Panacea Journal of Medical Sciences 2022;12(2):370–373

Content available at: https://www.ipinnovative.com/open-access-journals

Panacea Journal of Medical Sciences

Journal homepage: http://www.pjms.in/

Original Research Article

Prescribing pattern of drugs amongst COVID-19 patients in a medical college hospital

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ARTICLE INFO

Article history:
Received 16-12-2021
Accepted 14-02-2022
Available online 17-08-2022

Keywords:
COVID-19
Prescribing pattern of drugs

ABSTRACT

Objectives: This study was conducted to study prescribing pattern of drugs amongst mild to moderate COVID-19 patients in COVID dedicated medical college hospital in northern India.
Materials and Methods: A retrospective, descriptive study was conducted in a COVID dedicated medical college hospital at Uttar Pradesh India. Demographic data, hospitalization data, and drug utilization pattern of all laboratory confirmed mild to moderate COVID-19 patients of all age groups, either sex, and admitted between 01 July 20 to 30 September 2020 were retrieved and analyzed.
Results: Out of 767 COVID-19 patients 66.62% were male and 33.38% were female. Mean age of COVID-19 patients were 51 years. Average numbers of drug prescribed per patients were seven. Number of drug prescribed per patients increased in older COVID-19 patients and COVID-19 patients having co-morbidities. Most common prescribed drug was paracetamol (100%), followed by Vitamin C (99.08%), followed by multivitamins (97.78%), followed by protonpump inhibitors (74.84%), followed by antihistaminices in 51.89% cases followed by hydroxychloroquine and Ivermectin was prescribed in 47.84% cases. Most common antibiotic prescribed was Amoxicillin (40.94%), followed by Azithromycin (34.41%), and followed by Doxycycline (29.20%) cases. Flavipiravir was prescribed in 15.12% cases. Corticosteroids were prescribed in 16.30% cases.
Conclusion: Drug used for admitted COVID-19 patients were diverse and were in accordance to existing guidelines.

1. Introduction

Despite advancements in medical science to new heights COVID-19 has pushed the human beings back to the earliest stage of life, i.e. finding a wonder drug for COVID-19 treatment that would fasten the recovery and reduce death. COVID-19 affects respiratory system with an incubation period ranging from one to fourteen days most commonly being around five days. Cough without expectoration, Scratchiness in throat, fever, reduced sense of smell and taste, difficulty in breathing, rhinorrhoea, myalgia, and change in bowel habits are common symptoms of COVID-19.[1] However, immune-comprised person, old age persons manifest severe COVID-19 illness and mortality.[2] Diabetes, hypertension, malignancies, or renal disease were found more common among many of the severe COVID-19 patients. However the research on wonder drugs for COVID-19 continues numbers of treatment guidelines using combinations of earlier used drugs are being tried by researchers around the world; their main is to reduce apprehension and mortality. However, as new research on COVID-19 pathogenesis and proofs on effectiveness of

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https://doi.org/10.18231/j.pjms.2022.070

such treatments are being reported, there occur changes in these guidelines, leading to revised guidelines. In prevailing circumstances, reports on prescribing patterns of drugs in treatment of COVID-19 in different hospitals around the world may prove as important tool to assess the effectiveness of such treatment guidelines in COVID-19 patients. Since very few studies are available regarding prescribing pattern of drugs in COVID-19 patients, present study was planned in COVID -19 dedicated medical college hospital in Uttar Pradesh India.

2. Materials and Methods

A retrospective, descriptive study was conducted in a COVID-19 dedicated medical college hospital in Bareilly, Uttar Pradesh, India after taking ethical approval from the Institutional Ethics Committee. Data for last three months was collected for the period between 01 July 2020 to 30 September 2020. Case files of mild to moderate COVID-19 positive patients of either sex and of all ages hospitalized during the study period were included. Incomplete patients records and records of antenatal and postnatal females were not included. Study proforma included details on gender & age, hospital admission data, and drug utilization pattern. Hospital admission data included hospitalization date, date of first COVID positive report, Ward/ICU admission, diagnosis, presenting symptoms, COVID-19 classification, Lab investigations and prognosis were noted. For studying the drug prescribing pattern, name of the drug, dosage schedule, and treatment duration were noted. The clinical outcome was assessed in terms of recovery, mortality, or referral of patient. Data was analyzed using SPSS (Statistical Packages for Social Sciences).

3. Results

Table 1 depicts characteristics of COVID-19 population. Out of 767 COVID-19 patients 511(66.62%) were male and 256(33.38%) were female. Out of 511 males 20.74% were below 30years, 35.62% were 31-50 years, 35.50% were 51-70 years and 8.61% were above 70 years. Out of 256 females 21.09% were below 30 years, 37.11% were31-50 years, 30.47% were 51-70 years and 11.33% were above 70 years. Mean age of COVID-19 patients were 51 years. Mean number of prescription per patients were seven. Mean number of prescription was lowest (4) in age group below 30 years and was highest (9) in age group above 70 years. Less than four drugs were prescribed to 316 (41.20%) COVID-19 patients, 5-9 drugs were prescribed to 302(39.37%) patients and more than ten drugs were prescribed to 149(19.43%) patients. Number of prescriptions increased in older COVID-19 patients and COVID-19 patients having comorbidities (Diabetes, hypertension etc). Average duration of hospital admission was 8 Days in all age group. Mean duration of hospital admission increased with advancing age and COVID-19 patients having comorbidities (Diabetes, hypertension etc).

