



## A cross-sectional study on Iraqi patients with COVID-19 and a description of pulmonary complications

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### ABSTRACT

This study aims to find out the effect of COVID-19 and a description of pulmonary complications. Where a cross-sectional study was conducted from several different hospitals for a period of 6 months (12-4-2020 to 10-1-2020), and this study was designed by relying on a questionnaire distributed to patients to find out the pulmonary complications, then the data and demographic information related to the patients were analyzed by relying on the statistical analysis program IBM SOFT SPSS 22, where statistical tools were used to know the quality of the relationship with Covid patients, in addition to knowing the logistic analysis to analyze risk factors for patients

The results that were found in this study are the collection of 200 patients aged between 20-60 years, and the patients were distributed according to gender (Male 112 with 56% and females 88 patients with 44%), comorbidities were found and were the most frequent in this study is diabetes for 44 patients and heart disease for 43 patients, HYPERTENSION for 50 patients.

Pulmonary manifestations in this study were (Cough in 122 patients, shortness of breath in 40 patients, chest pain in 33 patients, and a statistically significant relationship was found between Pulmonary manifestations and COVID-19 with a p-value of 0.001).

A statistically significant relationship was found with the results of Respiratory rate, breath/min, and ages ranging from 50-60 were found to have difficulty in Respiratory rate with 23.3+2.4

A high mortality rate was found in this study for 32 patients with 16%, and the mortality spread significantly in the ages ranging from 50-60 years for nine patients with 4.5%, and we conclude from this study A statistically significant relationship was found at p-value 0.001 between the severity of complications and the increase in mortality rate.

#### Keywords:

Complications, mortality, Respiratory, breath, manifestations, Pulmonary

## Introduction

Patients with COVID-19 present a highly variable progression: from patients with mild symptoms of short duration to acutely ill patients who develop acute respiratory distress syndrome, with prolonged admission to critical care units. [1,2]

The initial stage is characterized by little expressed viral pneumonia. However, in some patients, [3,4] severe lung damage occurs with radiographic patterns of consolidation of pneumonia and diffuse alveolar damage with the onset of the immune response. [5]

In the initial stage of early infection, the clinical manifestations are secondary to the virus itself, with mild systemic and respiratory symptoms. During this period, the virus replicates and binds to the angiotensin-converting enzyme II (ACE-II) receptor 2, which is found to a greater extent in the pulmonary epithelium and vascular endothelium. [6,7,8]

In some cases, the initial stage is followed by an intermediate stage, in which the host's immune response begins [9,10]. Pneumonia begins, and viral pneumonia progresses with coughing and shortness of breath. [11] The average time from the onset of the first symptoms to the

## Material and method

Demographic information and data were collected from different hospitals, where cooperation with the authorities is carried out for the purpose of obtaining the necessary approvals in conducting this study, and written consent was obtained from patients for the purpose of distributing the questionnaire and collecting primary information related to height, weight, body mass, and comorbidities.

This study included 200 patients distributed at different ages ranging from 20 to 60 years, as it is a study of the impact of Covid 19 on vision complications. This study was designed by distributing a questionnaire to patients in addition to cooperating with the electronic registry in the hospital for the purpose of

onset of shortness of breath is 5-8 days. Hospitalization usually occurs at this stage [12] The late or severe stage is characterized by systemic hyperinflammatory syndrome with marked lung injury and a poor prognosis. Thus among admitted patients, up to 26% may require ICUs and invasive mechanical ventilation. 5% of cases have a severe illness with acute respiratory distress syndrome, shock, or multiple organ dysfunction. [13]

Acute respiratory distress syndrome is a major complication of critically ill patients and the leading cause of admission to intensive care units in 61% of cases. At this stage, the signs of systemic inflammation are very high [14]

Pneumonia caused by COVID-19 causes the air sacs inside the lungs to fill with fluid, and as a result, these organs reduce their ability to absorb oxygen, leading to shortness of breath, coughing, and other symptoms. [15]

Early data suggests that in the short term, the ability to move oxygen from the lungs into the bloodstream will be impaired for some time. We conclude that the greater the severity of viral pneumonia, the greater the effects on patients. [16,12].

collecting data related to the disease. The aim of this study is to find out the impact of Covid 19 on pulmonary complications.

