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Research Article

TREATMENT PATTERN OF COVID-19 PATIENTS IN A TERTIARY CARE TEACHING HOSPITAL OF NORTHERN INDIA

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ABSTRACT

Objective: The objective of present study was to assess the treatment pattern in the COVID-19 patients.

Methods: The present study was a hospital-based prospective observational conducted in Government Medical College Kathua (UT Jammu and Kashmir) on COVID-19 positive confirmed cases from December 2020 to January 2021. Consent was taken from patients who were willing to participate in the study. The details of presenting complaints and treatment received by them and outcome of management was recorded and evaluated from their treatment files.

Results: A total 56 patients of COVID-19 were enrolled for the study. Majority of them were males (60.71%) and maximum of the patients between 18 and 60 years constituted 69.6%. COPD (28.5%), severe anemia (21.42%), and diabetes mellitus and hypertension (19.64% each) were common comorbidities. Sore throat, dry cough, and breathlessness were common presenting symptoms. Pattern of antibiotics and antivirals revealed that azithromycin was frequently prescribed (87.5%) followed by hydroxychloroquine (44.64%), linzolid (21.42%), ceftriaxone (19.64%), and remdesivir (14.28%). Majority of patients (>50%) were treated with steroids, while all patients received multivitamins and Vitamin C (100%) and nearly 40% were administered zinc therapy.

Conclusions: Azithromycin, hydroxyquinine, remdesivir, and steroids were frequently prescribed in patients of COVID-19. Steroids were administered in oral, inhaler or in injection forms. Multivitamins including Vitamin C were given to all patients. Most of patients had comorbidities including COPD, diabetes mellitus type 2 and severe anemia.

Keywords: Coronavirus disease-19, Remdesivir, Steroids.

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) is the third viral infection after sever acute respiratory syndrome, (SARS) and Middle East respiratory syndrome originally reported from Asia [1,2]. The first case of COVID-19 was identified in Wuhan, China in December 2019 and now pandemic worldwide. It is caused by a virus known as SARS corona virus-2 and was initially named as novel coronavirus or 2019-N-COV [3]. India has currently the largest number of confirmed cases in Asia [4] and has the second highest number of confirmed cases in world after the United States of America. There have been 111,102,016 confirmed cases of COVID-19, including 2,462,911 deaths all over world till February 22, 2021. India has also recorded 11,005,850 confirmed cases and 156,385 deaths in India up to 22 february 2021 [5]. However, the death rate in our country is far less than developed world [6].

Infection occurs when virus-containing particles exhaled by an infected person, either as respiratory droplets or aerosols, get entry into the mouth, nose, or eyes of other person who is in close contact [7].

Symptoms of coronavirus disease often vary, but mostly people have fever, cough, breathing difficulties, fatigue, and loss of smell and taste. In severe cases kidney failure, high fever, multi organ failure, dyspnea, hypoxia is observed [8].

Although specific treatment eludes, but preventing measures play pivotal role in combating disease including physical or social distancing, frequent hand washing, quarantine, and ventilation of indoor spaces, face masking, avoiding public gathering, touching of eyes, nose, face by hands, healthy diet and lifestyle, and surface cleaning. Several vaccines have been developed and various countries have initiated mass vaccination campaign [9].

Symptomatic treatment is given in COVID-19 patients as there is no definitive therapy. It includes treatment of symptoms, supportive care, isolation, and experimental measures.

Drug controller of India on January 1, 2021, has approved the emergency or conditional use of Astra Zeneca's COVID-19 vaccine, AZD 1222 marketed as Covishield is developed by the University of Oxford in association with serum Institute Pune [10]. On January 2, 2021, vaccine BBV152 marketed as Covaxin developed by Bharat Biotech in association with Indian council of medical research and national institute of virology received approval from drug controller general of India for is emergency usage [11].

METHODS

A hospital-based observational study conducted in isolation ward and intensive care unit of Govt. Medical College Kathua in collaboration with the department of pharmacology.

Study population

A total of 56 patients were enrolled during span of 40 days of study, from ending of November 2020 to January 2021. Data were obtained by examining their case records sheets for treatment prescribed and demographic profile after obtaining consent.

Inclusion criteria

The following criteria were included in the study:

- PCR positive confirmed Covid-19 patients
- Patients More than 18 years of age
- Both genders.

Exclusion criteria
The following criteria were excluded from the study:

- Multi organ failure
- Age <18 years
- Mentally retarded person.

Study approval
Approval of this study was obtained from institutional ethics committee before the start of this study (IEC/GMCK/64/pharmadt-27/8/2020).

Consent
Informed consent was taken from patients who were included in study.

RESULTS

A total of 56 patients were enrolled in study. Socio-demographic profile, medical histories were recorded from case files.

