Upper Aerodigestive Tract Procedures in COVID-19 Pandemic

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Abstract- Since the late 2019 months' pandemic of Corona Virus Disease-2019 (COVID-19), it has spread globally and claimed abundant lives due to its expeditious interpersonal transmission and high mortality rate. Early studies showed that the upper aerodigestive tract procedures had the highest rates of nosocomial spread due to high viral load in upper respiratory and pharyngeal secretions. Between March 10 and April 10, 2020, a total of 28 rigid endoscopies were performed under general anesthesia for the removal of esophageal foreign bodies at our center. All the patients were screened on admission for symptoms of COVID-19 and a chest CT scan was performed and they were later followed up for further investigations. No patient had symptoms of COVID-19 (fever, cough, and dyspnea) on admission, and only one patient (3.57 %) had a suspicious CT scan for COVID-19. The mean age of 27 asymptomatic cases, including 14 men and 13 women, was 45.2 years old. Their average hospital stay was 0.8 days. all patients were later interviewed, inspected, and closely observed for any upcoming symptoms which would raise suspicion for COVID-19 during isolation. Of the 27 patients who cooperated, none showed COVID-19 symptoms. What makes this experiment prominent is that with suitable plans in a careful and precautionary manner, we can provide first-rate care for patients and meanwhile protect physicians during this pandemic promptly.

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Keywords: Upper aero digestive tract procedures; Esophageal foreign bodies; Rigid endoscopies; Coronavirus disease 2019 (COVID-19); Coronavirus

Introduction

In early December 2019, a cluster of pneumonia and acute respiratory illness was caused by a 2019 novel coronavirus (2019-nCoV) which is currently known as novel coronavirus disease (COVID-19), occurred in Wuhan, China. The disease has rapidly spread from China to other countries (1,2).

On March 2020, all five continents and about 170 countries had confirmed COVID-19 cases and the World Health Organization (WHO) declared COVID-19 to be a Public Health Emergency of International Concern (PHEIC) and declared a pandemic (3,4).

Its rapid spread has challenged the medical community unprecedentedly (5). Early studies showed the upper aerodigestive tract procedures had the highest rates of nosocomial spread due to the high viral load in the upper respiratory and pharyngeal mucosa (6).

In some patients, aerodigestive tract procedures (such as tracheostomy, laryngoscopy, endoscopy, bronchoscopy, and esophagoscopy) are emergent and cannot be canceled or delayed under any circumstances. Today in the era of COVID-19, appropriate and safe instructions are essential for these procedures in all medical communities (7).

In this study, we report some valuable experience in the management of esophageal foreign bodies (EFBs) in the COVID-19 pandemic. We also discuss our institute instructions, safety protocol, and results with rigid esophagoscopy regarding this pandemic.

Materials and Methods

As of February 20, 2020, the first case of COVID-19 had been reported in Iran and since then about 15000 cases have been confirmed in Iran so far. During this

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period, our center has decided to delay all elective procedures that involve nasal mucosa, oral, pharyngeal, and pulmonary secretions. But in emergent cases that need prompt procedure involving the upper aerodigestive tract mucosa such as EFBs, we follow our institute's instructions for rigid esophagoscopy (Figure 1).