The statistical analysis program IBM soft spss 22 was also relied upon.

And through the questionnaire that was distributed to patients to find out the symptoms that were at the beginning; in addition to that, they were discussed and studied

Infection with the emerging virus of Covid 19 increases the chance of developing lung fibrosis in the future, so it is recommended that people who have had respiratory symptoms for a long period of more than 12 months to do the necessary lung examinations periodically.

**Results****Table 1- Distribution of patients according to age**

	N=200	P%	P-VALUE	CHI-SQUARE
20-29	70	35	0.98	15.65
30-39	50	25		
40-49	50	25		
50-60	30	15		

**Table 2- Distribution of patients according to sex**

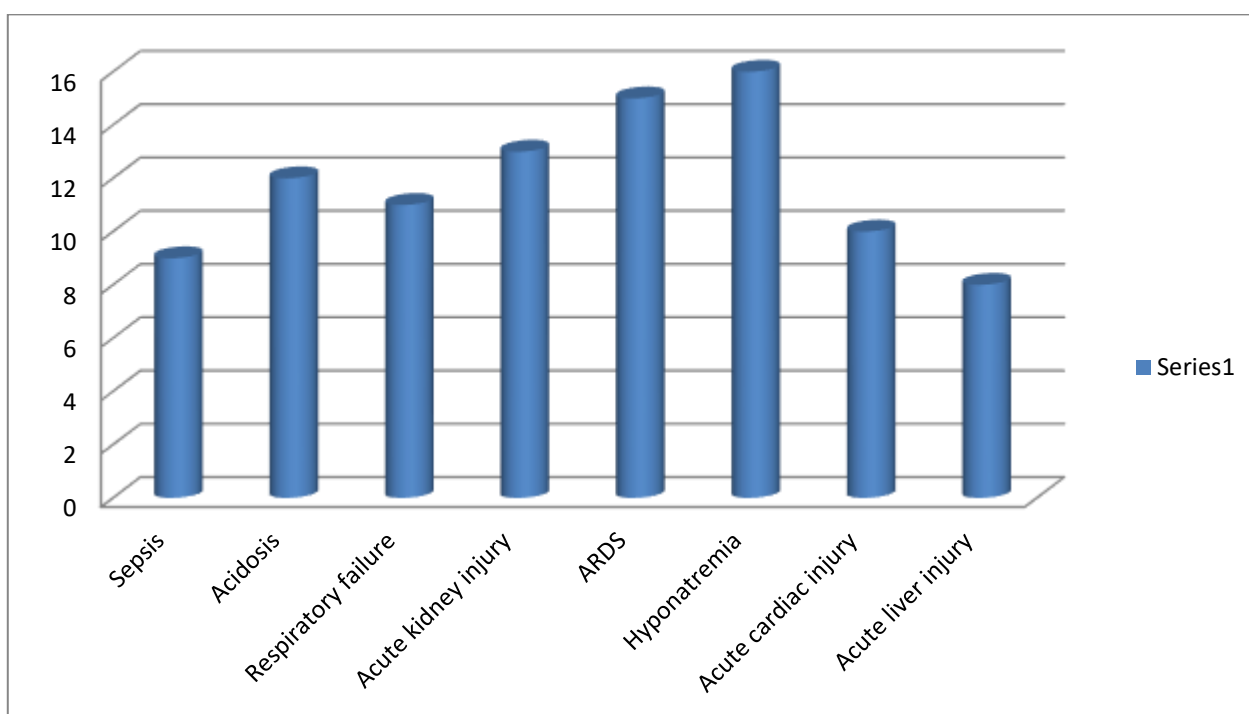
	F	P%	P value
Male	112	56	0.02
Female	88	44	

