International Journal Dental and Medical Sciences Research
Volume 3, Issue 4, July-Aug 2021 pp 671-675 www.ijdmsrjournal.com ISSN: 2582-6018

Clinical Presentation and Outcome of Covid-19 Infected Patients Admitted in Designated Covid Hospital at NMCRC, Visnagar.

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Submitted: 01-08-2021 Revised: 08-08-2021 Accepted: 13-08-2021

ABSTRACT

Background: The novel coronavirus, (Covid-19) continues to spread among all the parts of India. The aim of this report is to describe the clinical profiles and outcome of these Covid-19 infected patients admitted in Nootan Medical College & Research Centre, Visnagar ranging from their age, sex, clinical symptoms, laboratory evaluation, radiological characteristics and the final outcome. The described cases are those which are admitted at designated covid hospital, Visnagar during 2nd wave of Covid-19 pandemic.

Methods: Epidemiological, clinical, laboratory, and radiological characteristics and treatment and outcomes data were obtained with data collection forms from electronic medical records and history given by 466 Covid-19 infected patients admitted in NMCRC, Visnagar. Patients were tested for Covid-19 by realtime reverse transcription polymerase chain reaction (RT-PCR) assay of 2019-nCoVRNA.

Results and Discussion: During the course of this study 466 Covid-19 positive patients were admitted in NMCRC, Visnagar. Male patients constituted 63.09% of total patients and majority of the patients (68.02%) were above 50 years of age. Among Symptomatic patients fever was the most common symptom (92.8%) followed by weakness (91.2%), cough (89.2%), loss of appetite (80.3%) , dyspnea (65.6%), diarrhea (18.9%) and vomiting(16.1%). 156 patients (33.47 %) had underlying co morbidity in the form of hypertension, diabetes mellitus, hypothyroidism, chronic kidney disease or coronary artery disease. 221 patients (47.43%) had C- Reactive Protein more than 30 and 195 patients (41.84%) presented with D. Dimer more than 1000 ng/ml. On admission 39.2% patients oxygen saturation was above 90%. Around 70% patients need oxygen support on admission. Among all these patients 342 patients (73.4%) recovered and discharged and 96 patients (20.6%) died. Average stay in hospital is around 10-15 days.

Conclusion: Clinical investigations in 2nd wave of Covid-19 senario reveal higher D.Dimer and C-Reactive Protein as predominant finding. Young patients also suffered during this 2nd wave of Covid-19. But older age & associated comorbid conditions (Diabetes, Hypertension, cardiac disease) seem to have greater risk for lung injury thereby requiring oxygen support during the course of disease and these patients also had greater derangement in their biochemical profile. Also the death rate is increased during 2nd wave of Covid-19 pandemic.

Keywords: Covid-19, 2nd wave of Covid-19 pandemic, coronavirus

I. INTRODUCTION

In December 2019 a new respiratory tract infecting agent emerged in Wuhan city of China, known as the coronavirus. It was later named Covid-19. Full-genome sequencing and phylogenic analysis indicated that 2019-nCoV is a form of betacoronaviruses associated with human severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS).[1] The 2019-nCoV has close similarity to bat coronaviruses, and it has been postulated that bats are the primary source. While the origin of the 2019-nCoV is still being investigated, current evidence suggests spread to humans occurred via transmission from wild animals illegally sold in the Huanan Seafood Wholesale Market.[2] It spread rapidly through China infecting more than 85,000 people. Within a few months it engulfed the Europe causing massive loss of life and property in Italy, Spain, France, Germany, UK and then USA. It is now set to gain a foothold in India which is the second most populous country of the world. As of now more than 650,000 people have been infected and 28,000 people have succumbed to the illness across the globe. The WHO declared Covid-19 a global pandemic on 11th March 2020. Illness ranges in severity from asymptomatic or mild to severe; a significant proportion of patients with clinically evident infection develop severe disease. Mortality rate among diagnosed cases (case fatality rate) has a variable range; true overall mortality rate is uncertain, as the total number of cases (including

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undiagnosed persons with milder illness) is unknown.[3]

Since the rapid spread of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), critical care physicians have faced an increasing number of patients suffering from an acute hypoxemic respiratory failure associated with coronavirus disease 2019 (COVID-19)[4]. Many of these patients required the use of invasive mechanical ventilation (IMV), which was associated with a mortality rate between 40 and 65%.[4,5] Therapeutic interventions have therefore focused not only on reversing hypoxaemia and providing adequate organ support but also on potential treatments to decrease the viral load or the burden of the inflammatory response, thus limiting disease severity .[6]

The objective of this paper is to describe the clinical profiles of these patients ranging from their age, sex, clinical symptoms, laboratory evaluation, radiological characteristics and treatment provided along with common side effects and outcome.

