Review

Elaborating clinical characteristics of COVID-19 by focusing on the symptoms concerning otolaryngologists

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ABSTRACT

Novel coronavirus disease (COVID-19) has spread rapidly worldwide and penetrated most of the countries in a short time period, affecting millions of individuals. Otolaryngologists are on the frontlines of this pandemic. In this review, we discuss clinical symptoms concerning the ear, nose and throat (ENT) field. There are various clinical presentations of COVID-19 ranging from asymptomatic or mild disease to severe disease, causing pneumonia, multi-organ dysfunction, and death. Fever, cough, and fatigue are the most common symptoms of the disease. Dysfunctions in smell and taste have been also frequently reported. Questioning individuals for these dysfunctions may be a part of routine examination procedures of COVID-19 in the imminent future. In addition, unusual presentations have been reported from many countries. What is crucial about these rare presentations is that otolaryngologists must always be vigilant for a possible COVID-19 diagnosis in patients admitted even with classical ENT complaints to prevent exposure of the unprotected healthcare providers and delay in diagnosis. The role of otolaryngologists in diagnosing and managing COVID-19 patients is of utmost importance, considering the clinical scene built by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Most of the symptoms observed in COVID-19 are frequent reasons for applying to ENT clinics during daily routine, putting them under risk of catching the virus. Therefore, otolaryngologists must be fully equipped with protection and be alert for suspecting the novel disease during the pandemic era.

Keywords: Anosmia, coronavirus, COVID-19, dysgeusia, ear, nose and throat.

Novel coronavirus disease 2019 (COVID-19), also known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spread rapidly worldwide, since the first confirmed case in Wuhan of Hubei Province, China in late December, and was declared as a pandemic by the World Health Organization (WHO) on March 11th, 2020. According to the WHO data, there are 2,719,897 confirmed cases, including 187,705 deaths globally and 104,912 confirmed cases with 2,600 deaths in Turkey as of April 24th, 2020.[1] Otolaryngologists are on the frontlines of this pandemic. In this review, we discuss clinical symptoms concerning the ear, nose and throat (ENT) field in the light of current literature data.

Clinical manifestations of COVID-19 may vary ranging from asymptomatic or mild disease to severe disease, causing pneumonia, multi-organ dysfunction, and death. The rate of asymptomatic patients differs according to data collected from different countries; however, the numbers procured from the Diamond Princess cruise ship event gave us a reliable ratio. After a passenger departed from the ship

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and was diagnosed with COVID-19, the rest of the passengers and the crew were quarantined and, thus, unintentionally a reasonable cohort was created. Mizumato et al.[2] calculated the numbers acquired from this cohort and the rate of asymptomatic patients was 17.9%, considering the variation in incubation period between 5.5 and 9.5 days. In addition, it may be challenging to distinguish COVID-19 infection from other respiratory tract infections as presenting symptoms are non-specific. In a meta-analysis including 3,062 COVID-19 patients and 38 studies all conducted in China, 11.9% of patients were asymptomatic.[3] Fever was the most common symptom (73.0 to 86.9%), followed by cough (57.9 to 68.2%), fatigue (38.2 to 54%), expectoration (33.9 to 50%), anorexia (38.8%), chest tightness (35.7%), dyspnea (33.9%), and pharyngalgia (13.1%). In another meta-analysis including 59,254 patients and 60 studies from 11 countries, the results were similar and fever (82%), cough (61%), muscle aches and/or fatigue (36%), and dyspnea (26%) were the most common symptoms.[4] Chills without fever and headache may also occur. Compared to other upper respiratory tract infections such as common cold, bacterial tonsillitis and acute sinusitis, nasal congestion (4.8%), rhinorrhea (4%), swollen tonsils and enlarged lymph nodes which an otolaryngologist encounters often in daily practice seem to be rare in COVID-19 patients.[5-7] Allergy symptoms in addition to nasal congestion and discharge such as sneeze, itchy nose, and epiphora are also rarely seen in COVID-19 patients, making it hypothetically easier to differentiate from allergic rhinitis.

Pediatric patients account for a significant part of the patient population frequently admitted to otolaryngology clinics. The variety and severity of symptoms in pediatric patients differ slightly from adults. A review of 72,314 cases by the Chinese Center for Disease Control and Prevention revealed that less than 1% of the cases were children aged 10 years or younger.[8] In a recent study on a total number of 171 pediatric patients, 27 (15.8%) were asymptomatic and the most common symptoms were cough (48.5%), pharyngeal erythema (46.2%), and fever (41.5%).[9] Pediatric patients appear to have relatively less severe symptoms compared to adults, while a higher number of pediatric patients remain asymptomatic.[9,10] An otolaryngologist must be, therefore, aware of a possible COVID-19 infection while examining pediatric patients, even if they are asymptomatic, to make the right diagnosis, to protect themselves from infection, and to prevent further spread of infection.