Table 2 depicts most common prescribing drugs in COVID-19 patients. Most common prescribed drug was paracetamol (100%), followed by Vitamin C(99.08%), followed by multivitamins (97.78%), followed by protonpump inhibitors (74.84%), followed by antihistaminices in 51.89% cases. Mefenamic acid was prescribed in 33.51% cases and Ibuprofen was prescribed in 27.64% cases. Hydroxy Chloroquine was prescribed in 48.76% cases and Ivermectin was prescribed in 47.84% cases. Most common antibiotic prescribed was Amoxicillin (40.94%), followed by Azithromycin (34.41%), and followed by Doxycycline (29.20%) cases. Flavipiravir was prescribed in 15.12% cases. Corticosteroids were prescribed in 16.30% cases. Enoxaparin was prescribed in 13.56% cases. 24.25% patients were on antihypertensive drugs and 22.69% patients were on antidiabetic drugs.

4. Discussion

Overlapping events in COVID-19 patients with considerable variation poses an enormous challenge for doctors and paramedical staff. Continuous monitoring is required in severe COVID-19 patients to prevent and treat hypoxemia.[3] Antiviral agents should be used early to prevent irreversible damage when viral loads are high.[4] Like other studies multivitamin and Vitamin C were most commonly prescribed drug in our study as they may be beneficial in reducing the cytokine storm associated with COVID-19.[5] That being said, vitamins and supplements with existing evidence supporting their use in conditions associated with COVID-19 or ARDS, can be considered when potential benefit is determined to outweigh risk.[6] Ivermectin was prescribed in 47.84% cases in our study. Ivermectin is a well-known anthelmintic agent from the late-1970s. In recent times, the antiviral function of ivermectin has been discovered. Most common antibiotic prescribed was Amoxicillin (40.94%), followed by Azithromycin (34.41%), and followed by Doxycycline (29.20%) cases. Doxycycline was found safe and inexpensive option for the treatment of COVID-19 in number of studies.[7] Azithromycin can enhance the immune response against viruses by several actions, also it can up-regulates the production of type I and III interferons (especially interferon-β and interferon-λ), and genes involved in virus recognition such as MDA5 and RIG-I. These mechanisms are universally involved in the innate response against infectious agents, and potentially against SARS-CoV-2.[8] In our study corticosteroids were prescribed in 16.30% cases. Anti- inflammatory and immunosuppressant effects of corticosteroids are well established. Corticosteroids were tested in hospitalized patients with COVID-19 in the United Kingdom's national clinical trial and was found to have benefits for critically ill patients.[8] Antiviral drug

Table 1: Characteristics of COVID-19 population

	Overall 767	Age Group N %			
		0-30 Years 160 (20.86)	31-50 Years 277(36.11)	51-70Years 257(33.50)	≥ 70Years 73(9.53)
Sex N %					
Male	511(66.62)	106(20.74)	182(35.62)	179(35.03)	44(08.61)
Female	256(33.38)	54(21.09)	95(37.11)	78 (30.47)	29(11.33)
Mean age ±SD	51± 13	21±3	41±3	62±2.8	75±1.5
Mean number of Prescriptions (Range)	7(5-12)	4(3-6)	6(5-8)	7(9-12)	9(10-14)
Polypharmacy group N (%)					
1-4 Drugs	316(41.20)	86(53.75)	196(70.76)	138(53.70)	13(17.82)
5-9 Drugs	302(39.37)	74(46.25)	58(20.94)	85(30.07)	30(41.09)
≥ 10 drugs	149(19.43)	0	23(8.30)	34 (13.23)	30(41.09)
Mean duration of Admission in days (Range)	8(4-18)	5(4- 8)	6(4-10)	8(5-12)	10(8- 18)

Table 2: Most common prescribing drugs

Drugs Prescribed	Number of Prescriptions	Percentages
Paracetamol	767	100
Ibuprofen	212	27.64
Mefenamic acid	257	33.51
Multivitamin	750	97.78
Vitamin C	760	99.08
Antihistaminices	398	51.89
Ivermectin	367	47.84
HydroxyChloroquine	374	48.76
Proton pump inhibitors	574	74.84
Azithromycin	264	34.41
Amoxicillin	314	40.94
Doxycycline	224	29.20
Flavipiravir	116	15.12
Corticosteroids	125	16.30
Enoxaparin	104	13.56
Antihypertensive Drugs	186	24.25
Antidiabetic Drugs	174	22.69

Favipiravir was prescribed in 15.12% cases. Favipiravir, an oral, broad spectrum RdRp inhibitor, an already approved drug for new and re-emerging pandemic influenza in Japan and has established and well characterized safety profile.[9] Amoxicillin has been prescribed with or without Azithromycin to treat COVID-19 infections in some of the clinical trials,[10] and same was also observed in our study in some of the COVID 19 cases. Some studies have promoted the use of chloroquine and hydroxychloroquine for the treatment and prevention of COVID -19. Hydroxy Chloroquine was prescribed in 48.76% cases in our study. Hydroxychloroquine inhibit replication of SARS-CoV-2 in vitro. Some observational studies have suggested benefits of hydroxychloroquine for the treatment of Covid-19, whereas other studies have described mixed results.[11] Enoxaparin was prescribed in 13.56% cases in our study. Heparin has been found useful in prevention and treatment of coagulopathy of this disease, and it requires to be evaluated further. Additionally non- anticoagulant effects of heparin may also be beneficial in COVID-19.[12]

5. Conclusion

Drug used for mild to moderate admitted COVID-19 patients were diverse and were in accordance to existing guidelines.

6. Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

7. Source of Funding

None.

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Cite this article: Agrawal P, Singhal A, Agrawal VK. Prescribing pattern of drugs amongst COVID-19 patients in a medical college hospital. *Panacea J Med Sci* 2022;12(2):370-373.