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STUDY TO KNOW THE ASSOCIATION OF CLINICAL PRESENTATION AND COMORBIDITY AMONG COVID-19 PATIENTS ADMITTED IN TERTIARY CARE HOSPITAL

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Abstract:

Objective: *To study the association of clinical features & comorbidity among Covid-19 patients admitted in tertiary care hospital.*

Study Design: *Cross-sectional study*

Place and Duration of Study: *This study was conducted at the Mayo Hospital Lahore for the period of four months from April to July, 2020.*

Materials and Methods: *Total 142 admitted Covid-19 patients were selected as participants to assess the range of symptoms experienced during active phase of infection.*

Results: *Out of total 142 participants, 87.3 %(n=124) complaint of shortness of breath, 57.7%(n=82) had fever & 43.3% (n=62) had cough,27.5%(n=39) reported of body aches as compared to 14.1% (n=20) who had loose motions & 3.5%(n=5) who experienced irritability. Regarding comorbidity,49.3%(n=70) patients had Diabetes Mellitus,33.1%(n=47) Hypertension, 10.6%(n=15) Ischemic heart disease & 2.8%(n=4) had Chronic kidney disease.*

Conclusion: *During the pandemic of corona infection, majority of the symptomatic patients admitted in hospital had pre-existing health issues i.e. Diabetes, Hypertension, Renal diseases & respiratory involvement. Moreover, the concurrence of Covid-19 infection with medical syndrome serve as a vital prognosis factor linked with complications with multi organ involvement, unexpected outcome & longer hospital stay. This implies that health care emergency services should be formulated and implemented in a way where supervised intensive care should be provided to the most vulnerable group. Moreover, extensive awareness campaigns should be carried out to identify the group at risk of mortality.*

Key Words: *Clinical features, Comorbidity, Hypertension, Kidney disease, Ischemic Heart disease.*

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INTRODUCTION:

Since two decades, the public health system is continually challenged by contagious viral infections which have rendered the dire need to upgrade the current healthcare system at international level in context of prevention and management of epidemics. Recently, in the beginning of 2020, 2019-nCoV is declared by World Health Organization as a serious respiratory infection keeping in view the highly contagious nature and uncontrolled fatality rate with high probability. A shocking feature of cross specie spread from animals to human serve as a bitter evidence based reality not to be easily swallowed. As with SARS & MERS, Corona infection was expected to be same in intensity demonstrating wide but typical range of symptoms of common cold to pneumonia [1]. Covid-19 virus is spread via respiratory droplets and direct contact from patients. Although 50% of the patients remain asymptomatic while the rest of 30% present with complications with multi organ involvement [2].

Regarding immunology, in response to viral attack, the human body activates the process of innate immunity as a 1st defense mechanism where interferon I/III, IL-6, IL-18 & TNF proliferates and gathers. In exponential phase of Covid-19 infection, it inhibits interferon which stimulates immune response by ceasing the signaling genes of infected cells ascertained by diminished levels of cytokines, tumor necrotic factor & interferon [3].

An interesting myeloid response has been postulated in context of its deregulatory mucosal cell response which renders the covid-19 virus to attack and produce serious complications such as ARDS, disseminated intravascular coagulation DIC & cytokine release syndrome [4]. Being highly contagious in nature, the Covid-19 infection in its mild and asymptomatic form poses a danger of wide transmission as well as the difficulty to facilitate screening. No predictive factor has been identified for detection of asymptomatic patients although younger age group is expected to lie in this group [5].

Covid-19 syndrome is found to be similar to SARS-CoV in context of transmission, pathogenicity& nature of wide symptoms. However, in genome sequencing COVID-19 linked sequence identity is comparatively upgraded when studied with MERS CoV & SARS CoV.1ab polyprotein and surface glycoprotein or S-protein are the postulated regions of genomes which are altered in covid-19 virus as compared to MERS CoV SARS CoV [6]. With an incubation period of 14 days, median days of 4 to 5, is the gap between exposure and onset of symptoms of COVID-19 infection which produces common cold symptoms like fever, body aches, generalized fatigability, cough, sore throat, rhinorrhea, sneezing, difficulty in breathing & headache. However, a plethora of other non-respiratory symptoms have been reported during this COVID-19 pandemic.