Recently, many case reports and studies have emerged stating that olfactory dysfunction with or without gustatory dysfunction is a frequent symptom associated with COVID-19. Alterations in the sense of smell and taste were previously reported following upper respiratory tract infections in the literature.[11,12] Suzuki et al.[12] detected reported rhinovirus, parainfluenza, Epstein-Barr virus, and also coronavirus in nasal discharge of patients with post-viral olfactory dysfunction in 2008.[12] Epithelial cell damage and cranial nerve involvement are thought to be probable causes of these symptoms, although its exact pathogenesis has not been fully understood, yet.

In a study conducted with a total number of 1,702 patients, 579 had positive and 1,123 had negative test results as confirmed by the reverse transcriptase-polymerase chain reaction (RT-PCR) for SARS-CoV-2. Olfactory and gustatory dysfunctions were present in 59% of COVID-19-positive group and in 18% of those with a negative test result.[13] In a European multi-center study with 417 COVID-19 patients, 85.6% and 88% of patients reported olfactory (79.6% anosmic, 20.4% hyposmic) and gustatory dysfunctions, respectively.[14] Olfactory dysfunction was the first symptom in 11.8% of the cases. Preliminary results of an ongoing study conducted in the COVID-19 inpatient unit of our clinic also showed olfactory dysfunction in 25 to 30% and gustatory dysfunction in 30 to 35% of 108 patients inquired about their symptoms related to COVID-19. However, the final results are to be reported soon. Olfactory dysfunction appears to be more common in the absence of nasal symptoms including nasal congestion and rhinorrhea in COVID-19 patients,[13,14] thereby, suggesting us a mechanism related to nerve involvement behind the pathogenesis of this dysfunction.

A study from Milan and some other authors reported that olfactory dysfunctions with or without gustatory dysfunctions were more likely to manifest either in the early period of COVID-19 or in patients with mild or no constitutional symptoms.[15,16] Due to the paucity of information on the course of these mentioned dysfunctions, it is not yet possible to suggest whether they will fully resolve or when. Our clinical experience shows resolution of these dysfunctions in around 2 to 4 weeks in most of the patients. On the contrary, post-viral anosmia is known to be a long-term or permanent dysfunction.

In guidance of recent studies, the ENT-United Kingdom advises that adults experiencing new-onset anosmia without any other symptoms should self-isolate themselves to prevent possible COVID-19 transmission.[17] Moreover, the American Academy of Otolaryngology-Head and Neck Surgery proposes anosmia, hyposmia, and dysgeusia in the absence of other respiratory diseases and symptoms to be added to the list of screening tools for possible COVID-19.[18]

Many authors have been recently sharing their rare observations on otologic symptoms potentially related to COVID-19. Ye and Xianyang[19] described a case primarily assessed in an ENT clinic applying with otalgia who had no other sign or symptom concerning COVID-19 and was diagnosed with acute otitis media. A week later, the same patient was admitted with COVID-19 pneumonia symptoms and tested positive for SARS-CoV-2. It is early to comment whether the primary symptom was related to the disease; however, the possibility still remains. Sriwijitalai and Wiwanitkit[20] also reported one female patient who had sensorineural hearing loss among 82 COVID-19 patients from Thailand. Apparently, more evidence is needed to determine whether sensorineural hearing loss is associated with novel COVID-19. A few number of patients report vertigo and dizziness together with other characteristic symptoms of the novel disease.[21-23] Wang et al.[23] reported that patients might present with neurological involvement without any other complaint and warned clinicians to be watchful for a possible COVID-19 diagnosis. At this point, it is important to differentiate peripheral and central vertigo, since this group of patients may consult otolaryngology clinics without referral to the emergency or neurology department. It is yet unknown whether there is any involvement of the peripheral vestibular system as part of COVID-19 to interpret vertiginous symptoms. Some other authors have advocated that peripheral facial palsy may be also among rare manifestations of COVID-19. These various neurotologic symptoms constitute an area requiring further research for clarification of their role and relation in the recent pandemic. What is crucial about these rare presentations is that otolaryngologists must be vigilant for a possible COVID-19 diagnosis in patients applying with classical ENT complaints to prevent exposure of unprotected healthcare providers and delay in diagnosis.

In conclusion, considering the clinical scene built by SARS-CoV-2, otolaryngologists play a significant role in diagnosing and managing COVID-19 patients. Most part of the symptoms described above are frequent reasons for applying to ENT clinics during daily routine. Therefore, otolaryngologists must be fully equipped with protection against infection and be alert for suspecting the novel disease during the pandemic era.