II. METHODS

STUDY DESIGN:

For this study , All consecutive patients with a SARS-CoV-2 infection admitted to Designated covid hospital & nootan medical college & research centre, visnagar from April 1, 2021 up to May 31 , 2021 and with registered admission and discharge forms were eligible. SARS-CoV-2 infection was confirmed by: a) a positive result of real-time reverse transcriptase-polymerase chain reaction assay of nasopharyngeal swabs or b) a positive rapid antigen tests or c) chest computed tomography (CT) scan showing suggestive signs of COVID-19 infection, according to local radiological reports .

DATA COLLECTION

The medical records of patients were analyzed by the research team of the Department of Medicine, NMCRC, Visnagar. Epidemiological, clinical, laboratory, and radiological characteristics and treatment and outcomes data were obtained with data collection forms from electronic medical records and history given by patients. All data was reviewed by internal medicine specialists. Information recorded included demographic data, medical history, underlying comorbidities, symptoms, signs, laboratory findings; chest computed tomographic (CT) scans, and treatment measures (antiviral therapy, supportive therapy, respiratory support). Berlin definition was used to define ARDS. [7]

Real-Time Reverse Transcription Polymerase Chain Reaction (RT-PCR) Assay for Covid-19

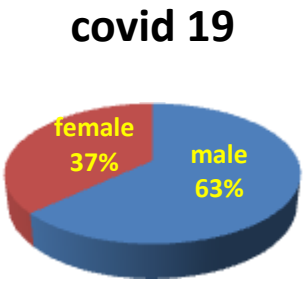
Throat swab samples were collected for extracting 2019-nCoV RNA from patients suspected of having 2019-nCoV infection and were placed into a collection tube containing virus transport medium (VTM) for extraction of total RNA. This process was tried to be completed in minimum possible time. Optimum amount of cell lysates were transferred into a collection tube and were later centrifugated. The suspension was used for RT-PCR assay of 2019-nCoVRNA. This diagnostic criterion was based on the recommendation by the National Institute of Virology (Pune).

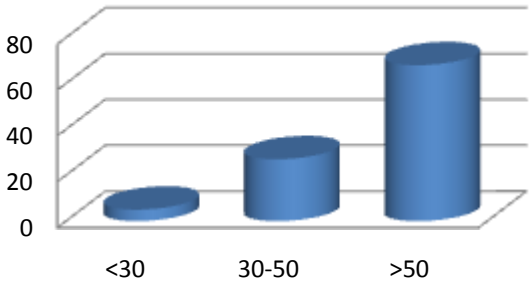
III. RESULTS

Demographics, clinical features and laboratory findings:

Age & Sex Distribution:

During the course of this study 466 Covid-19 positive patients were admitted in NMCRC, Visnagar. Total 294 Male patients (63.09%) and 172 female patients (36.91%) admitted with covid 19 positive pneumonitis. Total 317 patients (68.02%) were of age >50 years , 125 patients (26.82%)of age between 30-50 years and 24 patients (5.15%)of age < 30 years.





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Clinical presentation:

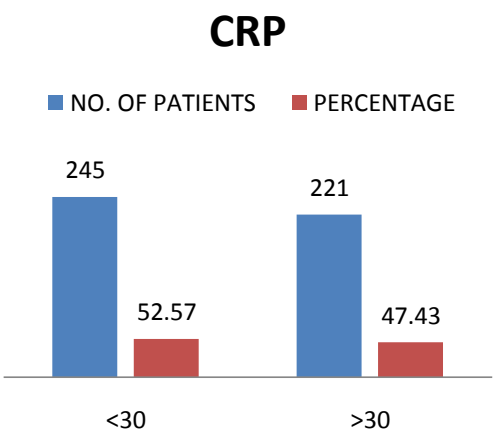
Among Symptomatic patients who were admitted fever was the most common symptom (92.8%) followed by weakness (91.2%), cough (89.2%), loss of appetite (80.3%) , dyspnea (65.6%), diarrhea (18.9%) and vomiting(16.1%). On admission in hospital oxygen saturation >90% in around 39.2% patients, spo2 between 70-90 % in 34.6% patients and spo2 < 70% in 26.2% of patients. Average duration of stay in hospital is around 10-15 days. But some patients also needed stay for more than 30 days particularly in ICU Setup with ventilator support. 156 patients (33.47 %) had underlying co morbidity in the form of hypertension, diabetes mellitus, hypothyroidism, chronic kidney disease or coronary artery disease. Among all these patients 342 patients (73.4%) recovered and discharged and 96 patients (20.6%) died.

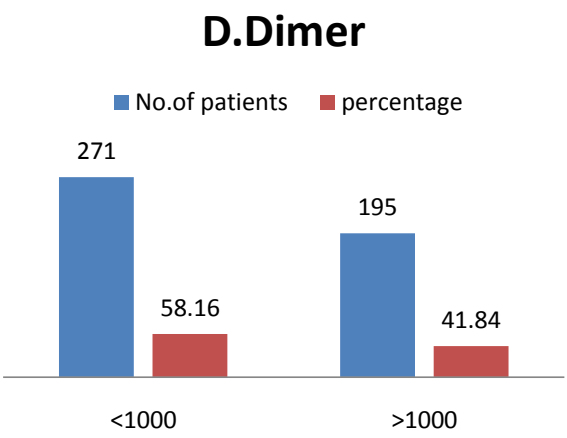
Table 1: case distribution according to clinical features.