For diagnosis of covid-19 infection, real time PCR serves as a vital diagnostic tool by achieving expectorated nasal, tracheal &Broncho alveolar secretion sampling (WHO recommends both upper and lower respiratory tract sample collection) as well as computed tomography of chest (CT SCAN) is used for diagnostic and prognostic tools. [7].

In management of COVID-19 infection, efficient measures include quarantine to prevent spread of disease, oxygen therapy and symptomatic relief. However, antibiotics are added to the regime with acetaminophen and cold sponging to control fever. Patients with severe respiratory disease & septicemia require intravenous steroids, high flow oxygen, nutritional supplements, vasopressors, anticoagulants, ventilatory support, hemodynamic & plasma transfusion. The progress of vaccine development against covid-19 virus has been under process. To prevent against rapid spread the only solution seems fruitful is isolation of patient with distant avoidance of contact with family members and even healthcare workers along with the judicious use of alcohol based hand sanitizers, surface bleach, N95 face masks & hand gloves. Evidence based community control programmes have been implemented globally under the guidance of WHO to control the transmission of infection [8].

MATERIALS AND METHODS:

During a pandemic of corona virus infection, 142 patients of Covid-19 were admitted in Mayo Hospital Lahore. The medical records of hospitalized patients were included in this study irrespective of comorbidity and severity. Patients already diagnosed with Diabetes Mellitus, hypertension, ischemic heart disease, chronic kidney disease, chronic liver disease, cerebral stroke & bronchial asthma were also included. Covid-19 patients with pregnancy were excluded. The patients with stay of more than 24 hours and long admission were included. We analyzed reported symptoms, including shortness of breath, fever, cough, body aches, diarrhea, vomiting & irritability as well as co-morbidities. The data entered and analyzed using SPSS version 20. For the purpose of analysis, participants were divided in two groups, those who were covid-19 patients along with comorbidity & others without any comorbidity.

Pearson Chi Square test and Fisher's Exact Test were used to evaluate associations between various qualitative variables of interest. For all purposes, p-value of <0.05 was considered statistically significant. Categorical variables were expressed as number (%) and compared by χ^2 test.

RESULTS:

Total 142 Covid-19 patients admitted in Abwa hospital and research centre, Faisalabad.

Table No.1: Demographic characteristics of study population

Characteristics	Frequency (%)n= 142
Age (mean ± s.d)	55.57±13.6
Gender	
Male	108(76.1)
Female	34(23.9)
Hospital stay days (mean ± s.d)	5.17±4.97
Recovery time(mean ± s.d)	4.96±4.96
Comorbidity	
Hypertension	47(33.1)
Diabetes mellitus	70(49.3)
Ischemic heart disease	15(10.6)
Chronic kidney disease	4(2.8)
Others (hcv, asthma, thyroid disease, cld, cva)	7(4.9)
Patient status	
Recovered	108(76.1)
Expired	34(23.9)
Patients with covid-19 symptoms	140(98.6)

*Descriptive statistics. Values are reported as n (%)

The mean age of participants was (55.57± 13.6) whereas 76.1%patients were male &23.9% females. The average stay of Covid-19 patients at hospital was (5.17±4.97) days and mean recovery duration was (4.96±4.96) days as shown in Table-1. The most striking comorbidity in our study was Diabetes Mellitus present in 49.3% admitted patients followed by 33.1%& 10.6% cases diagnosed of Hypertension & Ischemic heart disease respectively. Only 2.8% were consulting for chronic kidney disease & 4.2%belonged to a minor group (Bronchial asthma, HCV, Thyroid disease, CLD, Cerebrovascular disease). Moreover,76.1%patients recovered from corona infection as compared to 23.9% who could not survive during their stay at hospital. Amongst Covid-19 patients who expired due to complications during hospital stay, 79.4%had a single or multiple physical illnesses concurrent with Covid-19 infection.

Out of 142 participants, the majority reported various clinical symptoms at presentation and during treatment in the corona ward whereas only 1.4%(n=2) hospitalized patients were asymptomatic. In the context of symptomatology,87.3%(n=124) patients presented with shortness of breath,57.7%(n=82) had fever & 43.3% (n=62) had cough. Similarly,27.5%(n=39) Covid-19 hospitalized patients reported of body aches, as compared to 14.1% (n=20) who had loose motions & 3.5%(n=5) who experienced irritability. A minority of patients,2.8%(n=4) experienced hemoptysis, vomiting, loss of taste and hiccups singly.

