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Case Series

Early percutaneous tracheostomy in COVID19 patients with failed intubation: A case series

Saeid Marzban-Rad [a], Zahra Marzban-Rad [b], Ali Khanbanan [c], Sahar Bahmani [d], Amenehsadat Kazemi [e,*]

[a] Department of Surgery, Imam-Reza Hospital, Aja University of Medical Sciences, Tehran, Iran
[b] Department of Obstetrics and Gynecology, School of Medicine, Preventative Gynecology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[c] General Practitioner, Faculty of Medicine, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
[d] Zist Takhmir Pharmaceutical Company, Tehran University of Medical Sciences, Tehran, Iran
[e] Department of Psychology, Faculty of Medical, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

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ABSTRACT

Introduction: COVID19 and pulmonary dysfunction leading to acute respiratory distress syndrome (ARDS).
Case study presentation: Herein we presented the cases of failed intubation that was replaced by early percutaneous dilational tracheostomy. The procedure is safe for the patients, doctors and clinical staff.
Conclusion: Additionally, we report mucormycosis after COVID19 treatment that was potentially due to immunosuppressive drugs.

1. Introduction

Systemic manifestation of COVID19 and pulmonary dysfunction leading to acute respiratory distress syndrome (ARDS) have demanded extraordinary need of critical care such as mechanical ventilation, intensive care unit and sedation [1,2]. 20–41% patients with severe infection are presented with ARDS and require hospitalization. Coagulation disorders and pulmonary embolism is also reported with increased inflammation [3,4].

Initial studies related to COVID19 have shown that need of tracheostomy for intubation is associated with poor prognosis and mortality rate is high in these patients [5]. Percutaneous dilational tracheostomy (PDT) had been previously exploited in placement of intubation and has shown effective outcomes among respiratory distress patients [6].

In this case series we performed PDT on COVID19 patients requiring intubation, as per national guidelines.

2. Case presentation

In 32 patients, after transfer to ICU due to decreased PO2 and subsequent complications, following surgical interventions were made to continue treatment:

1 Placing CV-Line for hemodialysis, intravenous nutrition, CVP control and serum therapy
2 Performing a to establish the airway and more accurate suction through this method to prevent infection in the operating room.

Priorly, they were treated with intravenous remdesivir 200 mg, levofloxacin 500 mg/day, and dexamethasone (8 mg/day).

Mortality in the patients were followed by catheter drainage in a 76-year-old woman, thoracotomy and segmentectomy for giant bulla in a 54-year-old, discharge of subcutaneous emphysema followed by hitting by several needles and air drainage in a 72-year-old, drainage of emphysema anterior mediastinal space through enzyme in a 72-year-old woman and a retroperitoneal hematoma drainage and blood transfusion in a 56-year-old woman.

A 46-year-old man was discharged following thoracotomy for recurrent pneumothorax due to refractory fistula (Table 1).

Unique identifying number is: researchregistry7334.

This case series has been reported in line with the PROCESS Guideline [7].

; ARDS, acute respiratory distress syndrome; PDT, Percutaneous dilational tracheostomy.

* Corresponding author. Assistant Professor, Islamic Azad University, Tehran, Iran, Tel.: 09121308038.
E-mail address: sadat.kazemi@yahoo.com (A. Kazemi).

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Table 1
Methodology factors and demographics data investigated in this study.

Methodology	Number	gender	Age	dead	Discharge
Tracheostomy	23	Male/ female	60<	14	8
CV-line	0				
Pleurisy	1	Female	76	+	
Tracheostomy pneumonia	1	Male	46		+
tracheostomy segmentectomy	1	Male	54	+	
Subcutaneous emphysema	2	Male/ female	72,67	+	
mediastinal emphysema	2		72	+	
Retroperitoneal hematoma drainage	1	Male	56	+	
Pneumothorax	1	Male	50		+

3. Results

In 22 tracheostomy patients, 14 patients died, and 8 patients were discharged. The mean hospitalization in deceased tracheostomy patients was 33 days from the start of ICU admission and the average hospitalization period in deceased tracheostomy patients was 19 days from the beginning of ICU admission.

