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FRONTAL LOBE TUMOR PRESENTING AS ISOLATED PHANTOSMIA - A RARE CASE REPORT

[1]*Dr. Seema Singh Parmar and [2]Dr. Shweta Chauhan

[1]*Assistant Professor, Department of Psychiatry, Teerthanker Mahaveer Medical College & Research Centre, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh.
[2]Post-Graduate Student, Department of Psychiatry, Teerthanker Mahaveer Medical College & Research Centre, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh.

*** Corresponding Author: Dr. Seema Singh Parmar**
Assistant Professor, Department of Psychiatry, Teerthanker Mahaveer Medical College & Research Centre, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh.

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ABSTRACT
A 40 year old male presented with episodes of olfactory hallucinations (specifically the smell of roses) for the past 20 days. He also complained of decreased sleep for the same duration. He gave the history of fever 1 month ago along with upper respiratory tract infection lasting for a week following which his hallucinations started. There was no history of traumatic brain injury or previous neurological or psychiatric illness. On examination, he showed no signs suggestive of substance abuse and his face was symmetrical. A cerebral contrast Magnetic Resonance Imaging was advised for the patient, which revealed an irregular cystic lesion in the right frontal lobe measuring 51mm × 46mm × 36mm causing a midline shift of 6mm to the left. On magnetic resonance (MR) spectroscopy reduced levels of N-acetyl aspartate (NAA) were seen along with markedly elevated Choline level leading to reversal of Hunter's angle.

KEYWORDS: Phantosmia, Olfactory Hallucinations, Frontal Lobe Tumor, Magnetic Resonance Spectroscopy, Glioma.

INTRODUCTION
Olfactory hallucinations, also known as Phantosmia, are defined as the perception of smell in the complete absence of any physical odor. The perceived smell can range from obnoxious or putrid to pleasant, but the incidence of unpleasant odors is much greater.[1] Phantosmia can be unirhinal or birhinal. Olfactory hallucinations can be due to central or peripheral causes. Peripheral causes include dysfunction of the sensory olfactory neurons located below the cribriform plate. Central causes can either be neurological or psychiatric. Olfactory auras can be seen in temporal lobe epilepsy and migraines. Space occupying lesions, especially those involving the temporal lobe can also cause olfactory hallucinations. Recent studies indicate that olfactory hallucinations occur before the onset of motor deficits in Parkinson's disease.[2,3] Olfactory hallucinations without associated motor activity are seen in psychiatric conditions such as Schizophrenia[4-6], major depressive illness[7], eating disorders[8] and hypochondriasis.[9] Other organic causes include intracerebral hemorrhage, head trauma, upper respiratory tract infections, allergic and chronic rhinitis.[10-11] Frontal lobe tumors generally present with personality changes, expressive aphasia, seizures and diminished executive functioning.[12] Here we present a case where a male with a right frontal lobe glioma presented with isolated olfactory hallucinations.

CASE REPORT
A 40 year old, right handed male came to the hospital with recurrent episodes of olfactory hallucinations for the past 20 days. The olfactory hallucinations were always of the smell of flowers, most commonly roses. The hallucinations were sudden in onset and would occur at any time during the day or at night. The episodes lasted only for a few seconds and were relieved after the patient drank water. There were no associated automatisms with the hallucinations. The episodes started with a frequency of 1-2 episodes per day but now there were multiple episodes in a single day with an average of 4-5 episodes per day. According to the patient he tries to control these perceived smells but is unable to do so. While the patient perceives these smells he is awake and aware of his surroundings and responds to his name being called out. He said that he is aware that his experiences are abnormal because every time he tries to find flowers around him to locate the source of the smell perceived by him, but he is not able to do so.

He had no history of head trauma, previous neurological or psychiatric illness and showed no signs of substance

abuse. He had history of low grade fever along with upper respiratory tract infection 1 month ago for which he was referred to the ENT department where he was told that there is no active infection in his upper respiratory tract.

Neurological examination of the patient revealed no abnormalities. His face was symmetrical and there were no motor deficits. His reflexes were normal and symmetrical on both the sides and all his cranial nerves were intact and showed no abnormalities. His MMSE (Mini Mental State Examination) score was 26.

An EEG (Electro-Encephalo-Gram) was done for the patient and the result was a normal awake EEG study with no icteric activity. Patient's MR (Magnetic Resonance) Imaging revealed an irregular cystic lesion with mild heterogeneously enhancing component at the lateral periphery in the Right Frontal lobe measuring 51mm × 46mm × 36mm (AP × TR × CC). Small foci of SWI (Susceptibility weighted imaging) blooming was seen. No restriction of diffusion was seen. There was mild surrounding edema. Mass effect was seen as compression of right lateral ventricle and midline shift of 6mm to the left (Fig.1A&B).

