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Review

Impact of COVID-19 on otolaryngology head & neck speciality and residency program in Saudi Arabia

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ABSTRACT

The SARS-CoV-2 virus, which causes coronavirus disease 2019 (COVID-19), has rapidly swept worldwide since its identification in December 2019. As the spread of the disease accelerated both in Wuhan and elsewhere globally, the WHO declared it a pandemic. There is sound evidence to argue that otolaryngologists run high risks of occupational SARS-COV2 among health care workers due to high viral load in upper respiratory examinations. This review article was conducted to determine the effect of the COVID 19 pandemic on the otolaryngology department and residency program in Saudi Arabia. Since the pandemic outbreak, the government of Saudi Arabia has taken severe measures and issued several decisions to limit the spread of the virus. These decisions included operations, procedures, outpatient clinics by prioritizing emergency and time-sensitive cases while rescheduling all electives and routines once. As a result, the residency program was also affected by the substantial reduction of daily surgical activity and preventing endoscopic tests in the clinics, which led to a notable decrease in residents' involvement and risk of procedural skills deterioration which became a concern to many doctors of residency programs. It is difficult to deny that the epidemic will negatively impact. However, adhering to well-prepared guidelines and giving residents an excellent opportunity to overcome the defects will deliver training and patients' care while also protecting safety and health.

1. Introduction

The novel Severe Acute Respiratory Syndrome (commonly known as the Coronavirus or COVID-19) was first reported in December 2019 in Wuhan, Hubei province [1]. Until the beginning of January, data about this novel disease remained scarce and mostly inaccessible. The scarcity of data about COVID-19 led the World Health Organization (WHO) to declare it a health emergency [2]. As the spread of the disease accelerated both in Wuhan and elsewhere globally, the WHO declared it a pandemic. By the time it became a pandemic, information about COVID-19 had become more accessible. COVID-19 is a highly contagious infection caused by SARS-COV2, an enveloped single-strand RNA virus [3].This virus is easily transmitted from human to human with R0 of 2–3, meaning that each infected person is likely to infect 2-3 additional people in the population [4].

In Saudi Arabia, the First confirmed case of COVID19 was reported on March 2, 2020 [5]. By the time this research was written (June 11, 2020), the number of COVID-19 had confirmed cases had stood at 7,400, 013 globally and 116,021 in Saudi Arabia. The COVID-19 death toll on the same day hit 417,133 deaths worldwide, but only 857 deaths in Saudi Arabia, which is roughly 1%. In this research, Saudi Arabia had 80.019 recoveries, while active cases were 35,145 and 1738 were in the critical care unit [6].

Human-to-human spread occurs through respiratory secretions, so health care personnel that manage patients with diseases of the aerodigestive tract (dentists, otolaryngologists, head and neck surgeons, gastroenterologists, pulmonologists, respiratory therapists, speech therapists, and infectious disease physicians) or ophthalmologists are the most susceptible health care workers to become infected (risk ratio of 2.13) [7,8]. There is sound evidence to argue that otolaryngologists run high risks of occupational SARS-COV2 among health care workers due to high viral load in the instrument of upper aerodigestive tract

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examination and procedure [9]. The first death instances among physicians during COVID19 and SARS outbreaks were among otolaryngologists [10]. Since the pandemic, the government has taken severe measures to curb its spread. These measures included total lockdown, domestic and international flights suspension, and curfew. However, despite these measures, the pandemic continued to spread across the country, putting pressure on the health care system. Like in many other countries, the health care system in Saudi Arabia has been affected.

The current pandemic has brought about some challenges in the medical sector, especially among otolaryngologists in Riyadh, one of the largest cities in the kingdom with a very high population density. The spread of the COVID-19 pandemic significantly impacted work pressure and all surgical training residency programs and their academic curriculum. Surgical specialities, including the otolaryngology department, have a routine life between operation rooms, clinical providers, clinical visits [11]. In this centre, the clinics' flow was deemed significant. Each speciality of ORL-H&N surgery handled treatment and saw around 200 patients each week. Each resident actively participated in eight surgical cases each week, alternating between emergency and elective patients. This routine life has been highly disturbed by COVID19. By reducing team meetings, clinical and hand exposure, and the limitation of physician-patient encounters, the department sought to ensure team safety [12]. The impact of COVID-19 on the current working of the department in the short and long terms is still unknown, hence the need for systematic research. Here, we offer a summary of the effects of the COVID-19 pandemic on the department of Otolaryngology in Saudi Arabia's and the residency program in diverse settings, including outpatient clinics, surgical operations, training activities and education.

