



The Perils of Covid-19 for Otorhinolaryngologists: An Overview

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Abstract Covid-19 symptoms are commonly seen in Otorhinolaryngology clinics on a daily basis. This article provides a brief review of the current knowledge regarding SARS Cov-2 including disease transmission, clinical characteristics and occupational hazard. The article focuses on the adequate precautions needed for Otorhinolaryngologists. We, being involved in the frequent manipulation of the aero-digestive tract containing a high viral load carry the biggest threat of an occupational hazard. We should be aware of utmost importance of effective use of full or enhanced Personal Protective Equipment during diagnostic and therapeutic procedures.

Keywords Covid-19 · SARS-CoV-2 · Otolaryngologists · Occupational hazard

Introduction

Covid-19 made an abrupt, dreadful and unprecedented halt in everyone's life. Covid-19 outbreak spread rapidly worldwide after its origin in Wuhan city of Hubei Province of China [1]. It posed mental, emotional and physical threat to one and all. World Health Organization (WHO) initially declared it as an Epidemic and Public Health Emergency of International Concern on 30th January 2020 after the virus disrupted ways of life as it spread across the globe [2]. On 11th March 2020, it was declared as a Pandemic. Till

21/04/2020, around 2,483,013 cases and 170,494 deaths were reported in 185 countries globally [3].

Covid-19 is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARSCoV-2) which is an enveloped, single stranded RNA virus. It has 76.9% homology to SARS-CoV, as well as, 96.4% homology to bat coronavirus, pointing towards a strong suspicion of zoonotic origin of the pandemic [4].

On 25th January 2020, 1st infelicitous death among the healthcare workers reported at Wuhan due to Covid-19 was an Otorhinolaryngologist. Previous SARS outbreaks also reported occupational hazards in Otorhinolaryngologists [5]. Li Wenliang, a Chinese Ophthalmologist of Wuhan Central Hospital, who had first alerted about this outbreak, contracted the infection from an asymptomatic Covid-19 patient of acute angle closure glaucoma on 10th January 2020 and unfortunately died on 7th February 2020 [6].

India reported the 1st case of Covid-19 on 30th January 2020 at Kerala in a student with travel history to Wuhan, China. Two more similar cases with positive travel history were reported on 2nd and 3rd February 2020. This tally of 3 reported cases on 2nd March 2020 rose to 29 by 5th March 2020, all with a significant contact or travel history. Contact tracing of all positive patients were done and were subsequently quarantined. Since then the numbers are hiking and total number of reported cases are 18,658 in India at the time of writing this article on 21/04/2020.³ As of data on 18th April 2020, 160 healthcare workers in India have contracted the virus and the exponential growth is still surging strongly.

According to, The Ministry of Health and Family Welfare (MOHFW), the conditions were categorized as serious in Mumbai, Delhi, Pune, Indore, Jaipur and Kolkata. Data revealed that unfortunately, 80% of Covid-19 cases were either asymptomatic or with minimal symptoms

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thus escaping detection. India has been under complete lockdown since 27 days. Lockdown, awareness campaigns and strict regulations set by the authorities in place helped in decreasing the doubling rate from 7.5 to 3.4 days.

We as healthcare workers have the highest risk for the transmission of this virus. History dictates that in 2002, during SARS outbreak, 21% of healthcare workers were affected. SARS-CoV-2 has also affected many healthcare workers worldwide till now. China health statistics suggests that more than 3300 health care workers were infected by early March 2020, which included 22 deaths. While in Italy, more than 5000 healthcare workers have contracted the disease [7]. The brunt of the responsibility of managing SARS-CoV-2 patients falls on Otorhinolaryngologists, as we deal with the aero-digestive tract on a daily basis.

Most common symptoms of Covid-19 are cough (67.8%), fever (43.8%), fatigue (38%), increase sputum production (33.7%), shortness of breath (18.7%), body ache (14.9%), sore throat (13.9%) and chills (11.5%) [8]. Recent evidences suggested that anosmia or hyposmia or dysgeusia can also be a presenting symptom [9,10]. Possibility of asymptomatic carriers transmitting the infection to others could not be ruled out [11,12]. The majority of outpatient clinic in ENT department deals with these common Covid-19 symptoms. After the birth of Covid-19, these symptoms should be dealt carefully with adequate protective gears.

