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Clinical Course and Outcome of COVID-19 Patients in a Tertiary Care Hospital: A Retrospective Study

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Abstract

Introduction: COVID-19 the deadly virus, was declared a pandemic by WHO in March, 2020 because of its virulent nature. It has been a piece of work to understand the mechanism of action and the disease pathology of the virus, due to its novel origin. The quality of healthcare is seen to be severely degrading during these times. The two different types of COVID tests that are commonly available in the facility are RTPCR and Rapid Antigen Test or RAT. These help to identify whether the person is infected with the virus or not. With the current management being successful in majority of the cases, we should also consider strengthening the existing modalities.

Objective: To find the prevalence of COVID-19 patients and study their clinical course and outcome

Material and methods: Data regarding covid-19 patients was collected on basis of demographic profile by using google foms questionnaire at Dr. D.Y. Patil Hospital, Navi Mumbai.

Results: A total of 500 patients were included in the present study with male preponderance with 61.4%. 99% patients were tested COVID positive, 73.2% had a history of exposure to COVID patients, 80% had a positive travel history, 99% lab tests were positive. 50.4% duration of the treatment lasted for 7-14 days. 67.6% were treated in the wards, whereas, the remaining 32.4% were treated in the ICU. 19.6% patients required mechanical ventilator support. 51% patients required oxygen therapy. 80.2% did not require intubation. All the patients were on antibiotics, and majority of the patients, i.e. 99.8% were on immuno-boosters as well. Antivirals were administered in 80.6%. 82.8% were discharged with a negative swab. Out of the 17.2% patients with positive swab, mortality was seen in 6.2% patients. 3.4% patients were referred to different centers, while the treatment of the remaining 7.6% patients was continued for a longer period of time.

Conclusion: A stepwise perspective of non-pharmaceutical interventions, screening and testing procedures, implementation and compliance to distancing, hygiene measures and use of masks at airports, railway stations, other public places with pragmatic testing and tracing are effective measures that can be implemented. Worldwide

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numerous clinical trials are taking place for the treatment and prevention of COVID-19. Although, there is a rapid comprehensive expansion in regard to COVID-19 and few agents appear to be promising, there are no definitely proven effective therapies at this time. Evaluation of several agents by Scientists and researchers are progressive and commendable.

Keywords: Antiviral; Comorbidity; COVID-19; HRCT; Nasopharyngeal Swab; Negative Swab; Mortality; PCR antigen test.

Introduction

COVID-19 the deadly virus, was first discovered in Wuhan, China in the year 2019. COVID 19 popularly known as Coronavirus has swamped the entire world like a termite and created a ruckus in the modern medicine. It was declared a pandemic by WHO in March, 2020 because of its virulent nature. In the past, multiple health concerns in relation to the various coronavirus strains have been identified, namely, The Middle Eastern Respiratory Syndrome (MERS), Severe Acute Respiratory Syndrome (SARS) and the COVID -19. This ongoing pandemic caused by the COVID-19 virus, has held the medical fraternity in the conjectures of the challenges seen and yet to come. It has been a piece of work to understand the mechanism of action and the disease pathology of the virus, due to its novel origin. Another considerable reason for non substantial data availability can be comparatively lesser autopsies.[1] The global pandemic, has adversely affected the health of the population in every sphere- physically, psychologically and economically. Grueling times were made worse by the global COVID 19 outbreak. The psychological and financial set back due the pandemic has summed up an arena of psychiatric problems leading to mental instability like anxiety and depression.[2] A vast number of patients in home quarantine or isolation have developed negative outlook towards their health and other worldly affairs. Main concerns expressed by the COVID 19 patients were Stigma and uncertainty of viral disease progression. Patients who are hospitalized have recorded to experience significant psychological distress, studies have correlated this with the presence of higher inflammatory markers, which are said to have depressive qualities.[3]

