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ORIGINAL ARTICLE

Frequency of Covid Outcome in Covid Patients with Pre-Existing Different Co-Morbid Conditions

UNEEBA SYED[1], AMNA RIZVI[2], SYED ARSALAN HASSAN[3], UNAIZA SYED[4], IFRAH SYED[5]
[1,2]Department of Endocrinology and Metabolism, Services Hospital, Lahore, Pakistan.
[3,5]CMH Lahore
[4]Services Hospital, Lahore.
Correspondence to Dr Uneeba Syed, Email: uneeba.shah@gmail.com.

ABSTRACT

Background: Unexpectedly and unfortunately the end of the year 2019 has proved to be the start of a deadliest era of Coronavirus disease 19. Spread of this lethal disease has remained uninhibited so far. How rapidly it has wrapped up the whole world is dangerously alarming.
Aim: To determine frequency of Covid outcome in Covid patients with preexisting different co-morbid conditions.
Methods: This descriptive study was conducted from July 2020 to January 2021 in two tertiary care hospital i.e. Services hospital, Lahore (Punjab) and hospital, Quetta (Baluchistan). After ethical approval and informed consent from the patients, data from PCR positive patients was recorded. The demographic parameters, travel or exposure history, duration of stay in the hospital and co morbidities including diabetes, hypertension, stroke and ischemic heart diseases of the patients were collected.
Results: In our study, total 124 patients including 84(67.7%) male and 40(32.3%) female. The mean ages was 41.29±20.21 years, mean weight and height 83.46±15.1, 174.2±8.31. 82%patients were discharged, and 42%patients suffered death. Among the patients included in this study, 51(%) patients presented with diabetes, 55(%) patients presented with hypertension, 52% had ischemic heart diseases and 1.6% had stroke.
Conclusion: The conclusion of this study, there is a significant impact of pre-existing co-morbidities on Covid outcomes. Thus, it can be inferred that by modifying the comorbidities, positive outcome can be observed
Keywords: COVID-19, Risk factors, Outcome, Mortality

INTRODUCTION

The Beginning of Coronavirus 19 is from Wuhan, a province of China. Origin has always led to a controversy but many believe the virus has originated from wild bats[1]. Focus of infection in humans is the respiratory tract. Isolation of the virus from airway epithelial cells of human beings has confirmed its presence there[2]. By June 21, 2021 a humongous number of 178202610 confirmed cases of Covid 19 including 3865738 deaths are reported on WHO Covid-19 dashboard. The Covid 19 mortality rate varies from 30 to 97% for the severe category of patients with mechanical ventilatory support[3-6].

Diagnosis of this disease, collection of samples and subsequent management require special care as the whole process places the healthcare professional at greater risk of contracting the lethal infection. Nasopharyngeal PCR is the mainstay of diagnosis in symptomatic individuals[7,8]. Mild symptoms are fever, flu, sore throat, and myalgia. Some patients show bilateral pulmonary involvement required injectable treatment with or without ventilatory support[9].

Nowadays as focus is diverted towards mass scale vaccination, similarly clinicians are striving hard to pinpoint causative or associated factors leading to poor prognosis. To address this, large Italian and Chinese studies have expressed their concerns regarding association with co-morbidities like hypertension, obesity, and diabetes and probable poor outcome[10]. Peng et al and LiuHG are of the opinion that obesity has association with Covid 19 severity[11]. According to us, we are in desperate need of such studies from different corners of the world to come up with ideas to prevent or at least control the damage done by this novel virus. We want to contribute in this regard by establishing Coronavirus 19 association with co-morbidities in our part of the world. This study will positively arise array of hope and by controlling co-morbidities, we may address this disease effectively in future.

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Operational definitions:

Pre-existing different co-morbidities: Patients who are already diagnosed case of hypertension, diabetes, IHD and stroke whether on treatment or not.