2. Impact on otolaryngology surgeries and procedures

Since the beginning of the global crisis of COVID19 and the increase in the number of infected people in Saudi Arabia, the Saudi Ministry of Health has issued several decisions to limit the spread of the virus. Concurrently, according to an article published in May 2020 on "Elective Surgery Cancelled Date Due to COVID19 Pandemics", a total of 28,404,603 elective operations would be cancelled or postponed globally during 12 weeks of distribution and a rate of 2,367,050 operations per week [11]. One of the easiest proven ways to reduce transmission is reducing the number of patients. These decisions were meant to increase hospital capacity to receive confirmed cases of Corona patients requiring medical intervention and to increase the number of intensive care beds for emergency cases, and limit the throughput of traffic within health care institutions to reduce the risk of cross-infection among health care workers, which was a significant concern for all stakeholders [6]. These decisions included the rescheduling of all elective and non-emergency surgeries in all health sectors. In other parts of the world, like Hong Kong, and, and most recently, Italy, France, and Belgium, there has also been a reduction in elective clinics and operations, intending to prioritize the use of personnel and available facilities to the diagnostic and therapeutic pathways of COVID-19 management. These decisions are have also been recommended by otolaryngologists–head and neck surgeons and other health care workers in the US, Asia, and Europe [13]. In line with these decisions, the ministry stipulated that the continuation of oncologic and emergency interventions continues at the pandemic in the belief that they are time-sensitive and lifesaving [1]. In these circumstances, it is advisable to carry on the interventions or the surgeries as a day case and avoid admissions unless necessary to reduce the exposure to the hospital environment [14]. In all cases, the necessary measures need to be taken. It is necessary to know the patient's COVID-19 status ahead of time to prepare for the surgeries and operating rooms [13]. COVID-19 test screening should be performed as a routine within 48 h before the operation. Suppose the case is urgent and the COVID-19 test cannot be performed on time. In that case, the guidelines require all health care professionals involved in the surgery to treat the patient as a COVID-19 patient. This requirement is based on the fact that many COVID-19 patients do not show any symptoms, as proved in many studies. Moreover, the symptoms of COVID-19 could be easily confused with those of the regular flu, such as fever, dry cough, and shortness of breath. For the safety of all, surgeons, including otolaryngologists, must comply with these orders that have proven effective in protecting against the virus. These measures are:

1. Assigning one operating room to accommodate confirmed or suspected Coronavirus cases.
2. Keeping this room under negative pressure.
3. Removing all unnecessary employees.
4. All people must wear complete personal protective equipment for protection.

It was also recommended that all non-essential personnel leave the room during intubation and return only once the airway has been secured [13]. Also, to eliminate interaction and make better use of limited resources, time spent on surgeries or procedures was reduced. They were generally conducted by more experienced professionals. As a result, residents lost out on hands-on instruction and in-person observation of operations. Moreover, after directing the critical cases of Coronavirus patients to the specialized health centres, all members of the medical staff who have come in direct contact with the patients must self-isolate themselves until they test negative for the virus. This is important for the safety of everyone.

The risk of contamination is very high in upper respiratory examinations. The higher viral loads were detected after symptoms of COVID-19 in the nose and the throat, respectively [15]. Recent safety guidelines on the management of otolaryngologist cases suggest that the examination and procedures be limited and only done if having clear indication with extra measures to facilitate the process like topical preparation, video screens to keep the examiner face apart from the patient, and disposable endoscopes [9,13]. All the procedures carried out in the ENT department which have the potential to aerosolize aerodigestive secretions, such as nasolaryngoscopy, endotracheal intubation, noninvasive ventilation, transnasal endoscopic surgery, and high-speed handpieces or ultrasonic instruments, increase the risk of infection and should be avoided or employed only when mandatory [16,17]. Patients with COVID-19 may show no symptoms at all, yet they can still spread the disease. The epidemic has impacted the usual outpatient department's number of endoscopies procedures. The number has been cut to a bare minimum. According to reports, outpatient endoscopic operations have decreased by 91% [18]. Despite that, clinical and endoscopic examination recommendations can be very controversial because adequate personal protective equipment (PPE) to all staff involved in patient care cannot be available everywhere [1].