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REFERENCES

1. World Health Organization. Coronavirus (COVID-19). Available at: https://covid19.who.int/ [Accession: April 25, 2020]
2. Mizumoto K, Kagaya K, Zarebski A, Chowell G. Estimating the asymptomatic proportion of coronavirus disease 2019 (COVID-19) cases on board the Diamond Princess cruise ship, Yokohama, Japan, 2020. Euro Surveill 2020;25:2000180.
3. Zhu J, Ji P, Pang J, Zhong Z, Li H, He C, et al. Clinical characteristics of 3,062 COVID-19 patients: a meta-analysis. J Med Virol. 2020. [Online ahead of print]
4. Borges do Nascimento IJ, Cacic N, Abdulazeem HM, von Groote TC, Jayarajah U, et al. Novel Coronavirus Infection (COVID-19) in Humans: A Scoping Review and Meta-Analysis. J Clin Med 2020;9:E941.
5. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. N Engl J Med 2020;382:1708-20.

6. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020;395:497-506.
7. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Yet al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet 2020;395:507-13.
8. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. JAMA 2020. [Online ahead of print]
9. Lu X, Zhang L, Du H, Zhang J, Li YY, Qu J, et al. SARS-CoV-2 Infection in Children. N Engl J Med 2020;382:1663-5.
10. Dong Y, Mo X, Hu Y, Qi X, Jiang F, Jiang Z, et al. Epidemiology of COVID-19 Among Children in China. Pediatrics 2020:e20200702.
11. Welge-Lüssen A. Re-establishment of olfactory and taste functions. GMS Curr Top Otorhinolaryngol Head Neck Surg 2005;4:Doc06.
12. Suzuki M, Saito K, Min WP, Vladau C, Toida K, Itoh H, et al. Identification of viruses in patients with postviral olfactory dysfunction. Laryngoscope 2007;117:272-7.
13. Menni C, Valdes A, Freydin MB, Ganesh S, El-Sayed Moustafa J, Visconti A, et al. Loss of smell and taste in combination with other symptoms is a strong predictor of COVID-19 infection. medRxiv 2020.04.05.20048421.
14. Lechien JR, Chiesa-Estomba CM, De Siati DR, Horoi M, Le Bon SD, Rodriguez A, et al. Olfactory and gustatory dysfunctions as a clinical presentation of mild-to-moderate forms of the coronavirus disease (COVID-19): a multicenter European study. Eur Arch Otorhinolaryngol 2020:1-11.
15. Giacomelli A, Pezzati L, Conti F, Bernacchia D, Siano M, Oreni L, et al. Self-reported olfactory and taste disorders in SARS-CoV-2 patients: a cross-sectional study. Clin Infect Dis 2020:ciaa330. [Online ahead of print]
16. Xydakis MS, Dehgani-Mobaraki P, Holbrook EH, Geisthoff UW, Bauer C, Hautefort C, et al. Smell and taste dysfunction in patients with COVID-19. Lancet Infect Dis 2020. [Online ahead of print]
17. Hopkins C, Kumar BN. Anosmia as a potential marker of COVID-19 infection - an update. Available at: https://www.entuk.org/anosmia-potential-marker-covid-19-infection-%E2%80%93-update. [Accession: April 26, 2020]
18. American Academy of Otolaryngology - Head and Neck Surgery. AAO-HNS: Anosmia, hyposmia, and dysgeusia symptoms of coronavirus disease. Available at: https://www.entnet.org/content/aao-hns-anosmia-hyposmia-and-dysgeusia-symptoms-coronavirus-disease. [Accession: April 26, 2020]
19. Ye W, Xianyang L. A Novel Coronavirus Pneumonia Case Report From an Ear, Nose, and Throat Clinic. Laryngoscope 2020;130:1106-7.
20. Sriwijitalai W, Wiwanitkit V. Hearing loss and COVID-19: A note. Am J Otolaryngol 2020. [Online ahead of print]
21. Krajewska J, Krajewski W, Zub K, Zatoński T. COVID-19 in otolaryngologist practice: a review of current knowledge. Eur Arch Otorhinolaryngol 2020. [Online ahead of print]
22. Han W, Quan B, Guo Y, Zhang J, Lu Y, Feng G, et al. The course of clinical diagnosis and treatment of a case infected with coronavirus disease 2019. J Med Virol 2020;92:461-3.
23. Wang HY, Li XL, Yan ZR, Sun XP, Han J, Zhang BW. Potential neurological symptoms of COVID-19. Ther Adv Neurol Disord 2020;13:1756286420917830.