Cooperation of thoracic surgeon and hematologist in the treatment team, performing PDT to prevent infection of the surgical team, performing early tracheostomy, which is effective in improving the prognosis, subcutaneous and mediastinal emphysema, starting anticoagulant treatment, treatment of eye lesions (hemorrhage due to middle layer vasculitis and treatment of mucormycosis), which in one case was PCR positive from eye samples, delayed elective surgery, CBC with diff tests, IL-1, D-dimmer, TSH, T4, ferritin, pre-calcitonin, fibrinogen blood test in COVID patients with high hemoglobin, D-dimmer, CPK are effective in improving the blood coagulation barrier and clinical symptom.

4. Discussion

Initial reports from the clinical data in China showed ocular manifestation of COVID19, characterized by visual impairment. Chemosis, epiphora, and conjunctival hyperemia are also seen in 1/3rd of the population and is common in patients with systemic manifestations [8]. Biochemical parameters like white blood cell and neutrophil counts, procalcitonin, C-reactive protein and lactate dehydrogenase are also higher in these patients [9,10].

Our case series highlights the importance of early tracheostomy in COVID19 patients, that has been shown to be associated with reduced hospital stay [11]. However, early tracheostomies may be associated with higher 60-days mortality rate [12]. A case study reported PDT on 2 COVID19 patients with failed intubation and mechanical ventilation. These patients were discharged following the complete course of treatment in healthy condition [6].

Our case report also describes ocular manifestation of COVID19 after the treatment. Maini et al., reported a case a 38-year-old man presented with sino-orbital mucormycosis after COVID19.who was treated with fluconazole and amphotericin B and surgical debridement. The study concluded that with immunosuppression, as a result of COVID19 drugs or the manifestation of the disease, can instigate opportunistic infections in the body [13]. Similarly, Karimi-Galougahi, Arastou [14] reported a case of 61-year-old female who was presented by rhino-orbital mucormycosis after being treated for COVID19 for 2 weeks in the hospital. Some other case reports have also shown similar cases, where patients under steroid immunosuppression for COVID19 developed ocular manifestations that was confirmed as mucormycosis [15].

Endothelialitis and microvascular thrombosis in the lungs and extrapulmonary vessels are now extensively reported in COVID19 patients [16], which can favor angioinvasion of mucormycosis leading to infarction. Furthermore, immune dysfunction in COVID19 patients presented by lymphopenia and the usage of steroid-induced immunosuppression also promotes the development of opportunistic infections like mucormycosis [14].

5. Conclusion

Early tracheostomy after 48 h of initial intubation, protective measures and vaccine injection to the medical and surgical team can reduce the risk of COVID19 transmission. Additionally, COVID19 patients should be critically monitored for opportunistic infections, especially those taking immunosuppressive agents.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Conflict of interest

The authors deny any conflict of interest in any terms or by any means during the study.

Sources of funding

No funding was secured for this study.

Ethical approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent to participate

From the under 16 years old was given by a parent or legal guardian.

Consent for publication

Not applicable.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

Dr. Saeid Marzban-Rad: conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript. Dr. Zahra Marzban-Rad: Designed the data collection instruments, collected data, carried out the initial analyses, and reviewed and revised the manuscript. Dr. Ali Khanbanan and Dr.Amenehsadat Kazemi: Coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content.

Registration of research studies

1. Name of the registry: ResearchRegistry
2. Unique Identifying number or registration ID: researchregistry7334.
3. Hyperlink to the registration (must be publicly accessible): https://www.researchregistry.com/browse-the-registry#home/registrationdetails/61852fc3fd03bb001f20cbb3/

Guarantor

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsu.2021.103030.

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