Demographic profile of patients revealed that most of them were males (60.71%). Majority of the patients were in the age group of 18–60 years (69.6%) in which 18–40 year age group contributed 32.1% while 40–60 years age group contributed 37.5%. Most of the patient was under matric while 39.28% were undergraduate (Table 1).

Majority of the patients reported with sore throat (71.42%), dry cough (51%) and breathlessness (44.64%), and fever (28.57%) followed by generalized weakness, gastric upset, and malaise (Table 2).

Maximum number of the patients was having chronic obstructive lung disease (COPD) as comorbidity (28.5%), followed by severe anemia (21.42%), diabetes mellitus, and hypertension (19.64% each) (Table 3).

Pattern of antibiotics and antiviral revealed that azithromycin was frequently prescribed (87.5%), followed by hydroxychloroquine (44.64%), linezolid (21.42%), ceftriaxone (19.64%), and remdesivir (14.28%) (Table 4).

Steroids were frequently prescribed in these patients. Parenteral hydrocortisone was commonly prescribed (57.14%), followed by inhaler budicart 50% and dualin 46.2%. All patients were given multivitamin and Vitamin C. Majority of the patients also received pantoprazole (proton pump inhibitor 91.07%) antiemetic ondansetron was also given (Tables 5 and 6).

DISCUSSION

Since experience of mankind in management of COVID-19 disease is short, therefore the prescribing pattern in COVID-19 varied from country to country and many antiviral drugs and antimicrobials have been tried. In Indian setup also regimen varied. Therefore, it was thought of interest to evaluate the prescribing pattern in COVID-19 patients.

In the current study, demographic profile revealed that majority of patients were males (60.71%) and the most affected age group was between 18 and 60 years. The majority of patients were having education below matriculation (50%). Similar to our observations, other studies have also documented males to be predominantly affected with COVID-19 [12,13]. Perhaps, the reason for this may be due to increased mobility among males compared to females who mostly remain confined to their home in rural setup. Our hospital has majority of rural catchment where this pattern is quite prevalent.

The present study has revealed that sore throat (71.42%), dry cough (51.78%), and breathlessness (44.64%) were most common presenting complaints. All most all studies in past have shown similar presenting pattern of the disease with mild variation of symptoms [11,13,14]. Sore throat and dry cough is quite common presentation and is based on pathogenesis of coronavirus as it inflicts principally respiratory tracts [14].

Table 1: Demographic profile of patients

Basic parameters	Frequency	percentage
Number of patients	56	
Male	34	60.71
Female	22	39.28
Age (yr)		
18–40	18	32.14
40–60	21	37.5
60–80	12	21.42
>80	5	8.9
Educational status		
Under matric	28	50
Undergraduate	22	39.28
Postgraduate	6	10.71

Table 2: Symptoms of COVID-19 patients

Symptoms	Frequency	Percentage
Sore throat	40	71.42
Dry cough	29	51.78
Breathlessness	25	44.64
Fever	16	28.57
Productive cough	13	23.21
Weakness	11	19.64
Gastric upset	9	16.07
Cold	8	14.28
Malaise	7	12.51
Vomiting	6	10.71
Headache	6	10.71
Body aches	4	7.14
Chest pain	4	7.14

Table 3: Comorbidities in COVID-19 patients

Comorbidities	Frequency	Percentage
Chronic obstructive lung disease	13	23.21
Severe anemia	12	21.42
Hypertension	11	19.64
Type 2 diabetes mellitus	11	19.64
Dysfunctional uterine bleeding	3	5.35
Pelvic inflammatory disease	3	5.35
Pulmonary hypertension	2	3.57
Pancreatic carcinoma	1	1.78

Table 4: Pattern of antiviral/antimicrobials in COVID patients

Medication	Frequency	Percentage
Tab. Azithromycin	49	87.5
Tab. Hydroxychloroquine	25	44.64
Inj. Linezolid	12	21.42
Inj. Ceftriaxone	11	19.64
Tab. Doxycycline	10	17.85
Inj. Ceftriaxone+Tazobactam	8	14.28
Tab. Remdesivir	8	14.28
Inj. Ceftriaxone+Sulbactum	6	10.71
Inj. Meropenem	5	8.92

In the current study, number of the COVID-19 patients had comorbidities. COPD was observed in 23.21%, followed by severe anemia (21.42%) and diabetes type-2 (19.64%). The diseases affecting lungs are known to predispose to COVID-19. COPD patients are at higher risk of more severe COVID-19 compared to patient without COPD [15].