**Table 3- Characteristics of demographic results of patient**

Variable	Value	P-value
BMI (Mean±SD)	29.6±4.3	--
Comorbidities, N		
Diabetes	44	0.88
Heart disease	43	
Asthma	33	
Renal failure	30	
Hypertension	50	
Pulmonary manifestations		
Cough	122	0.001
Shortness of breath	40	
dyspnea	19	
fatigue and in severe cases	25	

Chest pain	33	
Neurological manifestations		
dizziness	100	0.001
nausea	30	
vomiting	32	
confusion	18	
myalgia	20	

**Fig 1- Distribution of patients according to hospital complications**



**Table 4- Demographic data Related with laboratory results**

Variable	Value	P-value
Heart rate, beat/min	90.2±6.3	0.01
Systolic BPa, mmHg	132.2±7.2	0.89
Diastolic BPa, mmHg	80.9±4.4	0.76
Red blood cells	4.1±0.4	<0.001
Hemoglobin, g/dL	11.2±1.3	0.03
WBCs counts	9.2±1.5	0.0023

Potassium, mmol/L	3.8±1.1	0.87
Creatinine, mg/dL	1.6±0.5	0.55
Albumin, g/dl	2.9±2.8	0.08

Fig 2- Results of Respiratory rate, breath/min

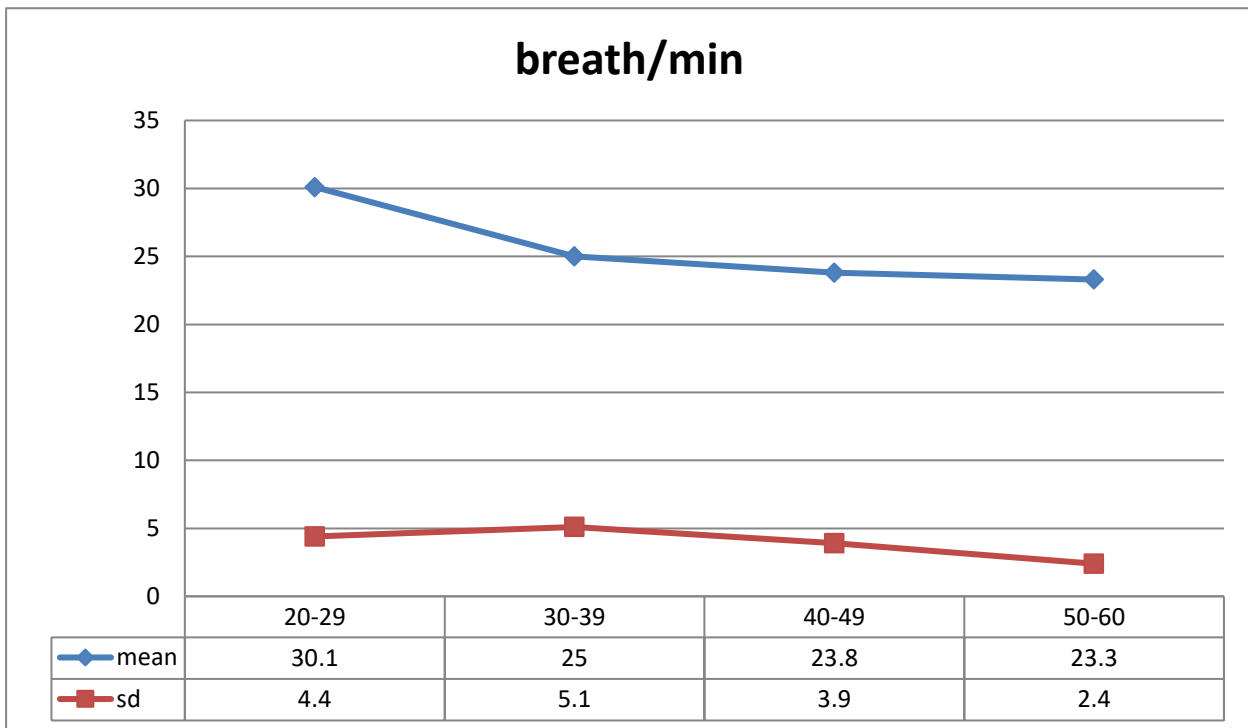


Table 5- Evaluate the final results after 15 days

Variable	F	P%
High Dependency Unit	9	4.5
Intensive Care Unit	13	6.5
COPD exacerbation, non-infective	11	5.5
Discharge home	129	64.5
Mortality according to age	30	15%
20-29	7	3.5
30-39	8	4
40-49	8	4
50-60	9	4.5

