



Critical Alert for Otolaryngologists: Earache May be the Early Signs of COVID-19

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Abstract

Introduction: The pandemic coronavirus disease 2019 or COVID-19 is infecting as fast as possible in more than 200 countries and creating the most horrible domino-like demolition ever seen. From its beginning in Wuhan, China, the SARS-CoV-2 infected the similar groups of 100,000 patients in 67, 11, 4, and 2 days. Healthcare workers are in the frontline of attacking by SARS-CoV-2, especially those who are in close contact with upper respiratory mucosa like otolaryngologists.

Objectives: To describe ear pain as one of the first clinical manifestations of COVID-19, we present two cases of a family (a mother and her daughter) with a positive RT-PCR test for COVID-19 who presented earache as their first symptoms.

Case Presentation: The first case was a 32 years old female patient (stewardess of an international airline, Tehran, Iran) was labeled as at risk due to her air flight to China in Dec 2019. She was first admitted for moderate ear pain in her left ear with mild itching of the external ear to an otolaryngology outpatient clinic by a general practitioner. After 7 days, her test for RT-PCR against COVID-19 was positive. No lung involvement was reported by high-resolution computed tomography (HRCT) of the thorax. Another case was her mother who were in close contact with each other and experienced severe ear pain after 7 days. She acquired mild COVID-19 symptoms with anosmia as a positive test result for COVID-19.

Conclusions: The earache must be considered as their first clinical symptoms during the early phase of the coronavirus outbreak. It seems that local and international scientific groups of otolaryngologists must prepare their national guidelines to protect their practitioners against COVID-19 based on practical strategies. Using personal protective equipment is of utmost importance in reducing the risk of nosocomial infection among otolaryngologists.

Keywords: Earache, Otolaryngologists, COVID-19, SARS-CoV-2, Clinical Practice Guidelines, Infectious Disease

1. Introduction

Not only the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) did not need several weeks to spread worldwide, but also it took faster than our imaginations to infect people of more than 206 countries within 8 weeks of its introduction and become a pandemic outbreak (1). The coronavirus disease 2019 or COVID-19 is moving as fast as possible to overcome all human and technologies and create the most horrible domino-like demolition ever seen. The SARS-CoV-2 infected the first 100,000 patients in 67 days, the second same size of the population in 11 days; the third one in 4 days, and finally the fourth group of 100,000 patients in just two days (2). In fact, this is one of the worst pandemic outbreaks ever human seen since the time of homosapiens. Till mid of April, more than 68,000 infected patients with COVID-19 were registered in the Iranian health care system with a mortality of 4300 cases and

curing of more than 35,000 patients. The definite diagnosis of COVID-19 patients in Iran were proved by RT-PCR, Chest CT Scan plus clinical manifestations while the beginning of the treatment regimen is related to the clinical manifestations and CT-Scan (3, 4).

The infected patient with COVID-19 shows itself with different signs and symptoms, from simple anosmia to severe pulmonary effusion and cardiac arrest. Healthcare workers are in the frontline of attacking by SARS-CoV-2, especially those who are in close contact with upper respiratory mucosa like otolaryngologists. Earache, as one of the mild symptoms of many infected patients, acts as a deceptive symptom in many patients and force them to refer to an otolaryngologist at the early step of infection with COVID-19. Consequently, this unwanted confrontation with SARS-CoV-2 leads to infection of otolaryngologists if they do not consider full protection in their clinics.

To describe ear pain as one of the first clinical man-

ifestations of COVID-19, we present two cases of a family (a mother and her daughter) with positive RT-PCR test for COVID-19 who presented earache as their first symptoms.

2. Case Presentation

2.1. Case 1

A 32 years old female patient who is a stewardess of an international airline (in Tehran, Iran) was labeled as at risk due to her air flight to China in Dec 2019 (Table 1). She was first (First day: February 24, 2020) admitted for moderate ear pain in her left ear with mild itching of the external ear to an otolaryngology outpatient clinic by a general practitioner. Ear exam at the time of admission (first day) did not show signs of otitis media, so she was prescribed for some analgesics. After 24 hours, sore throat and fever were added to her chief complaint. As a high-risk patient who had a history of traveling to China, an emergency specialist admitted her to a hospital and tested for RT-PCR against COVID-19 which was positive. Simultaneously, high-resolution computed tomography (HRCT) of the thorax was normal on the first day of admission. Interestingly all of the HRCT of this case and her mother (case 2) was completely normal without any suspectable lesion or mass.

2.2. Case 2

The mother of case 1, (51 years old, leaving in a family, lived with closed contact with her daughter) is the second case who was responsible to take her daughter to all clinics, found ear pain in her left ear 7 days after her daughter. Three days later, anosmia was added to her symptoms (Table 2). After seven days, she also was tested for COVID-19 and reached a positive result for COVID-19. Fortunately, the mother developed no more signs and symptoms in the next ten days.