Otorhinolaryngologist, being involved in the frequent manipulation of the aero-digestive tract containing a high viral load carries the biggest threat of an occupational hazard. Respiratory secretions are considered as a major mode of transmission. Recent evidence also suggests the spread through conjunctiva and feaco-oral route is also seen [13]. In a study of 17 symptomatic Covid-19 patients, high viral loads were reported in the nasal cavity in comparison to oral cavity and oropharynx [14]. Therefore, the healthcare workers involved in its management like Otorhinolaryngologists, Dentists, Head–Neck Surgeons, Gastroenterologists, Pulmonologists, Speech therapists or Ophthalmologists are most prone to infection with a risk ratio of 2.13 [15–17]. It mandates the need of adequate preventive measures for such healthcare workers [18].

Keeping all this in mind the procedures which need instrumentation of upper airway should be done only in cases of emergency or if absolutely necessary, Covid-19 testing should be given importance. Otorhinolaryngologists should be aware of utmost importance of effective use of full or enhanced Personal Protective Equipment (PPE) during diagnostic and therapeutic procedures dealing the aero-digestive tract. Enhanced PPE includes N95 mask with a face shield or powered air-purifying respirator (PAPR), surgical cap, surgical gown and double gloves.

India being a developing country, with less developed health infrastructure with an abysmal doctor population ratio of 1:1457 should find stringent method to contain the virus, decline the transmission and save the medical community. We are at the stage of pandemic dealing with the surge of cases every day. We should suspect many more hidden cases in the community. So the protocol of enhanced PPE should be implemented for any patient with unknown, suspected or positive status in which airway has to be dealt. High risk of aerosolization of nasal and oral secretions can lead to fatality among the healthcare workers.

After a comprehensive review of limited literature following recommendations are suggested for Otorhinolaryngologists in order to contain the virus and prevent the occupational hazard.

1. **Extensive screening** Complete histories regarding all the common symptoms, travel or contact history, contact/cluster tracing to identify the suspected patients. Based on this screening patients should be categorized as asymptomatic or symptomatic. Both types of patients should be managed accordingly.
2. **Vigilant waiting area** The patients should be made to sit at a distance of 2 m apart to prevent the transmission of aerosols between them.
3. **Adequate protection to patients** Face masks should be given to all the patients. Routine personal hygiene measures suggested by MOHFW include frequent handwashing with soap and water or use of an alcohol-based hand sanitizer, respiratory etiquette, avoiding touching face, and avoiding close contact with people who has symptoms [19].
4. **Counselling of patients** Concepts of social distancing and self-isolation should be explained.
5. **Staff reorganization** The number of healthcare workers should be reduced to minimize the exposure among them. The protocol of quarantine should be followed as advised by WHO.
6. **Sanitization of contacted surfaces** Various disinfectants can be used to sanitize the contacted surfaces. For e.g. 0.1% Sodium Hypochlorite, Lizol, 70% Ethanol.
7. **Airway protection** Ideally N95 masks should be used. In case of their scarcity, use of three grades of mask according to the patient character. Filtering Facepiece Particles (FFP), 2 and 3 has a filter efficiency of 80%, 94% and 99% respectively [20]. Use of FFP 1 in non-suspected cases, in suspected or confirmed cases- FFP 2 can be used for examination, but close otoscopic examination or oral examination recommends FFP 3. MOHFW also suggests the use of

