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Effects of post COVID-19 on lungs in tertiary care hospital, Peshawar

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Abstract---Background: A severe acute respiratory virus that started lethal lung infections in Wuhan, China in Dec 2019 swiftly evolved into an epidemic in March 2020. Millions of fatalities have been attributed to COVID-19 globally, and people who survived the acute type often experience major mortality. Objective: The purpose of this research was to describe a number of patients who had experienced pulmonary problems following COVID-19. Methods: From December

2021 to June 2022, a retrospective research was done in Hayatabad Medical Complex, Peshawar. Patients with a record of a COVID-19 diagnosis verified by nasopharyngeal RT-PCR and who had been hospitalized to or visited an outpatient department were included. Results: This research included a total of 50 COVID-19 infected individuals. patients most frequently reported shortness of breath (n=29; 58%), fever (n=7; 14%), cough (n=5; 10%), and hemoptysis (n=9; 18%). Major surgical treatments were carried out on them, including bullectomies, lobectomies, and decortications and the most successful treatment for empyema is open decortication. Thirteen patients (26%) were admitted to the ICU after operations, nine cases (18%) acquired mucormycosis, and two deaths were reported. Conclusion: Patients may endure chronic lung consequences after the remission of COVID-19, which could extend for months and have an impact on their quality of life, the need for ICU hospitalization, or even mortality.

Keywords---post COVID-19, decortications, pulmonary, surgical treatments.

Introduction

A severe acute respiratory virus that started lethal lung infections in Wuhan, China in Dec 2019 swiftly evolved into an epidemic in March 2020. Millions of fatalities have been attributed to COVID-19 globally, and people who survived the acute type often experience major mortality. 1,289,214 incidents have been reported in Pakistan only, and over 29,749 individuals have suffered fatalities as a result of COVID-19 [1-3]. People with COVID-19 who were hospitalized or not commonly observed experiencing the following symptoms: flu, breathlessness, coughing, fatigue, anxiety, nausea, diarrhoea, and vomiting. A minority of individuals needed hospitalization and subsequently modified acute respiratory distress syndrome (ARDS), which is potentially lethal despite the fact that majority of patients showed no maybe several indications [4,5].

Reports have been published about the resumption of pulmonary function following an apparent recovery from the infection since COVID-19 prefers the lungs. The therapeutic intensity of COVID-19 varies, varying from a moderate upper airway infection to acute interstitial pneumonia and ARDS [6-8]. When comparison to patients towards less serious illnesses treated in hospital centres, intensive care unit (ICU) survival have reportedly been shown to have limits in several measures that have changed their life satisfaction and resulted in lengthy psychological adverse outcomes [9]. On postmortem, generalized alveoli injury, swelling, microvascular coagulation, and pulmonary capillary obstruction as well as an intense pneumonic procedure that has a significant radiologic opacity are seen [10]. People having COVID-19 pneumonia who had healed and been released were found to still have abnormality in their chest computed tomography (CT) examinations, with ground-glass opacity becoming the most common pattern [11].

It has been discovered that elderly adults with co-morbid conditions like hypertension, diabetes, cancer, and lifestyle factors like smoking are more likely to experience severe illness. Comorbidities have now been linked to less improved therapeutic results. In contrast to the human disease obvious symptoms, family members may struggle with rising medical expenses and diminished earning potential brought on by severe, protracted illness. Given the disease's uniqueness and unpredictable nature, it is crucial to research how patients with the disease affect their lungs [12-14]. The purpose of this research was to describe a number of patients who had experienced pulmonary problems following COVID-19.

Material and Methods

From December 2021 to June 2022, a retrospective research was done in Hayatabad Medical Complex, Peshawar. Patients with a record of a COVID-19 diagnosis verified by nasopharyngeal RT-PCR and who had been hospitalized to or visited an outpatient department were included. The research comprised participants who had been 18 years old or older, had COVID-19 disease, and had breathing problems including coughing, breathlessness, hypotension, flu, and/or some other lung problems with recurrent COVID-19 PCR screening negative. Participants underneath the age of 18, those who had additional lung symptoms or problems, those whose data were inadequate or who departed without medical advice, and those who had persistent chronic lung disease were not included in the study.