The quality of healthcare is seen to be severely degrading during these times. Out of many reasons, the reasons that can be held most accountable for the same are; One, with the known risk of getting infected with virus, people are terrified to visit a clinic or hospital believing that they might come in contact with an infected patient or contaminated objects. Secondly, because of the lock-down and restrictions imposed on travel, majority of them are unable to reach a healthcare practitioner. Patients with minor ailments or long term health conditions who require constant follow up, are either terrified or barred to travel because of the imposed restrictions. In some parts, health workers and doctors have minimized their practice, mainly to avoid the spread of infection. Healthcare services in some areas may have been hampered because of quarantine of the healthcare workers. In the fear and desperation of protecting self, it is plausible that people may consume medicines with unknown effect for prevention against COVID-19.[4,5]

It is not news that HCWs, especially the front-line workers in the battle against COVID-19, are at the highest risk.[6] Non-healthcare occupations at the highest risk of contacting the infection are dominated by workers who are either in direct contact with high risk environment, such as flight attendants, teachers, barbers, jailers, and transportation security screeners, or may be directly exposed to SARS-CoV-2 (ambulance drivers, morticians, embalmers). These workers do not have an option of working remotely, hence, specific on the job interventions are required to prevent them from getting infected, these mainly involve the precautionary measures.[7]

The country had a humongous rise in the number of cases of COVID-19. The disease spread like a forest fire, increasing number of people started getting infected with the novel disease which lead to the rise in the number of people getting tested for the same. However, getting an RTPCR or RAT test done became a tedious job. From the booking of test slots, to the availability of testing kits and maintenance of necessary precaution during testing was extremely difficult. The two different types of COVID tests that are commonly available in the facility are RTPCR and Rapid Antigen Test or RAT. These help to identify whether the person is infected with the virus or not. RTPCR is considered the gold standard for testing COVID-19, while the latter that is RAT is used to determine SARS-CoV-2 antigens in

the patient. Despite the availability of tests, a good amount of false-negative results have been reported. The main reasons found to be responsible are related to the sampling procedures, sources of samples, and the sensitivity/specificity of the nucleic acid test kit. As a consequence, when asymptomatic subjects are tested it is quite impossible to distinguish between recurrence of COVID-19 infection or intermittent shedding of RNA fragments or new-onset infections. However, it could be possible in cases with persistent infections, reactivation or reinfection of the virus with another strain, especially if comorbidities are present.[8]

There is a grave exigency for effectual and specific antiviral treatment. The rapid genomic sequencing of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) laid out a noteworthy number of therapeutic targets. Worldwide numerous clinical trials are taking place, calculating and evaluating multiple investigational agents and other known drugs which are used for other diseases for the treatment and prevention of COVID-19. Although, there is a rapid comprehensive expansion in regard to COVID-19 and only a few agents appear to be promising in these difficult times, there are no definitely proven effective therapies that are known. Evaluation of several agents by Scientists and researchers are progressive and commendable. The known management followed currently include, supportive care measures such as ventilation, oxygenation, fluid management and immuno-boosters. With the current management being successful in majority of the cases, we should also consider strengthening the existing modalities.

Objectives

1. To find the prevalence of COVID-19 patients
2. To study the clinical course and outcome of COVID-19 patients

Material Methods

Study Subjects: COVID-19 suspects admitted in Dr. D.Y. Patil Hospital, Navi Mumbai

Study Design: Retrospective Study

Sample Size: 500

Study Duration: 3 months (June-August 2020)

Sampling Method: After the approval of the Institutional Ethical Committee, data regarding demographic details, clinical course and outcome of the patients was collected from the hospital database. Utmost care was taken to maintain the privacy and confidentiality.

Data Analysis: The data collected was coded and entered in Microsoft Excel and analyzed using SPSS version 17.0 software. Descriptive statistics was used for data analysis and the data was represented in the form of percentages, mean.

Results

A total of 500 patients were included in the present study. The study population had a male preponderance with 307(61.4%). It was observed that many patients had pre-existing comorbidity.

The study participants visited the hospital with different presenting complaints; fever, anosmia and sore throat topping the list. Other clinical features are mentioned in Table 1.

Table 1: Presenting Complaints

Clinical Features	Study Population (n=500)	Study Population (%)
Fever	500	100
Headache	402	80.4
Breathlessness	250	50
Sore throat	434	86.8
Running nose	70	14
Anosmia	477	95.4
Loss of taste	121	24.2
Body Ache	374	74.8
Diarrhoea	209	41.8
Cough	180	36

Out of 500 patients, 495 (99%) patients were tested COVID positive. 366 (73.2%) stated they had a history of exposure to COVID patients. Among the 500 patients, 400 (80%) had a positive travel history.

