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CASE REPORT

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Short duration phantosmia changes in a post-COVID-19 patient in Bangladesh

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Abstract

Phantosmia is a condition in perceived odors that do not exist. Given the high outlook and swift recovery of COVID-19-induced olfactory dysfunction, the emphasis should be on patients presenting with a poor prognosis who might receive from early management to avoid sequelae such as olfactory dysfunction-related phantosmia.

KEYWORDS

Bangladesh, COVID-19, olfactory hallucinations, phantosmia, smell sensation

1 | INTRODUCTION

SARS-CoV-2 infection and COVID-19 disease have been linked to various olfactory disorders, especially anosmia, phantosmia, and dysgeusia.[1–4] Phantosmia is a subjective olfactory disorder defined as perception without activating odor. In the literature, olfactory hallucinations were linked to migraine headaches, endoscopic skull base surgery, intracranial tumors, brain radiation treatment, and head injuries.[5] The smell is generally only noticeable for a few minutes the first time it is experienced, and it almost always appears out of nowhere.[6] Among the first signs of COVID-19 disease is olfactory impairment, manifest as hyposmia, anosmia, or a sudden loss of smell.[7] However, there has never been a report of COVID-19-related phantosmia or olfactory hallucination in Bangladesh. COVID-19 patients who had olfactory hallucinations are reported in this paper.

2 | CASE REPORT

A 32-year-old male physician complained of constantly "smelling onions and garlic" after his 1 week of COVID-19 diagnosis. On December 7, 2021, the patient developed a low-grade fever, seemed weak, and fatigued and was diagnosed with COVID-19 on December 9, 2021. He had his first dose of COVID-19 vaccination (Moderna) on July 19, 2021, and his second on August 18, 2021. The patient stated that the mysterious odor perception persisted till

December 20, 2021. Even though the food was not made with onion or garlic, the patient smelled onion and garlic odors. He also detects these scents in fruits. The patient had difficulties eating due to nausea caused by an overabundance of onion and garlic odors, impacting his quality of life.

While eating, the patient inquired if the mysterious odors could be detected by anyone nearby, but all other family members denied any onion or garlic odors. He denied having taste disturbances, nasal congestion, a runny nose, or post-nasal discharge, and he never had a sinus infection. Physical examination and the cranial nerves II–Xll were regular on physiological parameters, with no facial weakness or asymmetry. The motor examinations of the upper and lower extremities were regular. WBC 7.44 × 109/L, Hgb 14.6 g/dl, hematocrit 45.0 percent, and platelet count 272 × 109/L were unremarkable in the clinical laboratory.

Furthermore, the patient had never previously experienced phantosmia—any history of chronic disease, chronic drug use, maxillofacial trauma, or surgery. He also had a pungent stench for the entire 24-h period, and he had no smoking or fragrance habits; thus, there was no olfactory perception misperception due to the perfumes surrounding him. On December 21, 2021, while eating an egg and banana breakfast, the patient observed that the onion and garlic odors had vanished. Since then, he has not been getting the unpleasant onion and garlic flavors in everything he eats. He does not take any drugs for his phantosmia, such as carbamazepine, and it disappears within a few days. Because the strange odor dissipated quickly, he decided not to get a CT scan or MRI of the brain.

3 | DISCUSSION

Phantosmia is an olfactory sensation that occurs when there is no odor source. These phantom odors can be strong or weak, familiar or unfamiliar, and anyone in the immediate vicinity. Phantosmia was defined as a qualitative disruption of smell function, and it was not observed in Bangladesh during the COVID-19 pandemic. Persistent rhinosinusitis, craniofacial injury, cerebrovascular disease, seizure disorders, psychological symptoms, brain radiotherapy, neurologic disorders, iatrogenic causes, and neurologic and neurodegenerative disorders are the causes of phantosmia. This specific symptom's conductive or sensorineural underlying mechanism is still unknown.[8] In patients with olfactory disorders, phantosmia has been observed to occur up to 25% of the population, and the incidence is higher in the elderly than in the younger population.[9] However, in our situation, the patient was a young one. COVID-19 patients, on the other hand, frequently report a lack of taste or smell without nasal congestion or discharge.[10,11] It was clear that late-onset symptoms such as qualitative alterations (phantosmia) can develop. In some situations, phantosmia developed after months of no other symptoms.[11] In a population-based survey, Sjolund et al.[12] found that phantom odors were encountered fewer than once a month (54%) and that the most commonly reported phantom smell was smokey or burnt (46%). The odors of onion and garlic were present in our case, which was unusual.

