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Clinico-Epidemological Profile of COVID Positive Patients

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Abstract: ***Background: The present study aimed to assess clinico-epidemiological profile of patients identified and admitted in Hamidia hospital Bhopal. Methodology: The present study was conducted as a facility based observational study at dedicated COVID Care centre and ICU of Hamidia Hospital Bhopal. The study included a total of 100 patients diagnosed as a case of COVID 19 infection and admitted in the COVID care centre/ ICU. Detailed information regarding mode of presentation, travel history, contact history, history of comorbid conditions etc. was obtained and documented. All the patients were then subjected to detailed examination. Further patients were then subjected to detailed investigations. Results: Mean age of patients was 37.56±16.06 years and about 66% cases were males and only 34% cases were females. Breathlessness, bradycardia and elevated systolic and diastolic blood pressure was noted in significantly higher proportions of elderly patients (p<0.05). ECG as well as chest X ray abnormalities were observed in significantly higher proportions of elderly patients as compared to younger age group (p<0.05). Majority i.e. 81.8% cases belonging to elderly age group were symptomatic COVID positive whereas majority of younger patients were discharged (p<0.01). Conclusion: The trends of COVID infection are changing rapidly and there is a need for advanced support even for younger patients. Though home isolation is being practiced but strict isolation at home is not ensured completed and institutional surge capacity shall play a pivotal role in mitigating the overall impact of the pandemic. Elderly age group present with severe infection but overall infection rates have increased in younger population.***

Keywords: COVID, elderly, pandemic, clinical, epidemiological profile

1. Introduction

COVID-19 pandemic has drained the health care systems Worldwide. The disease started from Wuhan China in 2019 and affected every corner of the World.[1] The first case of COVID 19 infection was reported on 30th January 2020 and since then the cases have increased due to local transmission and foci of community transmission.[2] As on 5th January 2021, 10,357,569 individuals have been infected in India and 149,886 individuals lost their life due to the infection.[3] The infection can affect individuals of any age and either gender but the morbidity and mortality is reported to be higher in advanced age and presence of comorbid conditions.[4]The virus primarily affect lungs and patient may present with a spectrum of symptoms. Approximately, 80% to 85% of the patients infected with SARS-CoV-2 remain asymptomatic or may present with mild symptoms which mimic flu i.e. fever, cough, sorethroat. However, about 10 to 15% patients present with moderate to severe symptoms and may require institutional care including oxygen therapy, intensive care to ventilator support.[5]

Literature suggests that the population have unique vulnerabilities such as health awareness, overcrowding, other living conditions which lead to rapid transmission of disease. No definitive treatment is available for management of COVID 19 infected patients. Patients are managed based upon symptoms and clinical condition. It is necessary to analyse profile of patients infected with COVID 19 virus so as to help in response preparedness, resource mobilization and allocation, and in monitoring and predicting future trends. The present study was conducted at a tertiary care centre to assess clinico-epidemiological profile of patients identified and admitted in Hamidia hospital Bhopal.

2. Methodology

The present study was conducted as a facility based observational study at dedicated COVID Care centre and ICU of Hamidia Hospital Bhopal. The study included a total of 100 patients diagnosed as a case of COVID 19 infection and admitted in the COVID care centre/ ICU during the study period of 1 month i.e. from 15th November 2020 to 15th December 2020. All the cases diagnosed as COVID 19 positive with RTPCR belonging to age range of more than 14 years were included after appropriate consent. However, patients not willing to participate in the study were excluded.

After obtaining ethical clearance from Institute's ethical Committee, written consent was obtained from patients or their relatives. Data regarding sociodemographic profile was obtained from all the study participants and entered in pretested semi-structured questionnaire. Detailed information regarding mode of presentation, travel history, contact history, history of comorbid conditions etc. was obtained and documented. All the patients were then subjected to detailed general and physical examination. Height, weight, BMI and abdominal circumference was obtained for all the patients. Vitals such as pulse, Blood pressure, respiratory rate, SPO2 was measured at baseline and documented. All the patients were then subjected to detailed investigations including CBC, LFT, RFT, lipid profile, FBS, PPBS, HbA1c, and special investigations such as D Dimer, LDH, serum ferritin etc. when needed. Chest X ray in all the patients and ECG was conducted when required. All the findings were noted in questionnaire.