Symptoms	No. of patients (out of 466)	Percentage (%)
Fever	432	92.8
Weakness	425	91.2
Cough	416	89.2
Breathlessness	306	65.6
Loss of appetite	374	80.3
Loss of taste and smell	94	20.2
Diarrhea	88	18.9
Vomiting	75	16.1

LABORATORY FINDINGS:

During study we find that 221 patients (47.43%) had C- Reactive Protein >30 mg/l (5 times of normal value) and 245patients (52.57%) had CRP <30 mg/l. We also find that 195 patients (41.84%) presented with D. Dimer >1000 ng/ml and 271 patients (58.16%) had D. Dimer <1000 ng/ml.





RADIOLOGICAL FINDINGS:

On radiological presentation we had observed that HRCT chest of almost all patients admitted in NMCRC, suggestive of bilateral multiple ground glass opacities with predominantly peripheral predisposition. CT severity score of out of 40 given by radiologist was also studied by us. All imaging features were reviewed and evaluated by 2 experienced Radiologists. We find that 123 patients (26.39%) out of 466 patients having CT severity score of > 20 (out of 40) and 342 patients(73.61%) having CT severity score of < 20 (out of 40).

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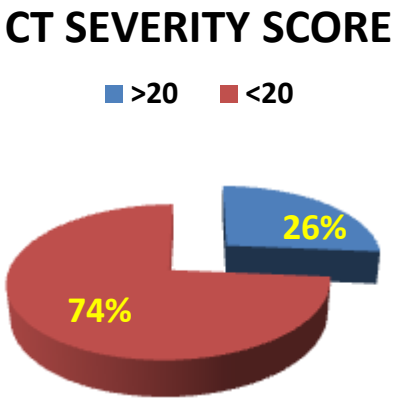

IV. DISCUSSION :

This study included 466 Covid-19 affected patients with the median age being 52.5 years, which is a quite comparative to that reported by Wang et al[5] (56.0 years), Chen et al[2](55.5 years). A decade less to that reported in Safiya Richardson et al[9](63 years). Most of the patients requiring oxygen support were above 50 years of age, thus demonstrating that elder patients were more likely to have lung injury and require ventilator support. Patients requiring oxygen support were more likely to have underlying co morbidities (75%) including either of diabetes, hypertension, cardiac disease, COPD or hypothyroidism. Most of the patients having Covid-19 were male (63.09%) which was near to that reported in Safiya Richardson et al (60.3%) and some what less to reported by Huang et al[4] and Chen et al which show 73.0% male predominance but higher than that reported by Wang et al (54.3%).

In our study fever was the most common symptom present in our patients (92.8%) followed by weakness and cough which was in contrast to that reported in Sudhir Bhandari et al[8] where cough (85.71%)was commonest symptom and comparable to that reported in Huang et al and Wang et al where fever was the most common symptom found (91.7%) and Guan et al7 (87.9%). . The laboratory evaluation of patients requiring oxygen support to maintain saturation demonstrated elevated levels of ferritin, CRP and D-Dimer levels which were significantly higher than in patients who did not require oxygen support. HRCT chest of patients demonstrated predilection for peripheral lung fields in the form of patchy ground glass opacities. HRCT of severely ill patients suggest extensive involvement of lung with high CT Severity score. In our study 20.6% patient died during treatment which is relatively comparable to that reported in Safiya Richardson et al[9] (24.5%)and so much less as compared to that reported in Yang X, Yu Y, Xu J, et al.(61.5%).

V. LIMITATION:

This study has several limitations. First, the study population only included patients within the Visnagar taluka and several talukas of mehsana district rural areas. Second, the data were collected from the electronic health record database. This precluded the level of detail possible with a manual medical record review. Third it only shows the data of 2nd wave of covid 19 pandemic in india.

VI. CONCLUSION :

Clinical investigations in 2nd wave of Covid-19 senario reveal higher D.Dimer and C-Reactive Protein as predominant finding. Predominantly male predominance seen. Young patients also suffered during this 2nd wave of Covid-19. But older age & associated comorbid conditions (Diabetes, Hypertension, cardiac disease) seem to have greater risk for lung injury thereby requiring oxygen support during the course of disease and these patients also had greater derangement in their biochemical profile. Also the death rate is increased during 2nd wave of Covid-19 pandemic. Also seen that as compared to the first wave, mortality was more in this 2nd wave of covid 19 pandemic in india.

CONFLICT OF INTEREST:

None of the authors have conflict of interest

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