SARS-CoV-2 involves the spike protein found in the angiotensin-converting enzyme (ACE)-2 protein to attach to a membrane receptor complex and host proteolytic activities such as host proteases TMPRSS2 to invade cells.[13,14] ACE-2 is not generated by olfactory nerve cells or olfactory epithelium mitral cells, according to the recent single-cell RNA-sequencing and immunostaining investigations. However, it is represented substantially by other supporting cells in the olfactory mucosa, such as sustentacular and microvillar cells.[13,15] The olfactory disorder has also been linked to viral illness of vascular pericytes (which express ACE-2) or immunologically vascular destruction in the olfactory epithelium and olfactory bulb; indeed, magnetic resonance microscopy research discovered microvascular injury in the olfactory bulbs of COVID-19 patients.[16]

In SARS-CoV-2-positive patients in Europe and America, smell and taste impairment prevalence range from 18.6% to 90%.[17,18] One sub-group study discovered that Chinese and Bangladeshi participants were more likely than other South East Asian ethnicities to have olfactory and taste dysfunction (OTD).[19] Unfortunately, treating these disorders is challenging. The use of systemic and local glucocorticoids,[20] as well as olfactory therapy[21] and carbamazepine,[5] is beneficial. However, no data on the efficacy of these strategies in post-COVID-19 STD are currently available. However, existing evidence does not support the usual prescription of systemic corticosteroids in this circumstance due to safety concerns.

Limitation, there was no endoscopy or rhinoscopy to examine the nasal cavity and evaluate for disorders that could explain phantosmia. Imaging techniques, such as computed tomography, magnetic resonance imaging (MRI), and electroencephalogram (EEG) scans, were used to search for problems in the nasal cavity, brain, or nervous system, which were also not performed.

Although phantosmia or olfactory hallucinations have not previously been linked to COVID-19 disease commonly, the onset of phantosmia due to olfactory impairment is a known occurrence. Albeit the pathogenic cause is unknown, phantosmia occurred following infection

with COVID-19 and subsided after the disease was resolved. Despite the small duration of follow-up, this case report revealed the presence of a novel, unique.

4 | CONCLUSION

The pathogenesis of phantosmia could be related to an inflammatory response to the viral S antigen mediated by the ACE-2 CoV-2-specific receptor and the S protein protease TMPRSS2. Comprehension of SARS-CoV-2, ACE-2, and S protein protease TMPRSS2 connections, as well as SARS-CoV-2 etiology,[22] may be improved by being aware of this probable post-COVID-19 phantosmia. Clinical assessment of abnormalities in chemical senses during COVID-19 could be difficult. Phantosmia was unnoticed for a long time since the symptoms were vague. The diagnosis is overlooked since it is based only on the patient's history.

Finally, COVID-19-induced phantosmia can last for a short time or a long time. Furthermore, these qualitative changes in scent can take months to appear after full recovery from COVID-19-induced quantitative losses in smell. To investigate these phenomena, further prospective research with larger cohorts is required.

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CONFLICT OF INTEREST
The authors declare that they have no competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

AUTHOR CONTRIBUTIONS
The article's first draft was written by MAA and MDH. MAA, SN, MFKR, and JF contributed to the literature review and manuscript preparation. All authors contributed to the final version by critically reviewing and editing drafts.

ETHICAL APPROVAL
The article is about a case study. As a result, our ethics committee's consent was not required.

CONSENT
The patient's written informed consent for the publication of this case report, as well as images, was acquired.

DATA AVAILABILITY STATEMENT
Data of this article is available with the corresponding author and first author.

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