Various investigations were done, like, blood tests (0.2% cases), HRCT (81.8% cases), nasopharyngeal swab (11% cases) and PCR antigen test (7% cases), out of which, 495 (99%) lab tests were positive. The treatment approach differed from case to case. In most of the cases, 252 (50.4%), duration of the treatment lasted for 7-14 days. Details regarding the duration of the treatments is given in Figure 1.

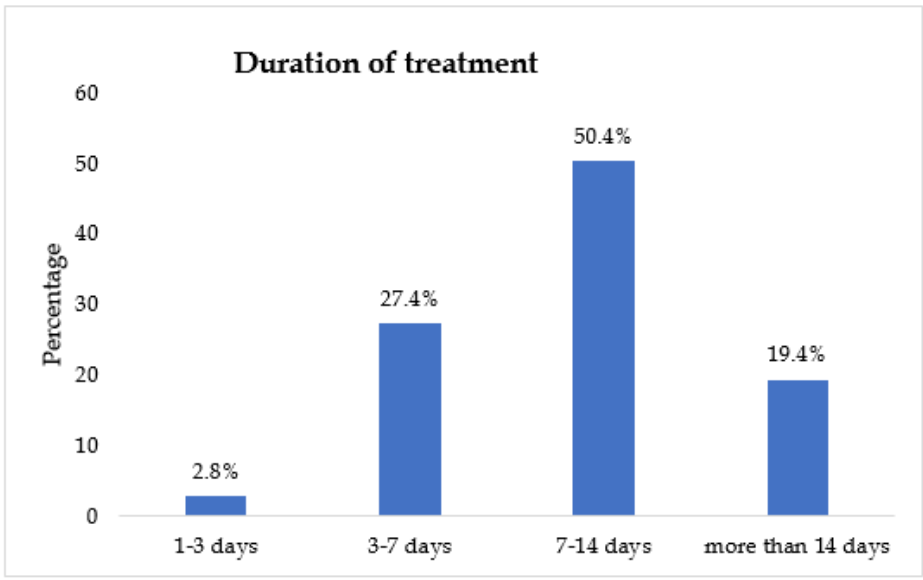

Figure 1

Majority of the patients, 338 (67.6%) were treated in the wards, whereas, the remaining 162 (32.4%) were treated in the ICU. Only, 98 (19.6%) patients required mechanical ventilator support during the course of their treatment. 255 (51%) patients required oxygen therapy. The details of oxygen therapy administration is given in Figure 2. Majority of the patients, 401 (80.2%) did not require intubation.All the patients were on antibiotics, and majority of the patients, i.e. 499 (99.8%) were on immuno-boosters as well. Antivirals were administered in majority cases, 403 (80.6%).

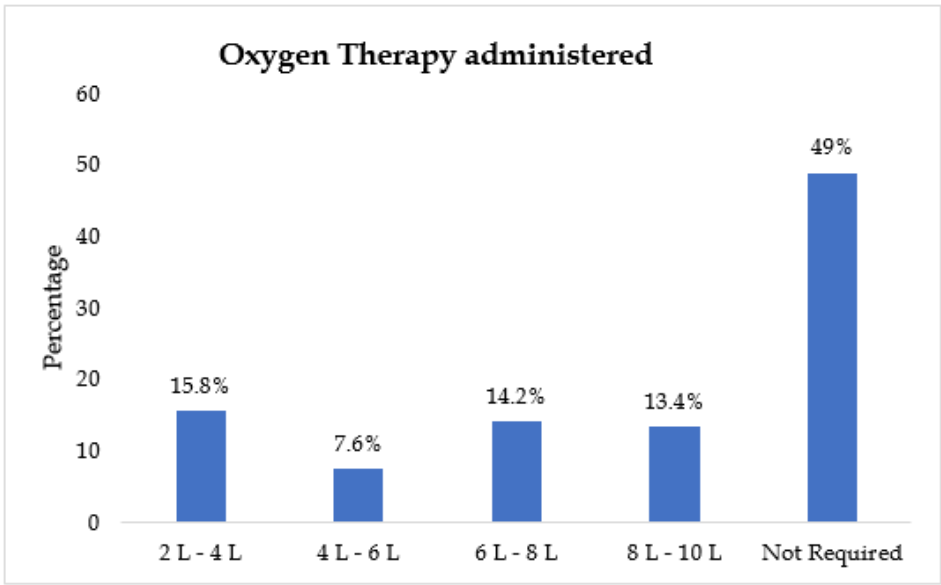

Figure 2

Out of 500 patients, 414 (82.8%) were discharged with a negative swab.