Statistical analysis-Data was compiled using MS Excel and analysed using IBM SPSS software version 20. Patients were categorized into two groups according to age. Chi square test was applied to assess the association between proportions whereas mean values were compared using

unpaired t test. P value less than 0.05 was considered statistically significant.

3. Results

The study included a total of 100 COVID 19 positive patients admitted at our institute. Mean age of patients was 37.56±16.06 years and about 66% cases were males and only 34% cases were females.

Table 1: Distribution according to baseline variables

Baseline variables		Age ≤60 years (n=89)	Age >60 years (n=11)	P value
Gender n (%)	Male	60 (67.4)	6 (54.5)	0.41
	Female	29 (32.6)	5 (45.5)	
Clinical features	Fever	32 (36)	5 (45.5)	0.54
	Cough	32 (36)	5 (45.5)	0.54
	Breathlessness	13 (14.6)	8 (72.7)	0.001
	Headache	9 (10.1)	3 (27.3)	0.09
	Vomiting	3 (3.4)	1 (9.1)	0.36
	Fatigue	24 (27)	4 (36.4)	0.51
	Anosmia	10 (11.2)	3 (27.3)	0.14
Height (Mean±SD)		160.3±11.7	157.2±6.6	0.39
Weight (Mean±SD)		60.8±10.6	59.7±13.0	0.76
BMI (Mean±SD)		23.8±4.7	24.1±4.8	0.86
Abdominal circumference (Mean±SD)		77.8±9.9	79.7±10.4	0.54
SBP (Mean±SD)		118.8±13.7	129.8±23.7	0.02
DBP (Mean±SD)		75.5±9.8	84.4±10.5	0.006
Pulse rate (Mean±SD)		90.04±13.3	80.1±20.1	0.04
Respiratory rate (Mean±SD)		18.8±4.5	19.2±3.3	0.8
SPO2 (Mean±SD)		96.6±3.5	94.9±5.1	0.15

In present study, breathlessness, bradycardia and elevated systolic and diastolic blood pressure was noted in significantly higher proportions of elderly patients as compared to younger patients ($p<0.05$).

Immediate intervention was required in 27.3% cases belonging to more than 60 years of age group and in 16.9% cases belonging to less than 60 years of age.

Table 2: Distribution according to investigations

Investigations		Age ≤60 years (n=89)	Age >60 years (n=11)	P value
ECG	Bradycardia, QT prolongation, Intermittent AV dissociation	0 (0)	2 (18.2)	0.001
	LVH	0 (0)	1 (9.1)	
	Normal	89 (100)	8 (72.7)	
Chest X ray	B/L haziness	0 (0)	2 (18.2)	0.001
	B/L pneumonia	12 (13.5)	1 (9.1)	
	Normal	77 (86.5)	8 (72.7)	
Hemoglobin (Mean±SD)		12.6±2.1	11±1.5	0.014
TLC (Mean±SD)		7078.2±3047.3	8172.7±3771.8	0.28
ANC (Mean±SD)		5886.4±2300.7	6312.9±4058.6	0.09
Platelet (Mean±SD)		2.59±1.14	3.1±0.74	0.18
SGOT (Mean±SD)		34.5±22.3	63±67.5	0.02
SGPT (Mean±SD)		32.6±26.7	53.2±63.6	0.07
BUN (Mean±SD)		19.9±12.2	33.8±14.4	0.002
Creatinine		1.05±0.34	1±0.0	0.65
Sodium		139.8±4.1	139.3±4.03	0.68
Potassium		3.9±0.3	4.4±0.5	0.001
Calcium		8.8±0.95	8.9±0.35	0.86
Total proteins		6.9±0.64	6.5±0.7	0.08
Albumin		3.7±0.8	3.3±0.5	0.13
Globulin		2.7±0.8	3±0.0	0.19
Cholesterol		150.2±34.6	187.6±32.1	0.01
Triglycerides		159.9±98.5	126.0±56.5	0.38
LDL		89.2±34.3	120.6±35.9	0.03
HDL		30.5±7.7	29.3±8.2	0.43
HbA1c		6.02±1.17	6.3±0.5	0.49
CRP		11.5±45.9	14.7±1.5	0.72
APTT		38.6±12.6	42.6±10.7	0.43
PT		15.7±3.3	15.6±3.1	0.96
ESR		21.03±9.9	24.8±7.7	0.43
D-Dimer		412.8±231.8	523±38.1	0.45
LDH		555.4±357.1	491.3±19.6	0.76
Ferritin		481.2±392.4	576.2±417.9	0.61

