© Pediatr Med Rodz 2022, 18 (4), p. 386–389
DOI: 10.15557/PiMR.2022.0058

Otrzymano: 14.03.2022
Zaakceptowano: 12.07.2022
Opublikowano: 31.03.2023

Najihah Hawari, Jeyasakthy Saniasiaya, Prepageran Narayanan

Wyniki leczenia nowo rozpoznanej dysfonii u pacjentów z COVID-19 w jednym ośrodku o trzecim poziomie referencyjności

Outcome of new-onset dysphonia in COVID-19 patients in a single tertiary centre

Department of Otorhinolaryngology, Faculty of Medicine, Universiti Malaya, 50603 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia
Adres do korespondencji: Jeyasakthy Saniasiaya, Department of Otorhinolaryngology, Faculty of Medicine, Universiti Malaya, 50603 Jalan Universiti, Wilayah Persekutuan Kuala Lumpur, Malaysia, tel.: +6012-6841223, e-mail: shakthy_18@yahoo.com

ORCID iDs
1. Najihah Hawari https://orcid.org/0000-0003-3278-1860
2. Jeyasakthy Saniasiaya https://orcid.org/0000-0003-1974-4379
3. Prepageran Narayanan https://orcid.org/0000-0001-5670-9340

Streszczenie

Wstęp: Od czasu pojawienia się choroby koronawirusowej 2019 (COVID-19), której pierwszy przypadek odnotowano w grudniu 2019 roku, na całym świecie zachorowały miliony osób, z czego 6,86 miliona zmarło. U pacjentów z COVID-19 występuje szereg różnych objawów i chociaż minęły już ponad 2 lata od wybuchu pandemii, pod wieloma względami COVID-19 pozostaje wyzwaniem, zwłaszcza dla systemów opieki zdrowotnej. Do nowych objawów, które mogą towarzyszyć zachorowaniu na COVID-19, należy zaliczyć dysfonię, czyli wielopostaciowe zaburzenie głosu. **Cel pracy:** Przedstawienie wyników leczenia dysfonii u pacjentów chorujących na COVID-19 w jednym ośrodku o trzecim poziomie referencyjności. **Opis przypadku:** W pracy przedstawiamy obraz kliniczny i wyniki leczenia 3 pacjentów z dysfonią w naszym ośrodku. Na tej postawie analizujemy przebieg i efekty leczenia dysfonii o nowym początku w grupie pacjentów z COVID-19. **Wyniki i omówienie:** W badaniu stwierdzono, że pomimo etiologii wirusowej dysfonia u pacjentów chorujących na COVID-19 utrzymuje się dłużej w porównaniu z innymi dysfoniami wywołanymi przez wirusy. Wystąpienie dysfonii może stanowić tzw. cichy objaw towarzyszący COVID-19.

Słowa kluczowe: dysfonia, chrypka, choroba koronawirusowa 2019, SARS-CoV-2

Abstract

Introduction: Ever since coronavirus disease 2019 (COVID-19) was first identified in December 2019, it has infected millions of people and resulted in more than 6.86 million deaths worldwide. Numerous novel manifestations have emerged ensuing COVID-19 and even though a full 2-year period has passed, the ongoing pandemic remains a conundrum, especially to the healthcare system. Dysphonia, or a disorder of the voice, is among the novel manifestations that have emerged. **Aim of the study:** To outline the outcome of new-onset dysphonia presentation in COVID-19 patients in a single tertiary centre. **Case study:** We aim to discuss the clinical presentation and outcome of the 3 cases that we managed in our centre to help understand the course and outcome of new-onset dysphonia among COVID-19 patients. **Result and discussion:** We found that despite its viral origin, dysphonia in COVID-19 patients persisted for longer compared to other viral-induced dysphonia. New-onset dysphonia is a possible silent manifestation of COVID-19.

Keywords: dysphonia, hoarseness, coronavirus disease 2019, SARS-CoV-2

INTRODUCTION

It has been 2 years since the novel coronavirus that causes coronavirus disease 2019, or COVID-19, was first identified in Wuhan, China, in December 2019. Numerous studies have been conducted worldwide in order to help advance the understanding of the deadly virus that has infected more than 758 million people, with 6.86 million deaths reported globally. Novel manifestations of COVID-19 include olfactory and gustatory dysfunction, hearing impairment, as well as dysphonia[1]. The prevalence of dysphonia among COVID-19 patients is 0.98%, as reported by Cohen et al.[2]. Interestingly, in 2014, Bennett et al. reported the prevalence of dysphonia following viral infection at 0.2%[3]. In the same vein, among the numerous postulations of COVID-19-induced dysphonia include vagal neuropathy, inflammatory factors resulting in vocal cord oedema, vocal cord injury, intubation injury, dysphonia secondary to poor lung function as well as psychogenic causes. In this paper, we present 3 cases that were encountered and managed in our centre in 2021.

AIM OF THE STUDY

To outline the outcomes of new-onset dysphonia presentation in COVID-19 patients in a single tertiary centre.