3. Impact on otolaryngology outpatient clinic

At the beginning of the pandemic, and with the small number of confirmed cases of COVID19 in Saudi Arabia, the outpatient clinic ran normally. However, with the number of confirmed cases increasing, precautionary measures were taken. Therefore, it has become customary to review the list of patients scheduled and determine the cases that require seeing a doctor to reduce crowding and limit the spread of the disease, except for patients with tumours, as is the case in many departments. As for the rest of the patients and patients who were unable to visit the clinic due to suspension of domestic flight and inter-state traffic, they were rescheduled and followed by phone calls, especially after the government imposed a curfew. As for treatment, a service was provided to deliver the necessary medicines and deliver them to patients in their homes. These measures have provided significant help for the patients, but they can hardly meet the traditional way of consulting patients. Similar precautions were taken in Hong Kong and UK; there has been a reduction in elective clinics and operations to mobilize the workforce to acute specialities combatting the outbreak [10,14]. Also,

there is understandably fear from the public in visiting hospitals. Both factors have resulted in a more than 50% reduction in daily patient visits to their specialist clinic [10]. This rapid change in clinic provisions and rescheduling of patients causes substantial inconvenience to patients and potentially poses a risk with delayed assessments but is necessary given the current situation's gravity.

With the current COVID-19 outbreak in our region and the previous experiences from SARS, all outpatient clinic patients are seen with otolaryngology physicians mandatorily wearing an N95 respirator, gown, cap at a minimum, eye protection, and gloves [14,19]. Also, all patients attending the outpatient clinic department must have their body temperatures checked on arrival. This personal protective equipment (PPE) setting is inevitably cumbersome and uncomfortable. However, such PPE precautionary practices are an absolute necessity.

4. Impact of COVID19 on the residency training program and the activities, education

The residency program was also affected by the substantial reduction of daily surgical activity and preventing endoscopic tests with routine perspectives in the clinics, which led to a notable decrease in residents' involvement in the surgical theatre; most of all, this could be a significant trouble for last-year residents [20]. Learning was also impacted by fewer supervised tests and less frequent bedside tutoring. This has resulted in poorer student confidence, a higher probability of judgment mistakes, the loss of experience-driven procedures, and restricted patient care. Therefore, we cannot deny the amount of trainees' concern about experience and education with surgical skills. On the other side, due to the Center for Disease Control (CDC) recommendations for group size of no more than ten people and keeping people 6 feet apart, many programs have been forced to move resident educational lectures to a remote-conferencing platform to maintain compliance with the Accreditation Council for Graduate Medical Education (ACGME) requirements [21]. As a result, the weekly academic activity has intensified and increased its rate up to twice a day. Daily virtual learning has become the primary form of collaboration between residents and tutors; increased use of telematic educational programs (as telemedicine and telementoring of surgical procedures) could be the opportunity to bridge the training gap [20]. Other online learning resources have also been made available. The American Academy of Otolaryngology-Head & Neck Surgery (AAO-HNS) provided all residents free access to Academy U and Otosource through August 2020. Integrating these resources into the consortia curriculum has begun [22]. The trainees were further affected when they had to postpone their annual tests and cancel some of them indefinitely, which is necessary for their resumes.

5. Discussion

We recognize that these difficult times necessitate great efforts. Procedural skills are in danger of deterioration if they are not used. A major meta-analysis of skill decay and retention literature lowered the average participant's performance by nearly a total standard deviation after 365 days of nonuse or nonpractice [23]. Because of these considerations, surgical simulation appears to provide the surgical resident with both safety and procedural instruction. Examples are simulation kits, surgical cadavers dissection, or video atlases to be provided to the residents in otolaryngology meant to reflect either fundamental surgical abilities or regularly seen otolaryngologic consultations. Recommendations are also proposed to take advantage of chances to engage the residents in research, empowering research abilities and adding to the otolaryngology speciality. It is difficult to deny that the epidemic will negatively impact. However, residents must be given an excellent opportunity to obtain surgical skills and overcome the defects rather than the number of cases. We propose that the program director identify weaknesses, establish clear objectives, expectations, and strategies, and ensure appropriate interaction and training exposure to replace the deficiency and get valuable feedback and assessment.

6. Conclusion

The Coronavirus pandemic has created global challenges in every aspect of life and most likely has long-term effects on medical education. The lack of exposure to clinical examination and surgical skills concerns many doctors of residency programs. However, the Coronavirus crisis helped create alternative plans to adequately maintain medical education for Saudi resident doctors in times of crisis. We will be able to deliver exceptional care while also protecting the safety and health of our colleagues if we adhere to well-prepared routines and procedures.

Author contribution

All authors have been contributed substantially to the study conception, design, literature review, and draft manuscript preparation. All authors reviewed the results and approved the final version of the manuscript.

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Declaration of competing interest

The authors declare that there is no conflict of interest.

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