Above table reveal findings of various investigations among patients belonging to younger and elderly age group. ECG as well as chest X ray abnormalities were observed in significantly higher proportions of elderly patients as compared to younger age group ($p<0.05$). Mean hemoglobin level was significantly lower in younger age group of patients ($p<0.05$). However, SGOT, blood urea nitrogen, serum potassium, cholesterol and LDL were significantly higher in patients belonging to age range of more than 60 years of age group ($p<0.05$).

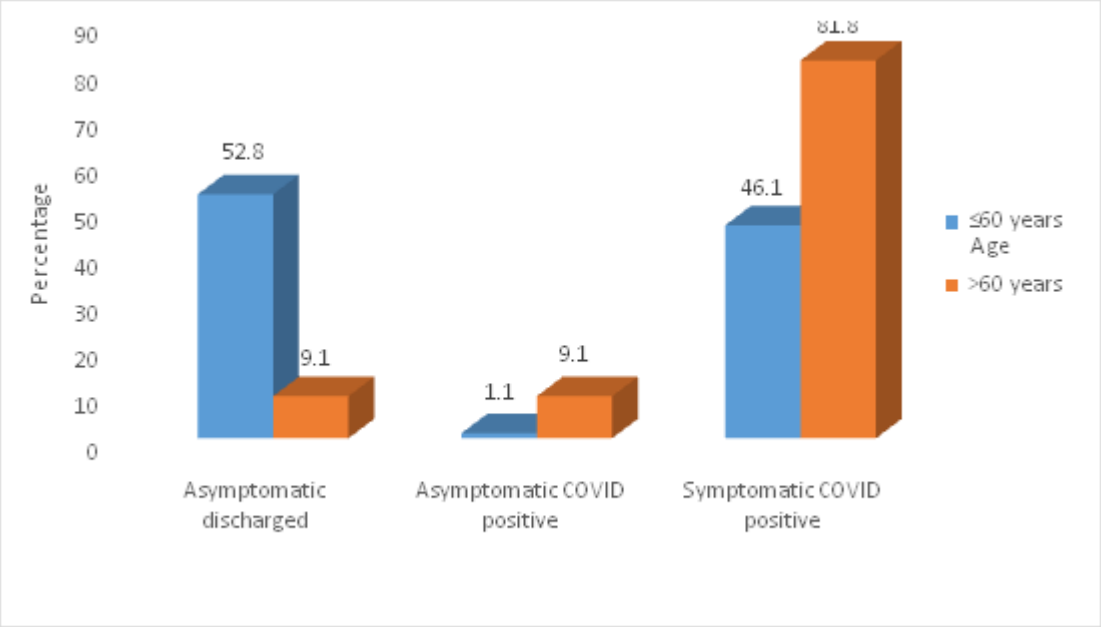

Figure 1: Comparison of outcome between younger and elder age group patients

Above figure reveal that majority i.e. 81.8% cases belonging to elderly age group were symptomatic COVID positive whereas majority of younger patients were discharged. The observed difference in outcome was statistically highly significant ($p<0.01$).