After receiving approval, a 3rd month appointment will be made for a lung function test, x ray of chest, and echocardiography (ECHO). The appointments will be maintained adjustable with a 1-week (before or after) window depending on the accessibility of the patients and meeting slots in order to aid the patient and prevent overflowing in healthcare settings. During the examinations, the patients will be encouraged to meet with a medical specialist or an infectious disease specialist for a discussion to go over the results and get additional disease-related recommendations. Patients will receive a comprehensive evaluation from the specialist, who may also recommend additional imaging testing as necessary. A second respiratory function test and chest X-ray will be performed at a subsequent follow-up appointment at 6 months, o Only if an irregularity is noted during the three - month follow-up with ECHO repeated. When a patient's chest X-ray reveals a chronic abnormality when opposed to the background or on a doctor's advice, a CT chest will be done at the three-month follow-up. The records of the organization were used to collect the information. The collecting data process was carried out using Excel Software 2019. Data analysis and classification were done using SPSS Version 25, a statistical program for the social sciences. P value under 0.05 is deemed to be significant.

Results

This research included a total of 50 COVID-19 infected individuals. Only 16 cases (32%) were women, while men made up the majority of the cases (n = 34; 68%). With a range of 19 to 65 years, the average life span was 42.03 years. In our study, the majority of participants (n=31; 62%) were non - smokers, while 38% of patients (n=19) did smoke (figure 1In addition to ischemic heart disease (IHD) and

TB, diabetes mellitus (DM) was the most prevalent comorbidity. Furthermore, 13 people only have COVID-19 and no other disease symptoms, compared to 11 patients who had DM, 11 patients who had IHD, and 7 patients who had Tuberculosis (figure 2).

All of the participants had acute COVID-19 and were subsequently hospitalized to the ICU. Of the 13 (26%) individuals who underwent mechanical ventilation, while 37 patients (74%) did not. The illness lasted for different amounts of time in each person, varying from 12 to 26 days with average of 12.3 days. By using RT-PCR, the patient's cure from COVID-19 was verified. Following their recuperation from the illness, patients most frequently reported shortness of breath (n=29; 58%), fever (n=7; 14%), cough (n=5; 10%), and hemoptysis (n=9; 18%). The CT scans performed on all of the individuals revealed various lung defects and results depending on the scenario. According to the individuals' circumstances, major surgical treatments were carried out on them, including bullectomies, lobectomies, and decortications. All but two of these operations required a thoracotomy, the other two required a Clamshell incision. Thirteen patients (26%) were admitted to the ICU after operations, nine cases (18%) acquired mucormycosis, and two deaths were reported. The majority of people (n=26; 52%) healed and were released from the hospital without sequelae (Table 1).

