leaflet is also available for loss of smell in covid-19. box 2: Patient perspective

Anosmia is like experiencing the world in two dimensions. I dearly miss the energising aroma of strong morning coffee and the soothing effect of spring scents. Appetite has dampened and fine wines which I loved have lost their depth and complexity. There are no smells to evoke good memories and I have lost an important coping mechanism. I feel constantly insecure of missing unhealthy fumes or rotten food. Friends trivialise this condition and show no empathy. Social media helped to put me in touch with similar patients, which has given me reassurance that I am not alone.

As a patient the thing I needed most was knowledge of prognosis and treatment. The media was fascinated by this phenomenon but only seemed to care about its importance as a marker for self-isolation. I now need hope and would like to see more translational research in this field. I also need help to adapt to this new world and focus on what I still have, rather than what I lost.

Box 3: Advice for patients

• Support is available from charities such as Fifth Sense (www.FifthSense.org.uk) and AbScent (www.abscent.org)

• Online patient support groups can be helpful in lieu of family or friends who may struggle to empathise

• Olfactory training offers a safe strategy that may be of benefit to some patients in recovering some ability to smell
• Rigorous adherence to “use by” dates on food and drink until the sense of smell has returned
• Ensure smoke alarms are functioning and tested regularly until sense of smell has returned
• 9 out of 10 patients with covid-19 loss of sense of smell can expect significant improvement within 4 weeks
• Only a minority of patients will require investigation, referral, or medication

Education into practice

• What symptoms would make you suspicious of covid-19 and direct you to testing?
• What value judgements will you have to make when considering the risk of steroid treatment versus the benefit of improvement in a patient’s sense of smell?

How this article was created

This article was created through review of existing literature regarding management of anosmia, and with updates pertinent to covid-19 related loss of smell. Evidence was identified through PubMed and guidelines were sourced from both Public Health England and ENT UK.

How patients were involved in the creation of this article

We involved a patient with anosmia secondary to covid-19 as a co-author to ensure that we addressed questions relevant to patients. We have also involved both AbScent and Fifth Sense, two charities set up to support patients with loss of sense of smell, who have critically reviewed the manuscript. We accessed, with permission, a social media group for patients with anosmia to help ensure that we address recurring themes in their posts. With the guidance of patients, we have expanded focus on the initial encounter between doctor and patient, with specific guidance on when to investigate and offer treatment, and the likely prognosis for patients with loss of sense of smell associated with covid-19.

Provenance and peer review: commissioned; externally peer reviewed

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