CASE PRESENTATION

Case 1

A 42-year-old female with underlying systemic lupus erythematosus contracted COVID-19 category III on 2 May 2021 and was discharged from a quarantine centre on 12 May 2021. Five days following her discharge, she presented with worsening sore throat, fever and odynophagia to solid food, which started one day after leaving the quarantine centre. At that point, the patient did not complain of noisy breathing or drooling. Upon examination of the oropharynx, the uvula, anterior pillar and tonsils were found to be inflamed. The oral cavity subsites were intact, with no evidence of medialisation. Flexible nasopharyngolaryngoscopy (FNPLS) showed inflamed and oedematous epiglottis, with slough seen over the left aryepiglottic fold, bilateral arytenoids and vocal cords were oedematous and inflamed. However, the vocal cords were mobile bilaterally. The patient was admitted and treated for supraglottis with intravenous broad-spectrum antibiotics, intravenous dexamethasone for 3 days along proton-pump inhibitors. On the subsequent day, the patient developed hoarseness with GRBAS scale of I with an element of roughness. Her throat swab culture yielded *Enterobacter hormaechei*. Flexible scope repeated 3 days after the completion of intravenous dexamethasone revealed normal laryngeal structures and healed ulcer, however, the patient's hoarseness persisted. She was discharged home with oral antibiotics, proton-pump inhibitors, and speech rehabilitation. During the subsequent monthly follow-up, the hoarseness persisted despite normal flexible scope findings. Six months post COVID-19, the patient noticed that hoarseness was improving.

Case 2

A previously healthy 48-year-old man presented with fever, cough and aphonia. Throat swab for reverse transcription polymerase chain reaction (RT-PCR) taken on admission revealed the patient to be positive for COVID-19 category IV. Further history revealed that the patient developed aphonia 9 days after the onset of fever. The patient was admitted as he required nasal prong oxygen for 3 days, which was subsequently weaned off. Upon examination, the patient had no stridor or noisy breathing. Voice assessment revealed GRBAS II with elements of roughness and strain. FNPLS was not performed on admission. Fortunately, the patient's voice began improving after 3 days of hospitalisation. During a follow-up review 2 weeks later, FNPLS revealed inflamed bilateral vocal cords with a whitish patch over the anterior third of the vocal cords bilaterally, with intact and symmetrical vocal cord mobility. The patient was prescribed proton-pump inhibitors and speech rehabilitation. Subsequent follow-up after 6 months revealed thickened vocal cords with hoarseness grade I and an element of roughness.

Case 3

A 64-year-old female with underlying metabolic syndrome presented with fever, cough and shortness of breath. On admission to the emergency department, the patient was intubated for worsening respiratory distress. Nasal swab for RT-PCR was positive for COVID-19 category V. The patient was intubated for a total of one week. Post-extubation, the patient was well, with no evidence of stridor or hoarseness. However, one week after extubation, the patient complained of hoarseness. On examination, the patient was comfortable under room air. Voice assessment revealed GRBAS II with components of roughness and strain. FNPLS performed bedside revealed erythematous arytenoids with symmetrical and mobile vocal cords. However, the patient experienced worsening respiratory distress 5 days later (13 days after extubation) and had to be re-intubated. Tracheostomy was subsequently performed following the failure of extubation. It was uneventful, and during the follow-up, repeated FNPLS revealed persistent erythematous arytenoids with symmetrical and mobile vocal cords bilaterally. The patient was started on proton-pump inhibitors and is planned for decannulation.

DISCUSSION

From our case series, one can conclude that all 3 patients presented with dysphonia between 9 to 18 days following a diagnosis of COVID-19. FNPLS revealed positive

 DOI: 10.15557/PiMR.2022.0058

findings of laryngeal pathologies such as erythema, oedema or patches over the laryngeal structures with symmetrical and mobile vocal cords. The resolution of hoarseness varied across the 3 patients: it improved after 6 months in the 1st patient, after 3 days in the 2nd patient, and in the 3rd patient voice assessment could not be performed due to tracheostomy. However, it is worth noting that the laryngeal abnormalities were still observed on FNPLS in all 3 patients, albeit showing signs of improvement.

New-onset dysphonia among COVID-19 patients is of great interest to otorhinolaryngologists. The number of dysphonia patients may be overlooked, as they may not be aware that the condition can in fact be a manifestation of COVID-19. According to Lechien et al., inflammatory processes involving the laryngeal structures may lead to oedema, erythema, and congestion, which was seen in all our 3 patients[4]. A study in the University of Mons, Belgium, has reported that high expression of angiotensin-converting enzyme 2 (ACE-2), a COVID-19 receptor, was found in the vocal folds which were postulated to be the main culprit of the inflammatory process resulting in dysphonia.

Nonetheless, poor lung function could also contribute to dysphonia. The pulmonary system has been reported to be severely inflicted by SARS-CoV-2, which could lead to dysphonia in patients with COVID-19, as optimal pulmonary air support is a key component of efficient phonation.

Gender also seems to play a role in the development of the condition. Females were noted to be affected by post-COVID-19 dysphonia more frequently than males, as reported by Lechien et al., whereby more than 20% of dysphonic symptoms were observed, especially in female patients, in a study comprising 700 patients[4]. Two of our patients were female.