On MRS (Magnetic Resonance Spectroscopy), reduced levels of NAA (N-acetyl aspartate) were seen with markedly elevated Choline levels leading to reversal of "Hunter's angle". Choline: NAA ratio of up to 3.2 and Choline: Creatinine ratio up to 3.3 was obtained.

All other cerebral, cerebellar and brainstem structures along with cisterns, ventricles and bones were normal in signal intensity. These MRI findings are suggestive of a Right Frontal lobe lesion – most likely an intermediate Glioma.

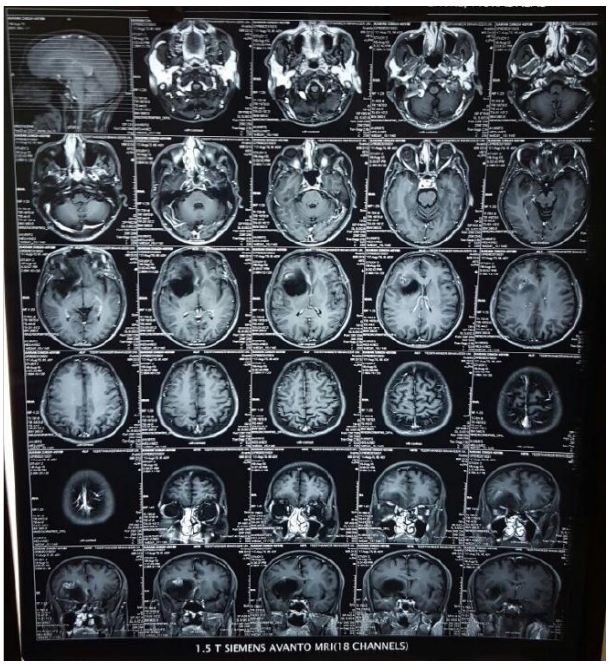

Fig.1A

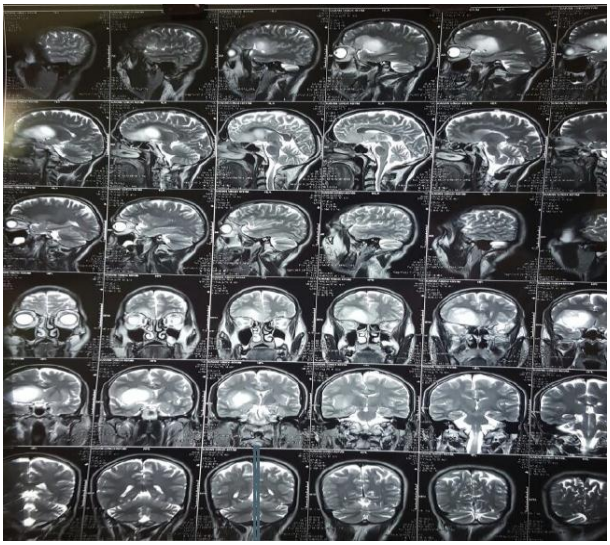

Fig.1B

DISCUSSION

Jaspers defined hallucinations as 'a false perception which is not a sensory distortion or a misinterpretation, but which occurs at the same time as real perceptions'. Olfactory hallucinations, also called as Phantosmia, are perception of smell in the absence of any odour. As described above many psychiatric as well as neurological conditions can lead to the development of Phantosmia, namely Schizophrenia, Parkinson's disease, Epilepsy and Neuroblastoma. One of the most common causes that has been evaluated regarding Phantosmia is Temporal Lobe Epilepsy, where it commonly occurs as a part of the 'aura' preceding the epileptic attack which is generally tonic-clonic in nature. Isolated olfactory seizures have also been reported with varied prevalence rates in various studies.

Most olfactory auras were reported as unpleasant smells like a rotten odor[13], but some were pleasant like flowers, perfumes, and fried meat.[14] Here we describe a patient who presented characteristically with the sensation of smelling roses. While mostly olfactory disturbances have been commonly associated with Temporal lobe pathologies, this patient was found to have and intermediate grade Glioma involving the frontal lobe and no localizing signs were noted on examination. Hence prompt imaging and further pathological investigation assumes more importance in such cases.

CONCLUSION

Common presentation of frontal lobe tumours include changes in personality like social disinhibition and difficulty in controlling emotions but the rare presentation of this case warrants a thorough follow up of patients presenting at a later age and with unexpected symptomatology.

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