In the study population of 500 patients, out of the 86 (17.2%) patients with positive swab, mortality was seen in 31 (6.2%) patients. 17 (3.4%) patients were referred to different centers, while the treatment of the remaining 38 (7.6%) patients was continued for a longer period of time. The details regarding the outcome is given in Figure 3.

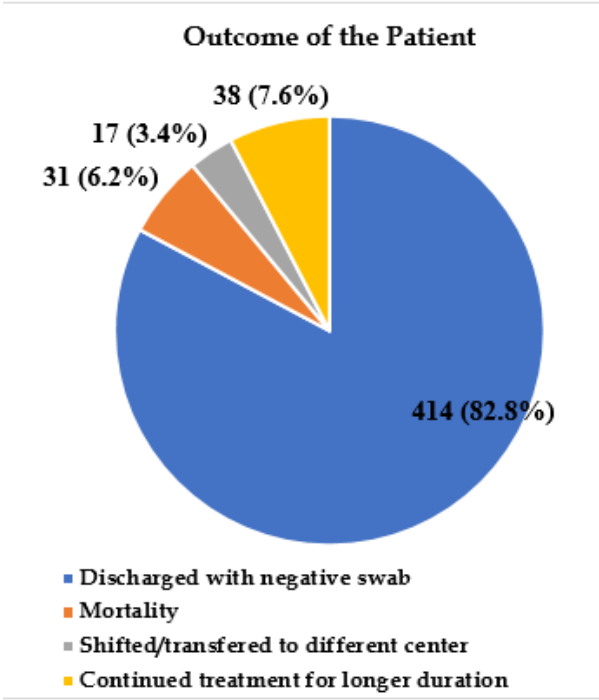

Figure 3

Discussion

A total of 500 patients were included in the present study. The study population had a male preponderance with 307(61.4%). Similar findings were observed in a meta-analysis conducted by Li LQ et al.[9] On dividing the patients by taking 60 yrs of age as threshold, it is observed that 444 (88.8%) patients were <60yrs, which is similar to the findings of a study conducted by Lui Y et al., where majority of the study participants where aged <60 yrs.[10] Majority of the individuals were found to be living in joint family. Enclosed space and overcrowding could have acted as a contributing factor.

124(24.8%) individuals had pre-existing comorbidity, in which hypertension topped the list. Similar findings were observed in a study conducted by Atkins JL et al.[11]

Individuals related to the health care system were affected the most. In the present study, 79 (15.8%) healthcare professionals, 46 (9.2%) hospital employees and 18 (3.6%) individuals working in the COVID hospital were affected, comprising of 28.6% of the study sample. According to a recent study, it is not surprising that HCWs, especially those at the front-line in the battle against COVID-19, are at the highest risk.[6] In global research on SARS-CoV-1, MERS-CoV and SARS-CoV-2, it can be seen that a very large percentage of the number of infected people are health professionals struggling with them in various medical facilities. This is most often due to the fact that medical personnel is incorrectly trained in proper protection against the virus and lack of equipment that meets the relevant standards.[12] In the case of SARS-CoV-1, medical personnel accounted for 21.07% (1706/8096) of all infections, MERS-CoV 13.37% (183/1368).[13,14] Currently, the total number of infected healthcare workers on SARS-CoV-2 is unknown due to the steadily increasing number of infections and the lack of global data on the problem.