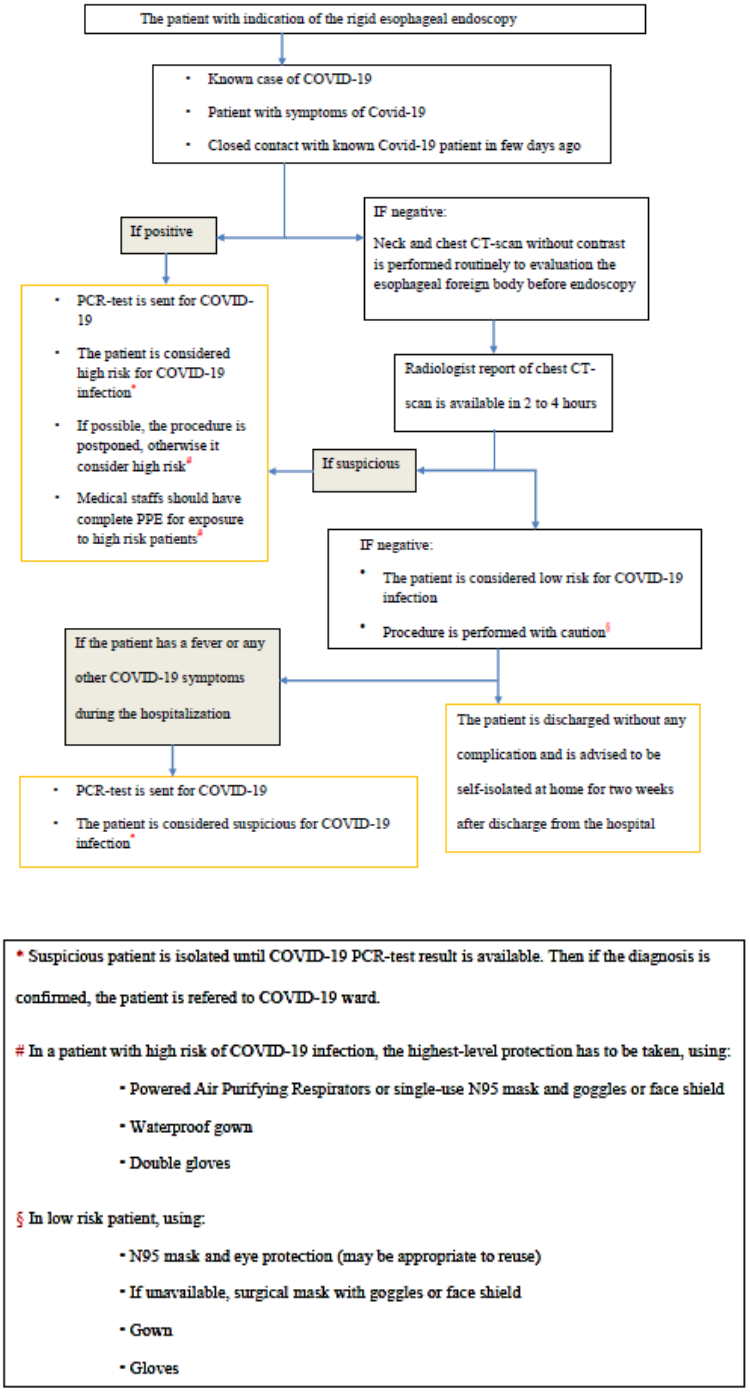

Figure 1. Instructions for rigid endoscopy in patients with esophageal foreign bodies.

COVID-19 PCR-test result is available for 1 to 2 days in our hospital. We used history, physical examination, and chest imaging for risk stratification of the emergent cases as low or high-risk patients for COVID-19.

All the patients were screened on admission for

symptoms of COVID-19 and neck and chest CT-scan without contrast were performed as a routine workup for Esophageal Foreign Bodies (EFBs). Then if indicated rigid esophagoscopy was performed. We classified the patients to low and high risk according to instructions. We used the highest-level protection for healthcare personnel at exposure to the high-risk patient with COVID-19 (Such as Powered Air Purifying Respirators or single-use N95 masks and goggles or face shields, water-resistant gowns, and double gloves). In a low-risk patient, we used: an N95 mask and eye protection which could be used repeatedly if it is unavailable, or a surgical mask with goggles or face shield, gown, and gloves.

All patients were advised to be self-isolated for two weeks after discharge from the hospital. Then all patients were asked by telephone interview or video calls about the symptoms of COVID-19 during isolation.

Demographic, clinical, and radiologic data were collected for each patient. The statistical package SPSS software for Windows (version 24.0 Armonk, NY: IBM Corp) was used for data analysis.

The instruction and safety protocols were developed with the cooperation of the local Ethics Review Committee of our institution and written informed consent was obtained from all the patients.

Results

Between March 10 and April 10, 2020, a total of 28 rigid endoscopies performed rigid esophagospcopy under general anesthesia for EFBs at our center.

Out of 28 patients, none of them had symptoms of COVID-19 (fever, cough, and dyspnea) on admission. Only one patient (3.57 %) had a suspicious CT scan for COVID-19 and then her test for 2019-nCoV from a nasopharyngeal swab had a positive result. Our COVID-19-positive patient was a 60-year-old woman who was discharged from the hospital after the endoscopic removal of her esophageal foreign body in 4 days. Fortunately, she was released from the COVID-19 ward in stable and appropriate general condition (Figure 2).