3. Discussion

Since the early phase of infected patients with COVID-19, who are diagnosed with RT-PCR, blocked sinus and ear pain could be the first symptoms of the COVID-19 as one of the important precocious symptoms. Some of the coronavirus survivors mentioned that ear pains and popping sensation must not be ignored (5). Based on an announcement by US Veterans Affairs (6), symptoms that may need urgent care attention (within 24 to 48 hours) include sore throat, earache, sprains, or strained muscles from sports or exercise and minor cuts and injuries.

Many studies showed that the infection with respiratory viruses like human rhinovirus (HRV), respiratory syncytial virus (RSV), and coronavirus (HCV) will be presented primarily and in the early steps only with acute otitis media (AOM) especially in younger cases (7). Studies using PCR to detect viral RNA in middle ear fluids suggest that coronaviruses, like other respiratory viruses, can cause otitis media (7-9). Acute upper respiratory infections may be presented primarily with symptoms resembling otitis media or otalgia including earache and sore throat. Based on these primary complaints, the patients with COVID-19 may choose an otolaryngology clinic as their first referral health system. Accordingly, the ENT specialists are at high risk of infection with SARS-CoV-2. Hence, a complete protection wearing set is of utmost importance during the COVID-19 outbreak and even after months of its pandemic in all otolaryngology clinics or departments.

We described two cases of a family infected with COVID-19 who were first presented with only mild to moderate ear pain then developed to other signs and symptoms (Figure 1). These cases were in closed contact from the beginning of the disease until the end of treatment and recovery. They could not make a self-isolation in their house because they were not aware of the infection neither themselves nor by the public awareness systems. Both were infected with SARS-CoV-2 after 7 days interval from daughter to her mother. The daughter worked in an airline, and this would be the source of infection in their family. Both of them referred to an otolaryngologist in the early phase of their disease. According to their declaration, unfortunately, none of the otolaryngologists did wear protection during their visit.

Because of the strict rules and regulations during this pandemic of COVID-19, the national health care, as well as the infected cases, didn't let us explore their middle ears and aspirate fluid or lavage to test for the viral cause of otalgia. Therefore, at the time of symptoms, it isn't proved to be an otitis media. Additionally, we would not be able to detect how many percentages of patients with positive RT-PCR test for COVID-19 may show otalgia if they refer with an earache. We may only conclude and ring the bells for special consideration of earache as a cautionary symptom in any high-risk patient and viral epidemics.

The WHO recommends health care workers to wear a gown, gloves, goggles, and a medical mask, which should be protective against droplet-based transmission (10). Once supply chains are restored, the CDC recommends returning to N95 respirator use with both persons under investigation (PUI) for COVID-19 and known COVID-19 patients (11). Similar researches from the previous epidemic crises like Ebola revealed that up to 80% of providers self-contaminated while removing respirators (12).

Table 1. Description of Paraclinical and Clinical Manifestations of the First Case (Daughter, 32 years) within 20 Days of COVID-19

	Day 1	Day 8	Day 12	Day 18
Imaging				
HRCT of thorax	Normal	Normal	Not done	Normal
Paraclinical findings				
O ₂ sat	87	92	96%	Not done
CRP	++	+++	+	+
ESR, mm/hr, (normal < 20)	9	22	21	13
WBC, 10 ³ /micl, (normal: 4.4 - 11)	7.4	4 (low)	10	8.6
Lymphocyte, %	30	36	37	26
Hct, (normal: 36 - 45)	38.7	41.8	40.4	42.1
MCV, fl, (normal: 80 - 96)	83	83	83.1	83.2
MCH, pg, (normal: 27.5 - 33.2)	27.9	27.3 (low)	28	27.9
MCHC, g/dL, (normal: 33.4 - 35.5)	33.6	32.8 (low)	33.7	33.5
Clinical manifestations				
Ear pain + sore throat	Yes (moderate, left ear)	Yes (moderate to severe)	No	No
Oral temperature	37.7	37.6	37.4	Below 37
Myalgia, (0 - 10)	4	7	8	9
Cough	No	Mild	Moderate	Severe
RT-PCR for COVID-19	Not done	Positive	Not done	Not done
Treatment	No Rx	Oseltamivir (BD, 75 mg) + Naproxen 500 mg + Levofloxacin 750 mg	Oseltamivir (BD, 75 mg) + Chloroquine (BD, 200 mg)	No Rx

Table 2. Description of Paraclinical and Clinical Manifestations of the Second Case (Mother, 51 years) within 20 Days