Table 6- Outcomes results according to a hospital stay

Period	N	P%
0-5	66	33
6-10	33	16.5

11- 15	24	12
Above15	19	9.5

**Table 7- Logistic regression to analysis risk factors on patient**

Variable	Rf-cs95%	P value
Age		
50-60	1.56(1.35-1.88)	<0.001
Gender (male)	1.20(0.89-1.54)	0.034
comorbidities	1.44(1.1-1.82)	0.005
Respiratory rate	1.32(0.98-1.55)	0.01

### Discussion

In this study, a total of 200 patients were distributed to different specific ages. Information and demographic data were collected from several different hospitals. The ages of this study ranged from 20 to 60 years, and the most frequent category in this study was the young ages ranging from 20 to 29 years of age for 70 patients with 35%, 50 patients of 30-39 years of age with 25% of the population, and 40-49 years of age for 50 patients with 25% of the population, and the ages that were least frequent in this study were the ages ranging from 50 to 60 years for 30 patients with 15

In this study, patients were distributed according to gender for 112 male patients and women for 88 patients, as shown in Table 2.

A high body mass index was noted for workers aged 50 to 60 years, and the prevalence of comorbidities, especially diabetes and pressure disease, was found. CD4+ and CD8+ T cells, hallmarks of disease progression, and high levels of the proinflammatory cytokines IL-6 and IL-8 during treatment in patients with severe disease correlate with low cell counts. Lymph.

COVID-19 usually presents as an acute respiratory infection, although it can be asymptomatic or asymptomatic.

The most common symptoms in hospitalized patients at the onset of the disease are fever, asthenia, and dry cough, which is sometimes followed by shortness of breath. In addition, the disease can present with various symptoms outside the lung, given the high prevalence of the virus for the angiotensin-converting enzyme 2 (ACE2) receptor, which is present in most organs.

According to general hospital data, patients admitted for COVID-19 of 66 patients with 33% had a mean hospital stay of 3 days (SD 1.2), while 33 patients with 16.5% in our patients had a hospital stay of 7.7 days (SD 1.3)

Patients aged 50-60 years had a longer hospital stay because of their greater severity and complication rate; they also had a higher rate of readmissions (3.5%).

The demographic and clinical data of our patients at admission and in their development during hospitalization are comparable to those of other studies except for the mean hospital stay.

COVID-19 affects the respiratory system more than others, and previous studies have found that in severe cases, the virus infects more than 50% of the lungs within 24-48 hours. According to official data from the Centres for Disease Control and Prevention, 5% of patients out of 72,000 suffer from hypoxia, and the death rate for the same number of cases is 2.3%.

In their reference study, published in the *Journal of the American Medical Association (JAMA Cardiology)*, the researchers revealed that "Covid-19" infection can cause vasculitis, myocardial infarction, cardiac arrhythmias, in addition to respiratory problems that contributed to an increase in the death rate of 1.2%.[17]

One of the studies on which the research-based its results was a study conducted on 187 patients who were admitted to a hospital in Wuhan for treatment from "Covid-19", of whom 144 (77%) recovered, while 43 patients (23%) died. Their average age is 58 years. Overall, there were 66 patients (35.3%) who had pulmonary complications, in addition to hypertension, coronary heart disease, and cardiomyopathy, while 52 patients (27.8%) had a heart muscle injury as a result of infection with the virus, which resulted in Heart failure and arrhythmia, which resulted in an increase in mortality rates for both groups. [18,19]

## Conclusion

A cross-sectional study was conducted for 200 patients for the purpose of describing pulmonary complications to patients with Covid 19 in Iraq, where a statistically significant relationship was found at a p-value of 0.001 between the severity of complications and the increase in mortality rate.

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