The mean age of 27 asymptomatic cases, including 14 men and 13 women, was 45.2 years old. Their average hospital stay was 0.8 days. Of the 27 patients who cooperated and were interviewed by telehealth communication 2 weeks after discharge from the hospital, none had the symptoms.

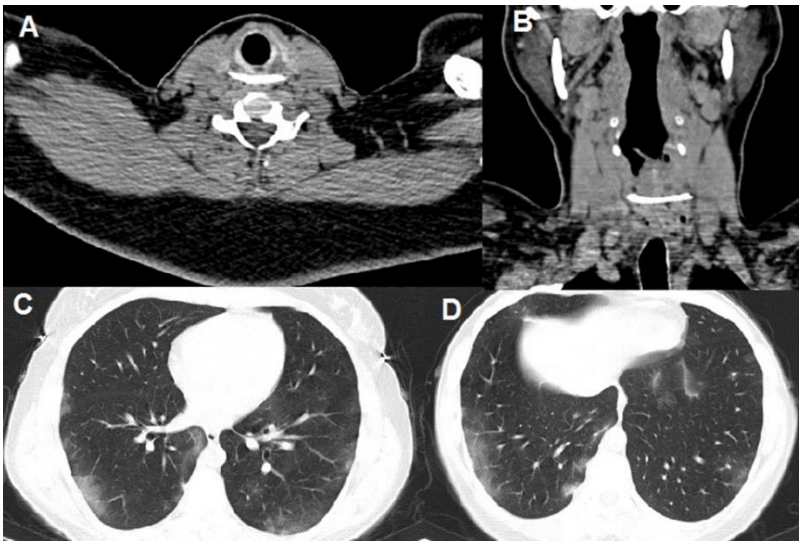

Figure 2. A and B: Cervical esophageal foreign body in axial and coronal views of neck CT-scan without oral and intravenous contrast. C and D: Diffuse peripheral opacification in favor of the coronavirus involvement in the chest CT scan of the same patient

Discussion

It is widely accepted that COVID-19 is mainly transmitted via droplets and contact, but there is also evidence that airborne spread is probable during aerosol-generating procedures (8). Therefore, an area of particular concern in the otolaryngology field is aerosol-generating procedures that would include an operative procedure involving the mucosa of the head and neck such as tracheostomy and laryngoscopy (9). During the COVID-19 pandemic, the Otolaryngology-Head and Neck Surgery department of our hospital decided to reduce the number of active healthcare workers to the least possible required and delayed all elective

procedures that involved nasal mucosa, oral, pharyngeal, and pulmonary secretions. Such strategies helped to eliminate any unnecessary exposure and contamination. But when such a procedure is indicated and inevitable, appropriate personal protective equipment (PPE) according to our safety protocol (Figure 1) for risk classification of disease transmission is mandatory for all operating room staff. These practices are consistent with the American Academy of Otolaryngology-Head and Neck Surgery's recommendations, published on March 20th, and the British Association of Otorhinolaryngology-Head and Neck Surgery (BAO-HNS) guideline for upper aerodigestive tract endoscopy in COVID-19 pandemic (10,11).

We also focused on improving safe care and reducing the length of hospital stays. Patients were discharged as soon as possible with clarifications of warning signs and then used remote communicating devices like phone or video conference for follow-up. These telehealth techniques are consonant with social distancing protocols. According to large viral loads in pulmonary and gastric secretions, clinical departments performing endoscopies are faced with great challenges during this pandemic. Healthcare workers consisted of 3.8% of confirmed cases from China and 8.3% of cases from Italy (12). However, in our institute, one in about 50 of the healthcare workers had positive symptoms (fever and cough). He was quarantined and continued his treatment at home for two weeks after his test was positive for SARS-CoV-2.

In this study, we use strategies that were recommended by guidelines from the Difficult Airway Society, the association of Anesthesia and Intensive Care Society, Royal United Hospital, UK for airway management and infection control during the COVID-19 pandemic. Safety for both, health staff and patients during general anesthesia were achieved by following these fundamental principles and precautions (13).

The importance of our experience is that with careful and secure plans, we will be able to provide beneficial care and protect physicians during this epidemic in an appropriate manner.

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