MATERIALS AND METHODS

This descriptive study was conducted from July 2020 to January 2021 in two tertiary care hospitals i.e. Services Hospital, Lahore (Punjab) and Hospital, Quetta (Baluchistan). After ethical approval and informed consent from the patients, data from PCR positive patients was recorded. The demographic parameters, travel or exposure history, duration of stay in the hospital and co morbidities including diabetes, hypertension, stroke and ischemic heart diseases of the patients were collected. Outcome of the patients in term of discharge or mortality was also recorded. Data was entered and analyzed on SPSS 23. Frequency of Covid outcome with pre-existing comorbidities was established. Chi square test were applied between the outcome and risk factors, P value< 0.05 was considered as significant.

Patients of both genders between age of 18 and 80 years having PCR positive admitted Covid were included, while pregnant and lactating females were not included in the study.

RESULTS

In our study, total 124 patients included 84(67.7%) male and 40(32.3%) females. There were 10(8.1%) patients of less than 40 years of age, 75(60.5%) were in between the age of 40 to 60 years and 39(31.5%) patients were in above than 60 years of age group. A total of 124 patients were divided into two groups according to the outcomes i.e. mortality and discharge. Out of 124, 82(66.1%) were discharged while 42(33.9%) passed away. Among the total number of patients, 51 (41.1%) were diabetic out of which 26(51%) had controlled diabetes while 25(49%) had uncontrolled diabetes, 73% (58.9%) were non diabetics. 55(44.4%) patients out of 124 had hypertension while 69 (55.6%) did not have hypertension. Out of 55(44.4%) hypertensive patients 43 (78, 2%) had controlled.

Table 1: Frequency of comorbidities Distribution

	Frequency
Diabetes	
Present	51(41.4%)
Absent	73(58.9%)
Controlled	26(51%)
Uncontrolled	25(49%)
Hypertension	
Present	55(44.4%)
Absent	69(55.6%)
Controlled	43(78.2%)
Uncontrolled	12(21.8%)
BMI	
Normal	28(22.6%)
Overweight	45(36.3%)
Obese	51(41.1%)
Ischemic heart disease	
Present	52(41.9%)
Absent	72(58.1%)
Stroke	
Present	2(1.6%)
Absent	72(58.1%)

Table: 2 Frequency of Diabetes and control of diabetes with Outcomes

	Frequency		P value
Outcome	Discharge	81(65.3%)	
	Death	43(34.7%)	
Risk factors			
Diabetes	**Discharges**	**Death**	0.000
present	21(41.2%)	30(58.3%)	
absent	61(83.6%)	12(16.4%)	
Control of diabetes			
Controlled	13(50%)	13(50%)	0.192
Uncontrolled	8(32%)	17(68%)	
Hypertension			
Controlled	24(55.8%)	19(44.2%)	0.003
Uncontrolled	1(8.3%)	11(91.67%)	

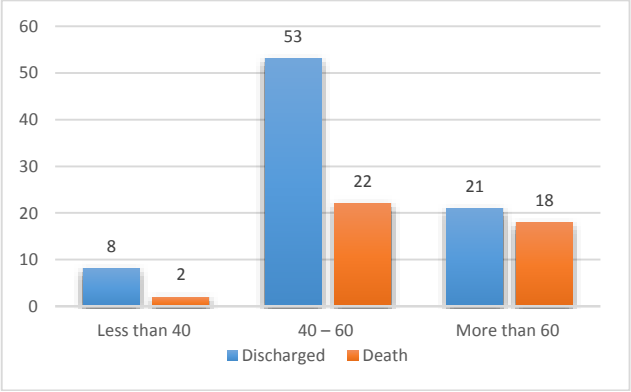
Hypertension while 12 (21.8%) had uncontrolled hypertension. ischemic heart disease was present in 52 (41.9%) of the patients while 2 (1.6%) had stroke. In the blow table out of 51 patients with diabetes 21(41.2%) were discharged while 30(58.3%) passed away. 61(83.6%) out of 73 patients who were not diabetics were discharged while 12(16.4%) died. With p-value becoming significant for the presence of diabetes in relation to the outcome. The control of diabetes, however, had a p-value of 0.194.