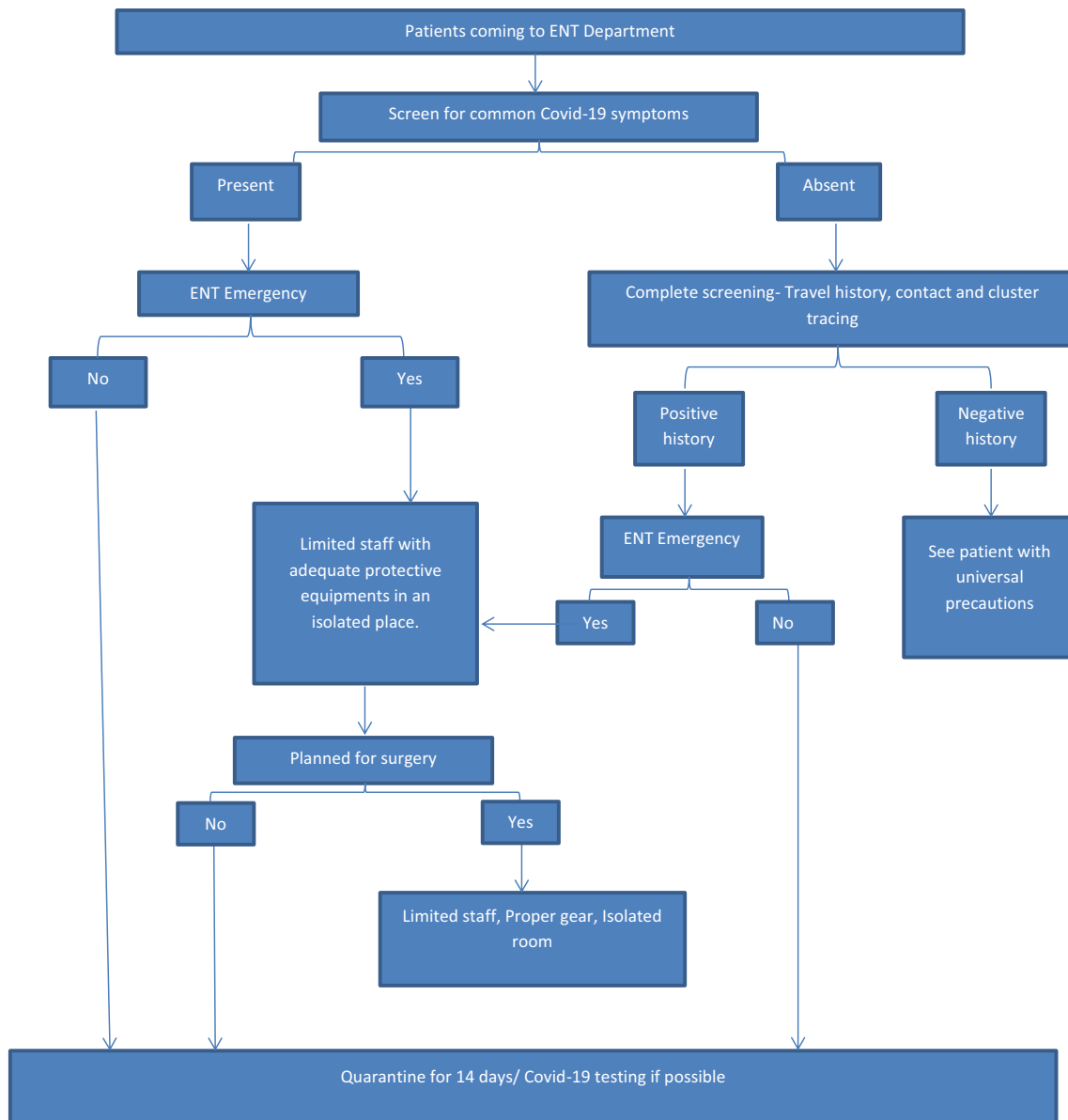


Fig. 1 Flowchart showing the triage system for an otorhinolaryngology clinic

- N95 masks if respiratory symptoms such as cough, fever, or difficulty in breathing, etc. are present [19].
8. **Reduce the contact time** Background about the patient should be enquired either from the screening desk or other colleagues before seeing the patient.
 9. **Hand hygiene** Both healthcare workers and patient should follow the hand hygiene. Alcohol based hand rubs are recommended by WHO [21].
 10. **Face shield** Properly fitted face shield should be used. It can be reuse after proper disinfection.
 11. **Eye shield** Use of well fitted goggles to prevent the aerosol to contact the conjunctiva. Regular corrective spectacles are not adequate preventive measure.
 12. **Hand gears** Double gloves should be used for examining or operating.
 13. **Body gears** A waterproof gown should be worn for all aerosol generating procedures. If waterproof gown is not available, disposable plastic aprons should be worn over it.
 14. **Symptomatic healthcare worker** One should be considered for testing. Self-isolation is recommended till the results come.

The pandemic also carries the risk of impending physical, emotional and mental breakdown of healthcare workers which can lead to unfavorable effects on the health infrastructure [22]. Health anxiety is already a common

finding in the healthcare workers, whose incidence may increase in a setting of such pandemic. This is defined as the anxiety in the healthcare worker when some changes in the body are interpreted as symptoms of being sick or ill [23]. It hampers our various necessities and makes the working environment stressed. It can have detrimental effects on personal health which can hamper decision making ability. A survey of 5062 healthcare workers from all clinical department suggested that 29.8%, 13.5% and 24% have suffered from stress, depression and anxiety [24]. A healthcare worker has to make a balance between his mental well-being, his family safety and patient care.

Therefore, Covid-19 is highly contagious with a droplet infection transmitted through either by direct or indirect contact of infected patients or contaminated surfaces. Breathing, talking, coughing and sneezing generates droplets to approximately more than 5 micro meter size which when reach to the mucosa of aero-digestive tract of the persons nearby causes the risk of transmission [25]. The particle can also stay at one meter distance in surroundings of the infected patient [26,27]. After collecting the available information, we propose an algorithm to triage the patients visiting the Otorhinolaryngology Clinic (Fig. 1).

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Compliance with Ethical Standards

Conflict of interest Author NS declares that she has no conflict of interest. Author NR declares that he has no conflict of interest.

Ethical Approval Being a short communication it is exempted from the ethical requirements.

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