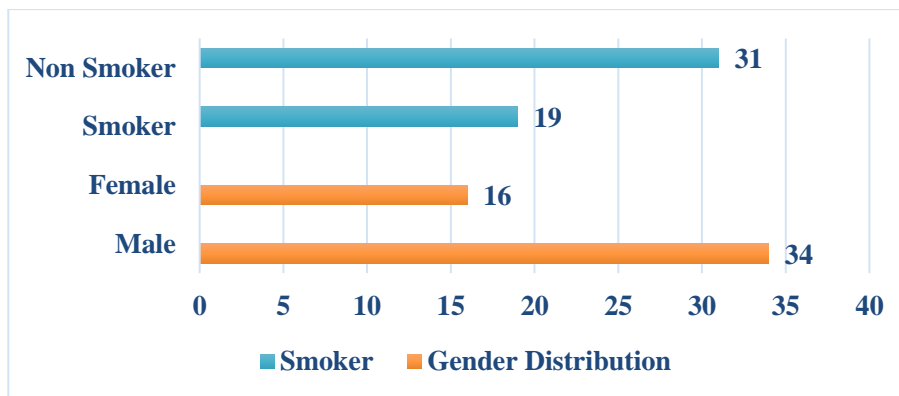


Figure 1: Gender distribution and cigarette smokers and non-cigarette smokers

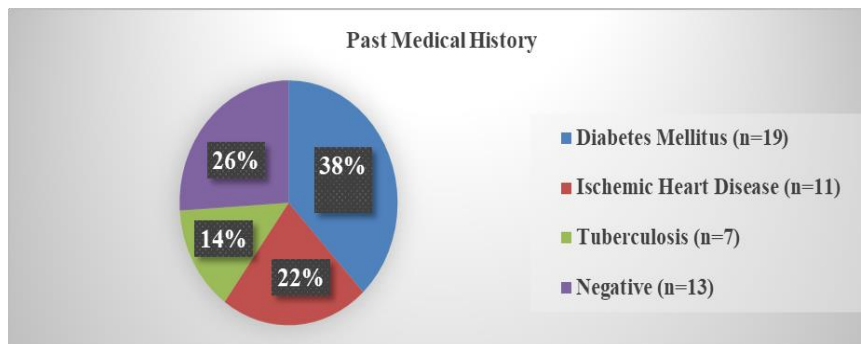


Figure 2: Past medical history of patients

Table 3: clinical characteristics of participants

Variable	Patients Number (n)	Percentage (%)
COVID-19-related ICU admission		
Yes	50	100%
No	0	0%
Mechanical Ventilation		
Yes	13	26%
No	37	74%
following COVID-19, the main complaint		
Shortness of Breath	29	58%
Fever	7	14%
Cough	5	10%
Hemoptysis	9	18%
Findings from the chest CT after COVID-19		
Empyema	25	50%
Air space	12	24%
Cavitary lesion	8	16%
Bronchiectasis	5	10%
Treatment Procedure		
Decortication	28	56%
Lobectomy	12	24%
Bullectomy	10	20%
Follow up		
Cured	26	52%
ICU enrolled	13	26%
Mucormycosis	9	18%
Demise	2	4%

Discussion

Despite the fact that most of COVID-19 infected incidents recover fully, for a significant chunk of patients, trying to survive COVID19 may only be the start of numerous struggles on the hard journey to complete cure because they have lasting illnesses that range in severity from mild to complex problem [15]. The name "post COVID-19 disease" refers to this complicated illness that persists after the disease has cleared up and has effects on numerous organs. It covers everything including functional restrictions to cognitive and physical disabilities to exercise deficiency, all of which add to a lower standard of living [16]. The intensity of the critical infection has been connected to a variety of respiratory distress among COVID-19 patients, including breathlessness with exertion, restrictive pulmonary physiology, impaired diffusion capacity, and fibrotic lung lesions [17].

It has been discovered that COVID-19 attributes to the lung tissue and threatens the alveolar cells by accessing through angiotensin transforming enzyme 2 (ACE2) receptors; this, in combined effect with cytokine storm, tends to make the alveoli susceptible to bursting, actually results in air leaks and the advancement of cystic air space lesions; this in turn, induced lung cystic deformities main, i.e.

shortness of breath (n=29; 58%) in Our results were consistent with earlier research's findings [18,19].

In this research, we identified twenty-five patients of empyema brought on by COVID-19. All twenty-five participants experienced surgical procedures, including decortication (n=28; 56%), lobectomy (n=12; 24%), and bullectomy (n=10; 20%). Long believed to be a surgical disorder, the most successful treatment for empyema is open decortication. Empyema is a rare but potentially fatal consequence that can exacerbate the COVID-19 disease and should be administered right away to enhance the patient's condition and chances of survival. Our results were consistent with the earlier research [20].

Conclusion

In summary, individuals may endure significant pulmonary consequences after COVID-19 has resolved. These issues could linger for months and result in a lower life quality, enrollment to the ICU, or even mortality. Morbidity and death can be reduced by continuing long-term clinical follow-up, rapidly referring patients to a pulmonologist, and intervening when pulmonary problems precede COVID-19.

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