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Halitosis: A newly described COVID-19 presentation?

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Abstract

After one year, world is still struggled with COVID-19 pandemic. COVID-19 is a strange viral infection which presents in different aspects and nearly can involve every system in human body. Both its direct and indirect effects make people in trouble, even in the presence of good adherence to health precautions. Recently, there is an attention to developing halitosis (bad breath) among infected patients, which could be due to COVID-19 consequences per se. Here we report a case of COVID-related halitosis who got rid of her bad breath spontaneously following recovery from COVID-19. Generally, during COVID-19 pandemic, oral hygiene must be rigorously taken into account.

Keywords: COVID-19; Halitosis; Oral hygiene

1. Introduction

At the beginning of COVID-19 pandemic, clinician thought oral involvement is not a COVID-19 presentation. However, recently SARS-CoV-2 has been isolated from saliva of infected patients and was determined reverse transcriptase-polymerase chain reaction (RT-PCR) test from saliva even could be a more sensitive than nasopharyngeal sampling. Furthermore, angiotensin-converting enzyme 2 receptors has been found in oral mucosa, especially with more density on dorsum of tongue and salivary glands. (relative should be deleted)

Halitosis is a bad breathing condition due to respiratory, otolaryngologic or gastrointestinal pathologies that may alter salivary characteristics and tongue dorsum susceptibility for hosting anaerobic microorganisms. (1) Halitosis requires a multidisciplinary approach for its diagnosis, assessment and treatment. It has been greatly challenged by the outbreak COVID-19.

A 45- year-old female patient presented to our clinic with chief complaint of bad breath and dry cough since 14 and 6 days ago, respectively. She was mildly obese but had not any significant medical history except than mitral prolapse, that is why she was on regular dose of propranolol (40 mg per day) and occasional use of frusemide (40 mg per day) for lower limbs positional edema. She was adherent to health precautions and always used surgical mask she had visited in a dentistry clinic and dentist examination report was unremarkable. Also, she underwent upper GI endoscopy, X-rays of lungs and paranasal sinuses. Because of reporting of positive Helicobacter pylori, she had received a course of Metronidazole, Clarithromycin and Pantoprazole. However, even after eradication treatment, still she was struggling with bad breath and she was visited once by psychiatrist and also underwent ear irrigation with no benefit. On examination, she was well, afebrile, and only complained about dry cough and continuous bad breath. On chest examination, bilateral fine crackles auscultated and oxygen saturation was 96% while breathing room air. In newly requested chest X-ray, bilateral mild infiltrations in lower zone detected and SARS-coV-2 PCR test requested which subsequently came positive. She was advised to take rest at home and follow national quarantine rules for 14 days. In

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addition, we recommended her to stop her diuretic medication. On follow-up visit after 15 days, she had not any complaint about bad breath and lower limbs edema as well.

There are some suggested theories regarding COVID-19-related halitosis. The first one is the alterations of the tongue dorsum by SARS-CoV-2 due to high density of angiotensin-converting enzyme 2 receptors. (2) Watanabe et al. found that halitosis was strongly associated with epithelial alterations of desquamated keratinized tongue mucosa. (3) second hypothesis proposed by Dziedzic et al. explains that acute infections of COVID-19 can cause xerostomia through decreased salivary flow, thus mediating greater occurrence of halitosis. (4) The third theory is impact of bacterial co-infection on COVID-19 patients may have a role in modulating the oral environment to favor the proliferation of species comprising the halitosis-associated microbiota and broader periodontopathic gram-negative bacteria. (5) Patel et al. reported a 35-year-old female presented with severe halitosis adjacent to necrotizing gingivitis. (6) In addition, drugs which were prescribed to COVID-19 patients also can cause halitosis as an adverse effect. (7,8) In our case, both metronidazole and frusemide can cause halitosis. Furthermore, masking may cause mouth breathing yielding xerostomia and halitosis that patient will be vulnerable to developing xerostomia and halitosis. (9) Finally, the over-attention of the people towards their mouth odor due to their new habit of wearing face masks thus indicating that halitosis was previously underdiagnosed. (10) it could be complicated with cities lockdown which can restrict access to oral hygiene services during COVID-19 crisis. (11)

There are a few case reports regarding COVID-19- related halitosis. (1) Riad et al. reported demographic, clinical and laboratory characteristics of eighteen patients (mean age was 35 years and 14 of them were female) with confirmed COVID-19 without any relevant medical history, who experienced new-onset halitosis during their course of infection. (9)

2. Conclusion

Halitosis is a newly described presentation of COVID-19 with various proposed pathophysiology mechanisms. The most important issue is to remember COVID-19 as new cause of halitosis besides well-known etiologies which are routinely investigated.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare no conflicting interests.

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