This table shows that 27(49%) of the hypertensive patients were discharged while 28(51%) died. Out of 69 non hypertensive patients 55(79.7%) were discharged and 14(20.3%) died. P-value was significant for the presence of hypertension as well as the control of hypertension. Age groups with Outcomes had a p value 0.124

Table 3: Frequency of BMI, ischemic heart diseases and stroke with Outcomes

BMI	Discharges	Death	P value
Normal	26(92.8%)	2 (7.1%)	0.000
Overweight	31 (68.89%)	14(31.1%)	
Obese	25(49%)	26(50.9%)	
Ischemic heart disease			
Present	25(48%)	27(51.9%)	0.000
Absent	57(79.1%)	15(20.8%)	
Stroke			
Present	0 (0)	2(100%)	0.046
Absent	82(67.2%)	40(32.7%)	

Fig. Frequency of Age groups with Outcomes



DISCUSSION

COVID-19 has been declared a pandemic by WHO due to the fact that it is an emergency of international concern. Though it is an acute infectious respiratory disease, it can have a rapid progression to bilateral pneumonia, coagulopathy and multiorgan involvement which playa a havoc with the precious lives. [12]. In our study we have looked for the pre-existing co-morbidities that include the diabetes, hypertension, ischemic heart disease etc. which are playing role in the progression and outcome of the patients with COVID-19 with a view that with effective control and prevention of these co-morbidities might be able to alter the course of the disease and improve the outcome of the patients in terms of mortality and morbidity.

It can be assumed that Covid-19 damages the organs especially the ones with preexisting damages from the co-morbidities. A newer pathological study with twelve deceased Covid-19 patients found high incidence of thromboembolic events suggesting an important role of Covid-19 - induced coagulopathy. 5 of the 12 patients showed high viral RNA titers in the liver, kidney, or heart[13].

A similar study conducted in New York and China[4,14] described the mean age was 63 and 54 years respectively as compare to our study the mean age 42 years. The most common comorbidities in our study was hypertension 56(45.2%) and diabetes mellitus 52(41.8%), which is again comparable to China study, the most common comorbidities hypertension was 47.8% and diabetes mellitus was 37.8%. Another study conducted by Sanyaolue et al[15] found out that HTN 55.4% was at the top of the list as a comorbidity, followed by diabetes mellitus 37.3%, and CVD 12.4%. In our study we found that HTN (45.2%) as a comorbidity was followed by DM (41.9%), IHD (54.5%) and smoking (35.5%).

Underlying pathophysiology of diabetes is mainly inflammation and persistent hyperglycemic state leads to

vascular endothelial damage, thus adversely affecting the patient's immune status. The abnormal pro-inflammatory cytokine response in diabetic patients may result in severe COVID-19 according to some studies. [16-18] Based on an epidemiological study of 72 314 patients with COVID-19, the mortality rate of patients with comorbidities was higher than that of patients without comorbidities, and the mortality rate of patients with diabetes was 7.3%[19] As compare to our study, the mortality rate in diabetic patients with controlled disease was 9(17.2%).

Zhou *et al*. reported that in-hospital death was related to age at admission[20]. the prognosis deteriorates with age probably due to the decline in immune system and due to the super added chronic diseases. Our study with 18(46.15%) mortality rate in patients above 60 years of patients and 22(29.33%) patients between the ages of 40-60 years being dead corresponds to this. A Saudi study, included 648 COVID-19-positive patients with a median age of 34 years. Risk factors associated with worse outcomes included males, age >60 years, cardiac diseases, chronic respiratory diseases and cases with two or more comorbidities[21]. In our study there was 27(21.8%) mortality in males and 16(12.9%) in females.

Due to ongoing Covid wave, the personnel protective equipment is much needed and are required to be used with great care. Our sample size, we believe is less and presents our limitation as a bigger sample size can validate the results as well as the results can be generalized as well. However, despite many patients of Covid we had to adhere to the protocols of the Covid to get the samples which required the usage of PPEs as well. We propose a larger sample size study in areas with adequate supply of the equipment so that it can add this.

CONCLUSIONS

The conclusion of this study is that there is significant impact of pre-existing comorbidities on Covid outcome. Presence of diabetes, hypertension, poor control of hypertension, presence of ischemic heart disease, stroke and higher BMI have been a contributing factor towards the poorer outcomes in term of mortality. Thus, it can be inferred that by modifying the co-morbidities, positive outcome can be expected.

Conflict of interest: Nil

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