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Review Article

Loss of Smell is a Big Loss

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Abstract

Olfaction is the sense of smell. Olfaction, along with taste, is a form of chemoreception. This sense is mediated by specialized sensory cells of the nasal mucosa, the main olfactory system detects volatile chemicals, which are present in the surroundings. The chemicals which activate the olfactory system, are called odorants. Odorants must be volatile to reach nose, must be water-soluble to penetrate mucus must be lipid-soluble to bind to receptors. The sense of smell is very vital to our everyday existence it determines flavor of foods and beverages and has significant role in nutrition safety and in the maintenance of quality of life but often downplayed as most people think that it is sufficient to know that they smell with their noses and are not concerned with the intricate details but this is a serious mistake to make because occasionally the loss of smell is the first sign of other disorders Anosmia may be a marker for certain conditions and diseases and many different conditions can lead to anosmia. Smell is essential elements of everyone's life, and it is not possible to ignore the details of such a great blessing. It can also be an early sign of hazardous health problems. Roughly two percent of people say that they have a smell disorder. People who have smell loss either have a loss in their ability to smell or have changes in the way they perceive odors. Anosmia is the total inability to detect odors at all. Hyposmia is a reduced ability to detect odors. Partial Anosmia is the inability to smell few odorants Specific Anosmia is the lack of ability to smell one or a few particular odorants Hyperosmia is abnormally acute smell function and often interpreted as hypersensitivity to odors Dysosmia is distorted or perverted smell perception Smell disorders have many causes, with some more obvious than others. Usually people who develop a smell disorder have a recent injury or illness. Sometime people notice that odors are distorted or that something that normally smells pleasant now smells foul. Some people may sense an odor that is not there at all.

Discussion

Everyone has lasting and permanent memories of smells. The very imagination of good smell will bring to mind the delight of the roses, the jasmine, lavender and other flowers, the bewitching scents of favorite perfumes, the fabulous smells of assorted spices, the rich aromas of fresh fried bread ,the tea, the coffee or the smell of meat sizzling on a barbecue, or the fragrance in your favorite Cologne . Just mere thinking about some of them for a moment is enough to awaken a sense of excitement. No doubt, each and every one of these delights is an incomparable blessing noteworthy. Our sense of smell helps us enjoy life. We delight in the aromas of our favorite foods or the fragrance of flowers. We think that we smell with our noses, but this is a little like saying that we hear with our ear lobes [1]. Our sense of smell is also a warning system, alerting us to danger signals such as a gas leak, spoiled food, or a fire. Any loss of our sense of smell can have a negative effect on our quality of life. Problems with smell increase as people get older, and they are more common in men than women. Many people who have smell disorders also notice problems with their sense of taste .It is amazing to see how does our sense of smell works, sense of smell is one of the most primitive of our senses which is dependent on olfactory cells located within olfactory epithelium high in the roof of the nasal cavity.

Olfactory pathway

Olfactory cell-Olfactory bulb-Olfactory tract (mitral cell axons)-Medial and lateral olfactory areas-Limbic system-Hypothalamus-Thalamus (indirect)-Brain stem nuclei -Cortex (The olfactory cortex) Olfactory bulbs have direct connections with the limbic system and its centers for emotions and memory that is the reason you remember all the pleasant aromas you have ever smelled over the course of your life. Olfactory sensory neurons-as well as sensory cells that help us taste-are the only sensory cells that our bodies regularly replace. Scientists are exploring why and how this happens so that they might find ways to replace other damaged sensory and nerve cells. The organ of smell is the olfactory

epithelium which has olfactory receptors. Olfactory receptor cells are bipolar neurons with radiating olfactory cilia, chemicals must be dissolved in mucus for detection Impulses are transmitted via the olfactory nerve Interpretation of smells is made in the cortex. Sense of smell is like sense of taste both are part of our chemosensory system, or the chemical senses. Olfactory sensory neurons are found in a small patch of tissue high inside the nose, these cells connect directly to the brain. Each olfactory neuron expresses one odor receptor. Microscopic molecules released by substances around us whether it's coffee brewing or a garden full of flowers stimulate these receptors. When the neurons detect the molecules, they send messages to our brain, which in turn identifies the smell. Since there are more smells in the environment than there are receptors, a given molecule may stimulate a combination of receptors. This response is then registered by the brain as a particular smell. The small scent molecules that form the basis of aromas come in different shapes and sizes [2]. For new scent particles to reach the receptors in the nose, the old molecules need to be disposed of, or it will be impossible to detect the smell of the second flower after smelling the first., Such an eventuality could have unwelcome consequences, but it is prevented by certain enzymes within the mucus [3].

The mucus layer covering the olfactory region is about 0.06 millimeter (0.023 of an inch) thick [4]. Scent receptors are actually nerve cells whose main function is to carry to the olfactory bulb the messages triggered by scent molecules, Views in the scientific world differ as to their numbers. Some researchers put the figure at 10 million, and others at around 50 million [5]. Smell reaches the olfactory sensory neurons through two pathways. The first pathway is through our nostrils. The second pathway is through a channel that connects the roof of the throat region to the nose that is why while chewing food, aromas are released that access the olfactory sensory neurons through this channel. If the channel is blocked, as in case of stuffed nose from a cold or flu, odors cannot reach the sensory cells and much of our ability to enjoy a food's flavor is lost. This is how our senses of smell and taste work closely together thus enabling us to distinguish familiar flavors. Many people going to the doctor thinking they have lost their sense of taste are surprised to learn that they have a smell disorder.