Multiple reports have demonstrated a significant association between dysphonia and dysphagia. The severity of dysphonia was significantly correlated with the severity of dysphagia[4]. Dysphagia may occur secondary to the inflammatory process that encompasses the laryngeal structures extending to the postcricoid region. However, none of our patients reported dysphagia. Archer et al. reported that 90% of patients admitted to a COVID-19 facility developed dysphagia, of which 70% were critically ill COVID-19 patients requiring mechanical ventilation[5]. The authors hypothesised that high rates of dysphagia and dysphonia were associated with prolonged intubation as well as lying in the prone position for a long time[5]. In the same vein, neuropathy following COVID-19 infection is postulated as one of the causes of dysphonia[6]. However, unlike other types of post-viral induced neuropathy, the recovery rate of dysphonia in COVID-19 patients is longer.

Trauma following intubation is another theory behind new-onset dysphonia among COVID-19 patients. Post-intubation dysphonia during the COVID-19 pandemic could also be caused by oropharyngeal and laryngeal trauma as well as neuromuscular weakness due to prolonged non-use of laryngeal structures during long-term intubation[7].

Interestingly, numerous published studies have described the involvement of psychogenic dysphonia, especially among female patients. Psychogenic dysphonia should always be considered in patients with COVID-19 presenting with voice quality disorders, as the individuals developing this disorder are affected not just physically but emotionally as well.

Kosztyła-Hojna et al. has defined psychogenic dysphonia as a psychogenic disturbance of speech and voice quality, which essentially is a diagnosis of exclusion, suspected upon ruling out primary organic causes in the larynx. Various emotions significantly influence the process of voice production by disrupting the respiratory-phonatory-articulation mechanism and suprasegmental elements of speech[8,9]. Females aged 30 to 50 years old with a dysregulated emotional system have been reported to be affected by psychogenic dysphonia[10], with treatment options including adequate counselling and voice therapy[8].

Colizzi et al. has linked sudden dysphonia to the psychopathological strain generated by COVID-19, especially in vulnerable subjects[11]. The finding was supported by a study done by Buselli et al., who reported a case of sudden and prolonged dysphonia in a 50-year-old Italian nurse in December 2020, which was found to be psychogenic dysphonia[12].

CONCLUSION

New-onset dysphonia among COVID-19 patients calls for a thorough assessment and follow-up. Persistent dysphonia requires treatment, notably speech rehabilitation. Unexplained dysphonia or new-onset dysphonia may be an early sign of COVID-19. However, in our presented case series, dysphonia was not an early symptom. Additionally, delayed improvement of dysphonia was noted across all 3 patients, which suggests the need for regular follow-up and rehabilitation.

Conflict of interest

The authors do not declare any financial or personal links to other persons or organisations that could adversely affect the content of this publication or claim rights thereto.

DOI: 10.15557/PiMR.2022.0058

Piśmiennictwo

1. Saniasiaya J, Kulasegarah J, Narayanan P: New-onset dysphonia: a silent manifestation of COVID-19. Ear Nose Throat J 2021; 145561321995008.
2. Cohen SM, Kim J, Roy N et al.: Prevalence and causes of dysphonia in a large treatment-seeking population. Laryngoscope 2012; 122: 343–348.
3. Bennett JE, Dolin R, Blaser MJ: Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. Elsevier, Saunders, 2014.
4. Lechien JR, Chiesa-Estomba CM, Cabaraux P et al.: Features of mild-to-moderate COVID-19 patients with dysphonia. J Voice 2022; 36: 249–255.
5. Archer SK, Iezzi CM, Gilpin L: Swallowing and voice outcomes in patients hospitalized with COVID-19: an observational cohort study. Arch Phys Med Rehabil 2021; 102: 1084–1090.
6. Leis-Cofiño C, Arriero-Sánchez P, González-Herranz R et al.: Persistent dysphonia in hospitalized COVID-19 patients. J Voice 2021; S0892-1997(21)00234-4. DOI: 10.1016/j.jvoice.2021.07.001.
7. Frajkova Z, Tedla M, Tedlova E et al.: Postintubation dysphagia during COVID-19 outbreak – contemporary review. Dysphagia 2020; 35: 549–557.
8. Kosztyła-Hojna B, Moskal-Jasińska D, Kraszewska A et al.: Verbal communication disorders in psychogenic dysphonia. Otolaryngol Pol 2019; 73: 14–20.
9. Martins RHG, Tavares ELM, Ranalli PF et al.: Psychogenic dysphonia: diversity of clinical and vocal manifestations in a case series. Braz J Otorhinolaryngol 2014; 80: 497–502.
10. Baker J: Psychogenic voice disorders and traumatic stress experience: a discussion paper with two case reports. J Voice 2003; 17: 308–318.
11. Colizzi M, Bortoletto R, Silvestri M et al.: Medically unexplained symptoms in the times of COVID-19 pandemic: a case-report. Brain Behav Immun Health 2020; 5: 100073.
12. Buselli R, Corsi M, Necciari G et al.: Sudden and persistent dysphonia within the framework of COVID-19: the case report of a nurse. Brain Behav Immun Health 2020; 9: 100160.