Table No.2: Commonly reported symptoms in COVID-19 patients

Symptoms	Frequency (%)
Shortness of breath	124(87.3)
Fever	82(57.7)
Cough	62(43.7)
Body ache	39(27.5)
Diarrhea	20(14.1)
Irritability	5(3.5)
Hiccups	1(0.7)
Vomiting & hemoptysis	2(1.4)
Loss of taste	1(0.7)

*Descriptive statistics. Values are reported as frequency (%)

In view of table-3, Amongst hospitalized covid-19 patients,68.3%(n=97) had already diagnosed medical diseases, in contrast to 45% of patients who had no other physical illness at the time of corona infection.31.1%(n=14) of covid-19 patients without comorbid disease detained in management ward for less than 24 hours whereas 68.9%(n=31) remained under hospital's supervised treatment. Similarly, amongst the other group of participants of covid-19 disease along with comorbid medical condition, 88.7%(n=86) preferred to stay at hospital.

Table No.3: hospitalization of covid-19 patients vs. Covid-19 + comorbidity patients

Variables	Hospitalization		P-value
	Yes	Less than 24 hours	
Covid-19	31(68.9)	14(31.1)	0.004*
Covid-19 + comorbidity	86(88.7)	11(11.3)	

Values are expressed as frequency (%). Chi square test: *p <0.05

DISCUSSION:

Severity of covid-19 disease along with the deteriorating course of infection has been associated with presence of various medical diseases. The chance of contracting an infection is greater in those having medical/psychiatric illness. The current study showed the greater number of COVID-19 patients with other medical diseases; hospitalized in a greater number as compared to those who are not previously diagnosed with other illnesses. A recent meta-analysis in early 2020 shows that the most common co-morbidities elucidated in these patients of corona infection were Hypertension (15.8%), Cardiovascular disease (11.7%) and Diabetes mellitus (9.4%). Another study in Wuhan, China identified Diabetes 20%, Hypertension 15%, and Cardiovascular disease 15% along with the corona infection in hospitalized patients. However, this study reports that Diabetes Mellitus (49.3%) surprisingly predominates in participants in context of co-morbidities followed by Hypertension (33%) and Ischemic heart disease (10%) where longer hospital stays and willingness for immediate seeking for medical treatment were prominent [9].

As compared to milder cases of corona infection, those who are hospitalized are mostly symptomatic presenting with complaints of fever, cough and dyspnea. One study reports fever as core symptom in majority of hospitalized patients. Atypical symptomatology has been observed in high risk group which comprises of older age, immune compromised& comorbid medical illness. In contrast, in the context of symptomatology, this study identifies frequency of various clinical complaints experienced by hospitalized covid-19 patients where dyspnea stands out remarkably in 87.3%, fever 57.7%& cough in 43.7%of participants. Following this, diarrhea and irritability has been reported by 14.1% & 27.5% of participant's respectively [10]. A multicenter study on gastroenterological symptoms of covid-19 disease shows that myalgia, anosmia, nausea, gastric discomfort, diarrhea & vomiting are considered to be symptoms suggested of mild disease which are experienced usually prior to development of fever [11].

Although it was believed that the prognostic factors of Covid-19 infection are yet to be ascertained, a study was conducted during the early phase of pandemic in Changsha in 2020 where a high risk

group is identified as of old age, with comorbid medical illness, bilateral lung involvement, decrease in white cell count and raised C-Reactive protein highlighting as the predictors of complications. According to the recent multivariate study carried out in Henan, certain symptoms serve as prognostic tools related to outcome of covid-19 disease in which Fever was reported by 92% of covid-19 patients but its predictability of outcome is unascertained. Although shortness of breath & cough was recognized to be associated with disease severity [12,13].

Another study on healthcare workers showed 97%of negative assay results of covid-19 tested were either asymptomatic or only complain of sore throat, where higher viral load was detected in those having high grade fever and myalgia. Presentation of symptoms and their severity was considered to be a useful predictive measure of PCR result and prognosis [14].

As Atypical symptoms are surprisingly common in Covid-19 infection, Helm and colleagues suggested that 69% of severely ill Covid-19 patients have irritability linked to CNS invasion of Covid-19 virus by generating a cascade of hyper activation of cytokine response leading to multiple organ failure specifically targeting brain and lung parenchyma [15].The findings of our study are consistent with those of recently published research work in terms of the similarity of co-morbidities among hospitalized patients of Corona Virus disease. However, hypertension and coronary heart diseases remained the most common category of comorbidity [16-19]. The older patients with diabetes mellitus, hypertension, ischemic heart disease, and chronic kidney disease; had poor prognosis correlating with outcomes of several studies [20].