Common causes of smell disorders

Several popular cold remedies could result in the loss of smell. Like our sense of taste, our sense of smell can be damaged by certain medicines. Medications, especially those prescribed for allergies can cause smell loss there are a number of known etiologies, for olfactory disturbance. The majority of cases of presumably permanent chronic anosmia or hyposmia are due to prior upper respiratory infections, head trauma and nasal and paranasal sinus disease. Sinus and other upper respiratory infections. Polyps in the nasal cavities Frontal head injuries. Hormonal disturbances. Exposure to certain chemicals, such as insecticides and also dental problems. Many medications, including common antibiotics and antihistamines Radiation associated with the treatment of head and neck cancers, health issues that are related to the nervous system, such as Parkinson's disease or Alzheimer's disease. Off course aging and Smoking are paramount factors and can cause damage to the olfactory neuroepithelium. Despite extensive evaluations, a substantial proportion remains idiopathic. Loss of smell can be subdivided into two types:

1) Conductive or transport impairments from obstruction of the nasal passages (for example, chronic nasal inflammation, polyposis etc.

2) Sensorineural impairment from damage to the olfactory neuroepithelium, central tracts and connections (for example, viruses, airborne toxins, tumors, seizures etc.

Many times, it is difficult to classify an olfactory disorder into one of these classes, because both blockage of airflow to the receptors and damage to the receptors of the olfactory neuroepithelium may be present. In case of chronic rhinosinusitis, both damage to the olfactory membrane in addition to blocking airflow results in degeneration within the olfactory bulb, a central structure. A clear distinction between a complaint of taste loss secondary to lack of flavor due to olfactory loss and true taste loss (i.e. sweet. sour, bitter and salty sensation) must be ascertained. Quantitative assessment of dysfunction is critical to determine validity of the patient's complaint, the degree of dysfunction, establishing treatment efficacy and determining prognosis.

The smell loss can be worked up, diagnosed and treated

Proper diagnosis is important. Diagnosis may lead to an effective treatment of the underlying cause of the smell disorder. It is Important to distinguish between ansomia and hyposmia and also whether the loss of smell is in one or the other nasal chamber and whether the dysfunction is for all odorants or for few smells only, it is important to take into account the timetable of loss that is whether associated with the events such as viral or bacterial infections and head trauma. Head injuries resulting in skull fracture damaging cribriform plate effects the olfactory nerves, other factors to be considered are history of radiation therapy inhalation of toxic fumes, nasal infections that affect olfactory receptors, neurodegenerative diseases such as Parkinson's disease and Alzheimer's and signs of early dementia. Disorders like sinusitis, allergic rhinitis, hypothyroidism all such underlying but recognized set of causes should be explored and should be treated and finally cessation of smoking can result in improvement in smell loss Topical nasal steroids are often ineffectual in returning smell function because the steroid fails to reach the affected regions in the upper nasal passages. Increased efficacy occurs when the nasal drops or spray are administered in the head -down and forwards position. When a bacterial infection is suspected (for example, infectious rhinosinusitis), a course of antibiotics should be used, some tests are designed to measure the smallest amount of odor that patients can detect. Common test consists of specific odors. Patients are asked to identify the odors. However, evaluation of smell disorder should consist, physical examination of ears, nose, and throat; a thorough health history, such as exposure to toxic chemicals, trauma and Head injury.

Conclusion

Certain types of smell disorders are curable by addressing the underlying cause of a potential smell disorder. If problem is caused by certain medications, to see if lowering the dosage or changing that medicine may reduce its effect on sense of smell. Surgery to remove nasal obstructions such as polyps can restore airflow. Occasionally, people recover their ability to smell when the illness causing their olfactory problem is resolved. At times a person may spontaneously recover his or her sense of smell. Antibiotics should not be given unless indication of bacterial involvement is present, as some adversely influence smell function. Most reported pharmacological treatments for smell disturbances, including zinc, vitamin A, are not effective unless frank deficiencies are present. A short course of systemic steroids can be used to determine whether smell loss is due to transport problems or neural damage to the receptors.

Research is tireless

Scientists are trying to understand more and more the olfactory system, and this may lead to new treatments for smell disorders. The most recent research into our sense of smell is also the most exciting discovery of a family of olfactory receptor genes that encode the receptors found on olfactory sensory neurons-one receptor per neuron. Recent studies on how olfactory sensory neurons recognize odors, aided by new technology, are revealing how our olfactory system detects and identifies the differences between the many chemical compounds that form odors. Scientists are working to find out why this is so in an effort to develop drugs that can help restore a person's sense of smell. Scientists are exploring how to promote the regeneration of sensory and nerve cells and to understand the effects of the environment and prevent the effects of aging on smell and taste and to improve treatment methods and rehabilitation strategies.

Acknowledgement

None.

Conflict of Interest

No conflict of interest.

References

1. Maya Pines (2001) Finding the Odorant Receptors. Howard Hughes Medical Institute, Maryland, US.
2. Heinz Breer (1999) Olfaction Encyclopedia of Life Sciences.
3. A Chess, I Simon, H Cedar, R Axel (1994) Allelic inactivation regulates olfactory receptor gene expression. Cell 78: 823-834.
4. John C Leffingwell (2000) Op cit.
5. John C Leffingwell (2001) Olfaction.