The study participants visited the hospital with different presenting complaints, fever being the most common. Various other findings have observed the same pattern.[15-18]

Out of 500 patients, 495 (99%) patients were tested COVID positive. 366 (73.2%) stated they had a history of exposure to COVID patients. Among the 500 patients, 400 (80%) had a positive travel history. Fever screening and history taking on traveling to risk area is the general primary for screening for disease. It is found that disguising on travel history is a big problem that results ineffectiveness of using fever and travel history screening as preventive tool against COVID-19.[19] A recent study used real-time mobility data from Wuhan and detailed case data including travel history to elucidate the role of case importation in transmission in cities across China and to ascertain the impact of control measures. Early on, the spatial distribution of COVID-19 cases in China was explained well by human mobility data. After the implementation of control measures, this correlation dropped and growth rates became negative in most locations, although shifts in the demographics of reported cases were still indicative of local chains of transmission outside of Wuhan. This study shows that the drastic control measures implemented in China substantially mitigated the spread of COVID-19.[20]

Various investigations were done, like, blood tests (0.2% cases), HRCT (81.8% cases), nasopharyngeal swab (11% cases) and PCR antigen test (7% cases), out of which, 495 (99%) lab tests were positive. The treatment approach differed from case to case. In most of the cases, 252 (50.4%), duration of the treatment lasted for 7-14 days. Majority of the patients, 338 (67.6%) were treated in the wards, whereas, the remaining 162 (32.4%) were treated in the ICU. Only, 98 (19.6%) patients required mechanical ventilator

support during the course of their treatment. 255 (51%) patients required oxygen therapy. Majority of the patients, 401 (80.2%) did not require intubation. All the patients were on antibiotics, and majority of the patients, i.e. 499 (99.8%) were on immuno-boosters as well. Antivirals were administered in majority cases, 403 (80.6%).

Out of 500 patients, 414 (82.8%) were discharged with a negative swab. Age could have played a contributing factor for this result as majority of the patients, i.e. 125 (25%) lie in the age group of 21-30 yrs, followed by 111 (22.2%) in the age group of 31-40 yrs. In the study population of 500 patients, out of the 86 (17.2%) patients with positive swab, mortality was seen in 31 (6.2%) patients. 17 (3.4%) patients were referred to different centers, while the treatment of the remaining 38 (7.6%) patients was continued for a longer period of time.

Conclusion

COVID-19 has created a lot of Stigma and uncertainty regarding the viral disease progression among the patients. Patients have experienced significant psychological distress, and the levels of depressive features are correlated to the inflammatory markers in these patients. It is important to address the psychiatric symptoms for COVID- 19 patients, and enhance the coping strategies and other psychological interventions. Improvement in prevention and effective management of COVID-19 will need basic public health and clinical interventions. The pathogenesis of the Novel coronavirus is still not well defined. Most patients present with a self-limited course, however, a few experience severe or even life threatening disease. The treatment approaches currently under investigation include antiviral and anti-pro-inflammatory cytokines, anti-infectious and life support therapies, monoclonal antibodies and passive immunotherapy, especially in patients with bad prognosis. Although, the therapeutic strategy against the disease is of great significance and this is the main way to prevent virus spread is the development of an effective and safe vaccine widely. It is a necessity especially in developing countries to make the vaccines available and reasonable for the entire population of the country.

We should always evaluate our own health condition before taking any long-distance public transportation. The trip should be avoided if any symptoms like fever or cough are present. Even while going to fever clinics wear face masks and take all necessary precautions. Due to lack of data on the effectivity of face masks, further research should focus on assessing the efficacy of face masks against COVID-19. For economical benefits investigating regarding reuse of face masks and assessing compliance should akso be taken into consideration. Quarantine of travelers may delay introduction or re-introduction of the virus, or may delay the peak of transmission, but it has limited evidence. There should regular disinfecting practices followed everywhere.

Presently, the summed up aggregate of number of infected healthcare workers on SARS-CoV-2 is unknown due to the continuously increasing number of infections and the lack of global data with respect to COVID 19. We often ignore the affective of COVID 19 among the HCWs, this extremely important aspect of the fight against the current pandemic, and should not be overlooked. The cost that we will be paying for this in future will force us to reconstruct the health care systems around the world and the security of medical staff needs urgent improvement.

A stepwise perspective of non-pharmaceutical interventions, screening and testing procedures, implementation and compliance to distancing, hygiene measures and use of masks at airports, railway stations, other public places with pragmatic testing and tracing are effective measures that can be implemented.

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