	Day 7	Day 9	Day 18	Day 24
Imaging				
HRCT of thorax	Not done	Not done	Not done	Not done
Paraclinical findings				
	Not done	Not done	Not done	Not done
Clinical manifestations				
Ear pain + sore throat	Yes (moderate, left ear)	Yes (moderate to severe)	No	No
Oral temperature	37.3	37.1	37	37
Myalgia, (0 - 10)	3	5	5	2
Cough	No	No	No	No
TR-PCR for COVID-19	Not done	Positive	Not done	Not done
Treatment	No treatment	No treatment	No treatment	No treatment

A recent study by Vukkadala (13) revealed that otolaryngologists are at a unique risk due to the close contact with mucus membranes of the upper respiratory tract and have been among the most affected healthcare workers in Wuhan, China.

This is one of the most challenging points for many otolaryngologists because referring a patient with a moderate ear pain could be an important symptom of a future

dangerous viral infection like COVID-19. Undoubtedly, otolaryngologists may prohibit altering a simple infection to a complicated one.

3.1. Conclusions

The earache must be considered as their first clinical symptoms during the early phase of the coronavirus outbreak. It seems that local and international scientific

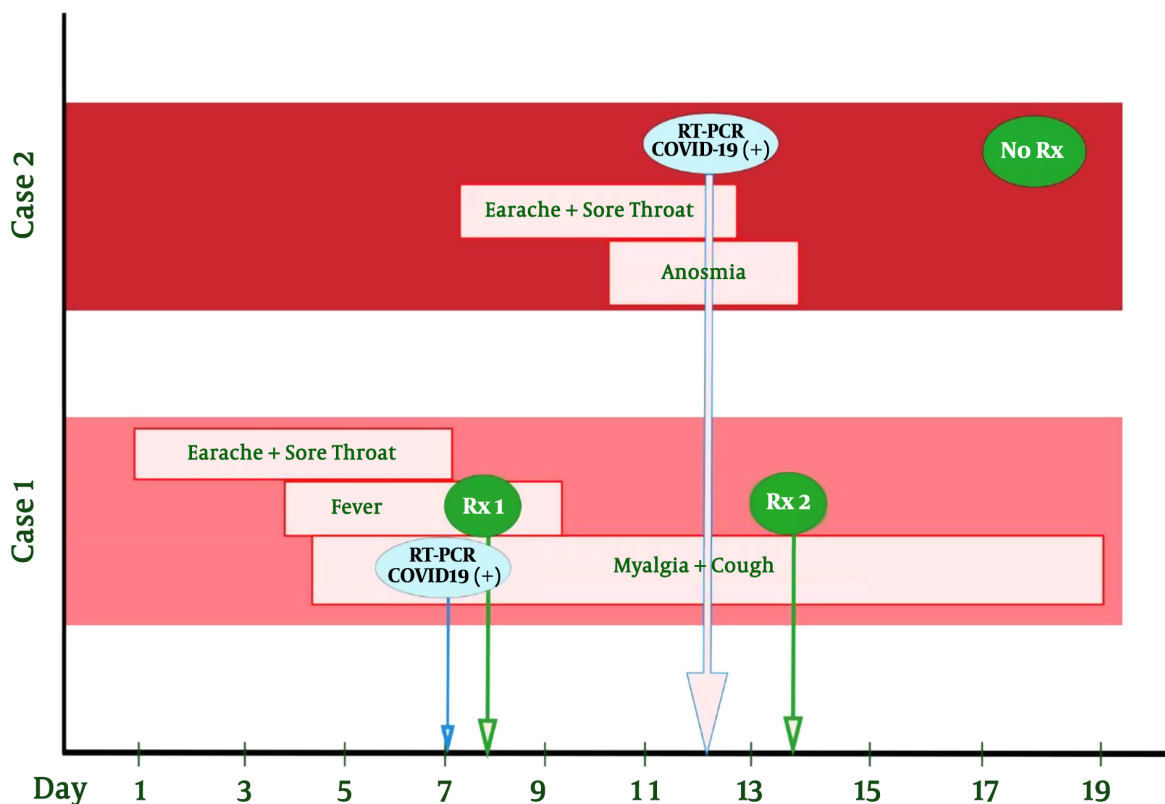


Figure 1. Schematic timeline of ear pain and COVID-19 symptoms and test results in two cases

groups of otolaryngologists must prepare their national guidelines to protect their practitioners against COVID-19 based on practical strategies. Using personal protective equipment is of utmost importance in reducing the risk of nosocomial infection among otolaryngologists.

Footnotes

Authors' Contribution: Seyyed Mohammad Miri wrote the first draft and collected case data. Mohammad Ajalloueyan wrote the discussion and finalized the article.

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Patient Consent: All data of this case series collected retrospectively with informed consent from patients.

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