Similarly severe anemia also predispose to COVID-19 disease. The pathophysiology of anemia and COVID-19 association is well explained when hemoglobin is low it results in less transportation of oxygen to various organs resulting in hypoxia. Hypoxia will ultimately result in

Table 5: Pattern of steriods in COVID-19 patients

Medication	Frequency	Percentage
Inj. Hydrocortisone	32	57.14
Inhaler budicart	28	50.00
Inj. Methyl prednisolone	26	46.42
Tab. Methyl prednisolone	10	17.85

Table 6: Pattern of other medications

Medication	Frequency	Percentage
Tab. Vitamin C	56	100
Cap. Multivitamin	56	100
Cap. Pantoprazole	51	91.07
Tab. Ondansetron	39	69.69
Cough syrup	32	57.14
Inhaler-duolin	26	46.42
Tab. Zinc sulfate	22	39.28
Tab. Deriphyllin	21	37.5
Tab. Paracetamol	20	35.71
Tab. Ranitidine	19	33.92
Tab. Levocetirizine	18	32.14
Injection enoxaparine	18	32.4
Tab. Montelukast+Levocetirizine	13	23.21
Tab. Amlodipine	12	21.42
Tab. Levocetirizine	10	17.85
Inj. Frusamide	10	17.85
Inj. Diclofenac sodium	9	16.07
Tab. Telmisartan	8	14.28
Tab. Metformin	8	14.28
Inj. Insulin	5	8.92

multi organ dysfunction especially the respiratory organ dysfunction making more vulnerable to COVID-19 [16].

Diabetes was a frequent comorbidity in our study (19.64%). Number of studies has documented that DM patients are predisposed to the infections including COVID-19 [17,18]. Recently, studies have also found that even death rate was higher among COVID-19 patients with diabetes [19-21].

Among antibiotics the azithromycin (87.5%) was frequently prescribed followed hydroxychloroquine (44.64%), injection linezolid (21.42%), inj. ceftriaxone (19.64%), and injection meropenem (8.92%). Similar to our results numerous research workers have shown azithromycin and hydroxychloroquine to be most frequently prescribed in COVID-19 patients [12,22-24].

However, our study results are in contrast to other trial where third-generation cephalosporins (i.e., ceftriaxone) (53.8%), meropenem (40.9%), moxifloxacin (29.5%), and doxycycline (25.4%) [25] were the four most prescribed antibiotics among participating patients.

Azithromycin, in addition to its antibacterial macrolide activity, has also antiviral and immunomodulation properties. These actions make azithromycin frequent choice in management of inflammatory manifestations of coronavirus involving lungs [26].

Antiviral remdesivir was prescribed in only eight patients (14.2%). This is in contrast to western literature where the remdesivir was more frequently prescribed [27]. The lesser proportion of prescribing of remdesivir in our study compared to developed countries could be due to higher cost of and less availability. Since our institution catchment area has majority population with poor economic status; therefore, it is not surprising that antiviral was less prescribed. However, central government has recently issued directions to cut down the price and enhance more production of remdesivir so that it is available to masses [28].

Steroids were also given in most of the COVID-19 patients. The steroids reduce inflammation (swelling) and mucus production in the airway of lungs. Steroids have been shown to have beneficial effect in moderate to severe COVID-19 diseased in indoor admitted patients [29,30].

In the present study, vitamins were prescribed in all patients. Number of studies has also shown similar pattern. Vitamins in addition to restore deficiency have antioxidant role. Most of studies have also demonstrated similar pattern [31,32].

Studies conducted in other countries have revealed that statins, angiotensin converting enzyme inhibitor, anticoagulant mostly formed the bulk of medication in contrast to our country. Statins are known for their pleiotropic anti-inflammatory, antithrombotic, and immunomodulatory effects. They may have a potential role as adjunctive therapy to mitigate endothelial dysfunction and deregulated the inflammation in patients with COVID-19 infection [33].

Two patients in our study group died due to bilateral COVID-19 pneumonia. Both patients had ground glass appearance in lungs. Bilateral lungs involvement is highly fatal in COVID-19 disease. Various studies have recorded similar pattern [11,34].

CONCLUSIONS

Azithromycin and hydroxyquinine were more frequently given than remdesivir, steroids were almost given to all patients as inhaler, injection. Other drugs like multivitamins were prescribed in all patients. Most of patients of COVID-19 had comorbidities COPD, diabetes mellitus type 2 and severe anemia were common comorbidities.

Limitations

Our study has some limitations. Less number of patients has been taken. COVID- 19 positive patients who were admitted in other centers than GMC Kathua were not included in the study.

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AUTHORS' CONTRIBUTIONS

Dr. Suman Lata conducted the study at hospital site, collected, analyzed, interpreted the data, and wrote the manuscript. Dr. Vineeta Sawhney conceived the research idea of research work, while Dr. Vijay khajuria reviewed and edited the manuscript.

CONFLICTS OF INTEREST

The authors declared no conflict of interest related to study.

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