CONCLUSION:

There is significant association between comorbidity and COVID-19 where severity of infection and comparatively delayed recovery is associated. Similarly, presence of medical illness & severe symptoms experienced by COVID-19 patients also serve as important prognostic factors. Healthcare system should be devised effectively to screen high risk group & provide early intervention to prevent its transmission to masses.

REFERENCES:

1. Cascella M, Rajnik M, Cuomo A, et al. Features, Evaluation, and Treatment of Coronavirus (COVID-19) [Updated 2020 Aug 10]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554776/
2. Lovato A, de Filippis C. Clinical Presentation of COVID-19: A Systematic Review Focusing on Upper Airway Symptoms. Ear Nose Throat J 2020; 99(9):569-76.
3. Vabret N, Britton GJ, Gruber C, et al. Immunology of COVID-19: current state of science. Immunity 2020;52:910-41.
4. Ma Y, Xu Q, Wang F, et al. Characteristics of asymptomatic patients with SARS-CoV-2 infection in Jinan, China. Microb Infect 2020; 22:212-7.
5. Kannan S, Shaik Syed Ali P, Sheeza A, Hemalatha K. COVID-19 (Novel Coronavirus 2019) - recent trends. Eur Rev Med Pharmacol Sci 2020;24(4): 2006-11.
6. Pascarella G, Strumia A, Piliego C, Bruno F, Del Buono R, Costa Fet al. COVID-19 diagnosis and management: a comprehensive review. J Int Med 2020;288(2):192-206.
7. Hassan SA, Sheikh FN, Jamal S, Ezeh JK, Akhtar A. Coronavirus (COVID-19): A Review of Clinical Features, Diagnosis, and Treatment. Cureus 2020; 12(3):7355.
8. Guan WJ, Ni ZY, Hu Y, et al; China Medical Treatment Expert Group for Covid-19. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med
9. Zheng F, Tang W, Li H, Huang YX, Xie YL, Zhou ZG. Clinical characteristics of 161 cases of corona virus disease 2019 (COVID-19) in Changsha. Eur Rev Med Pharmacol Sci 2020;24(6):3404-10.
10. Lan FY, Filler R, Mathew S, Buley J, Iliaki E, Osgood R, et al. COVID-19 symptoms predictive of healthcare workers' SARS-CoV-2 PCR results. PLoS One 2020;26:15(6).
11. Li J, Chen Z, Nie Y, Ma Y, Guo Q, Dai X. Identification of Symptoms Prognostic of COVID-19 Severity: Multivariate Data Analysis of a Case Series in Henan Province. J Med Internet Res 2020;22(6):19636.
12. Pan L, Mu M, Yang P, Sun Y, Wang R, Yan J, et al. Clinical Characteristics of COVID-19 Patients With Digestive Symptoms in Hubei, China: A Descriptive Cross-Sectional, Multicenter Study. Am J Gastroenterol 2020;115(5):766-73.
13. Abdi A, Jalilian M, Sarbarzeh PA, Vlaisavljevic Z. Diabetes and COVID-19: A systematic review on the current evidences. Diabetes Res Clin Pract 2020; 166:108347.

14. Sher Y, Rabkin B, Maldonado JR, Mohabir P. COVID-19-Associated Hyperactive Intensive Care Unit Delirium with Proposed Pathophysiology and Treatment: A Case Report. Psychosomatics 2020; 61(5):544-50.
15. Sanyaolu A, Okorie C, et al. Co-morbidity & its Impact on Patients with COVID-19.SN Compr Clin Med 2020;1-8.
16. Huang C, Wang Y, Li X, et al. Clinical features of patients with 2019 novel coronavirus in Wuhan, China. Lancet 2020;395:497–506.
17. Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet 2020;395:507–13.
18. Kui L, Fang YY, Deng Y, et al. Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province. Chin Med J 2020; in press [https://doi.org/10. 1097/ CM9. 0000000000000744].
19. Xu XW, Wu XX, Jiang XG, et al. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case studies. BMJ 2020; 368:606.
20. Liu K, Fang YY, Deng Y, Liu W, Wang MF, Ma JP, et al. Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province. Chin Med J (Engl) 2020;133:1025–31.