4. Discussions

The present study aimed to study the clinico-epidemiological profile of 100 cases infected with COVID 19 virus at tertiary care center of Bhopal. Even after one year of onset of infection in our country, the pandemic is intensifying. Each admitted patient whether symptomatic or asymptomatic occupy bed for several days together and there is a need of repeat testing before discharge of these patients. Stringent containment and faster testing strategies are the need of an hour to avoid excessive load on testing and treatment centers.[6,7]

The epidemiological trend is changing continuously and the virus is affecting patients in each age group with similar severity and virulence. Our study documented that only 11% patients belonged to elderly age group whereas 89% cases were less than 60 years of age. Mean age of patients infected with COVID 19 virus was 37.56±16.06 years. Male predominance was observed with male:female ratio of 1.9:1. However, Sherwal et al documented that approximately three fourth patients infected with COVID 19 virus belonged to more than 60 years of age.[1]The reference study also documented male predominance similar to present study.[1]The observed difference in age of infection between present study and reference study could be attributed to higher mobility and involvement in outdoor activities of young males as compared to females and elderly population.

Our study documented fever and cough to be the most predominant symptoms in patients with COVID 19 infection. The incidence of fever, cough, headache, vomiting, fatigue and anosmia was observed in almost equal proportions of patients belonging to younger and elderly age group ($p>0.05$), however, incidence of breathlessness was observed in significantly higher proportions of elderly patients ($p<0.05$). Mohan et al documented cough as predominant symptom in patients with COVID 19 infection similar to present study.[8] Sherwal et al observed dyspnea in 11.9% and 14.4% cases belonging to less than 60 and more than 60 years of age group.[1]In present study, systolic as well as diastolic blood pressure were significantly raised in patients belonging to age range of more than 60 years as compared to younger age group which could be due to associated hypertension among them or due to stress associated with infection($p<0.05$).

ECG and chest X-ray abnormalities were also documented in significantly higher proportions of patients belonging to age group of more than 60 years. Also, mean hemoglobin was less in elderly patients in our study. Literature suggest that elderly patients usually presents with severe disease.[9,10] Higher X ray and ECG abnormalities in elderly patients could be due to lower level of immunity and vulnerability to non communicable and communicable diseases. Acute lung injury has been documented as the major pathology in cases with COVID 19 infection on autopsy indicating diffuse alveolar damage.[11]

In present study, mean SGOT, blood urea nitrogen, serum potassium, cholesterol and LDL were significantly higher in patients belonging to age range of more than 60 years of age group ($p<0.05$). Chau et al reported liver impairment in up

to 60% cases with SARS CoV infection.[12] Chai X et al suggested that COVID virus may directly bind to ACE2-positive cholangiocytes and dysregulate liver function.[13]The infection has been associated with acute kidney injury in previous studies which results due to an interplay of virus-mediated injury, and exaggerated inflammatory response. Also the infection leads to activation of angiotensin II pathway, hypercoagulability as well as microangioapthy leading to renal damage.[14]

Though mortality due to COVID infection is higher, our study reported mortality in none of the patients. Majority of patients were discharged whereas few remained symptomatically COVID positive. However, in our study, about 81.8% cases belonging to elderly age group were symptomatic COVID positive whereas majority of younger patients were discharged ($p<0.01$). Similar findings were reported by Sherwal et al.[1]

5. Conclusion

The trend of COVID infection is changing rapidly and there is a need for advanced support even for younger patients. Though home isolation is being practiced but strict isolation at home is not ensured completed and institutional surge capacity shall play a pivotal role in mitigating the overall impact of the pandemic. Elderly age group present with severe infection but overall infection rates have increased in younger population.

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