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Clinical Research

CLINICAL CHARACTERISTICS AND VITAL SIGNS, A COMPARATIVE STUDY IN RT-PCR POSITIVE AND NEGATIVE PATIENTS IN SOUTH BIHAR

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ABSTRACT The coronavirus disease 2019 (COVID-19) has turned into global public health problem after the first patient was detected in Wuhan, China in Dec. 2019 and has placed unprecedented stress on health system across the world. Due to rapid spread throughout the world with varied severity and outcome , rapid and accurate diagnostic methods are needed to identify, isolate and treat the patients as soon as possible, thus preventing adverse hospital outcome. The patients in the study group were hospitalized based on clinical manifestations, laboratory test results and a positive C.T. scan result corresponding to COVID-19.The patients were categorized into RT-PCR positive and negative groups and evaluated for symptoms, vital signs, clinical and laboratory findings and co-morbidities. Symptoms and vital signs in both groups were almost same while there were some difference in the prevalence of co-morbidities like diabetes and hypertension which were more common in RT-PCR positive patients. In case of RT-PCR negative patients with same clinical presentations, positive C.T. results and laboratory findings as in RT-PCR positive patients, a logical decision should be taken by the treating clinicians. These patients should be isolated from other healthy individuals, treated properly and not discharged from the hospital until fully recovered.

KEYWORDS : RT-PCR, COVID-19, C.T. scan

Background

An outbreak of pneumonia with unknown etiology was reported in Wuhan, a city in China's Hubei Province at the end of 2019 and a novel coronavirus named SARS-CoV-2 belonging to coronaviridae family was identified as the cause which was derived from a bat and transmitted to humans after mutations in the spike glycoprotein (protein S) and nucleocapsid N protein. The transmission of COVID 19 occurs via respiratory droplets or contaminated surfaces. There may be variable symptoms. Some persons may be asymptomatic, some with mild RTI while others can present with severe pneumonia with high incidence of mortality. Most patients had fever (82%) and cough (81%). Severe pneumonia and acute respiratory distress syndrome (ARDS)was reported in 14% cases with an overall mortality rate of 1% .

METHOD

This research was performed in CNM hospital, Bhagalpur. Informed consent was taken from subjects and the hospital administration. The patients with signs and symptoms of COVID-19 and compatible C.T. findings requiring hospitalization according to National guidelines were included in the study. The laboratory tests like CBC, coagulation tests, biochemistry and inflammatory indices were also considered. A group of patients with suspected COVID 19 with RT-PCR negative were also included in the study.

Patients

The study was done from April to May 2021. A total of 152 patients (63.2 % male & 36.8 % female) participated in this study. The patients were divided into two groups , 112 RT-PCR positive(73.7 %) and 40 RT-PCR negative patients (26.3 %). At the time of admission RT-PCR was done of each patient and sampling was done using a standard protocol by trained individuals. The patients were evaluated for symptoms, initial vital signs, comorbidities, clinical and laboratory findings. CT scans were performed for all symptomatic patients at the time of admission.

RESULT

Out of 152 patients of the study group RT-PCR was positive in 112 patients and negative in 40 patients. No significant difference in the symptoms in RT-PCR positive and negative groups were found except cough and weakness which were slightly more frequent in the RT-PCR positive group.

Cough (98-87.5 %) , sore throat (95- 84.8 %), fever (71- 63.4 %) and dyspnea (67- 59.8 %) were found to be frequent in RT-PCR positive patients while cough (26- 65 %), dyspnea (21- 52.5 %), fever (20- 50 %) and weakness (19- 47.5 %) were common in RT-PCR negative patients. Vital signs including pulse rate, temperature, blood pressure and oxygen saturation were also measured. In RT-PCR positive patients PR >100/min (69.6 %) and O2 sat. <90 % was more frequent. Comorbidities including CHD and asthma were common in both groups while diabetes and hypertension were more frequent in RT-PCR positive patients.

Variables	PCR Positive	PCR Negative
Gender NO(%)		
Female	50(44.6%)	16(40%)
Male	62(55.4%)	24(60%)
Initial vital sign. Mean (SD)		
Temp> 37.8	32(28.6%)	9(22.5%)
PR >100/min	78(69.6%)	20(50.0%)
High Sys BP	26(23.2%)	8(20.0%)
High Dias BP	23(20.5%)	7(17.5%)
O2 Sat < 90%	84(75.0%)	14(35.0%)
Symptoms.NO(%)		
Cough	98(87.5%)	26(65.0%)
Sore throat	95(84.8%)	7(17.5%)
Dyspnea	67(59.8%)	21(52.5%)
Fever	71(63.4%)	20(50.0%)
Chills	44(39.3%)	13(32.5%)
Weakness	78(69.6%)	19(47.5%)
Headache	40(35.7%)	18(45.0%)
Dizziness	36(32.1%)	6(15.0%)
Muscular pain	54(48.2%)	18(45.0%)
Nausea	35(31.3%)	12(30.0%)
Vomiting	24(21.4%)	6(15.0%)
Diarrhea	16(14.3%)	9(22.5%)
Comorbidity.NO(%)		
Diabetes	29(25.9%)	10(25.0%)
Hypertension	25(22.3%)	9(22.5%)
Hyperlipidemia	9(8.0%)	1(2.5%)
CHD	16(14.3%)	8(20.0%)
CKD	2(1.8%)	1(2.5%)
Asthma	10(8.9%)	9(22.5%)
COPD	2(1.8%)	2(5.0%)

DISCUSSION

During the initial phase of the COVID-19 outbreak, due to diversity of symptoms including it's severity and imaging results the diagnosis of the disease was difficult. But now the RT-PCR is considered to be a Gold standard method. Although RT-PCR is not always positive in patients with COVID-19 and in this case , chest C.T. images showing pulmonary parenchymal lesion could play an essential role in the diagnosis .

Previously published studies have suggested that in some COVID-19 patients, a false-negative RT-PCR result be observed. False-negative results may be caused by various factors such as human errors when

following the diagnostic kit protocol, the sensitivity of reagents, the site and method of specimen sampling, and collection times.

In Yang et al.'s study, the total positive rate of RT-PCR for throat swab samples was reported to be about 30–60% at initial presentation despite limitations of sample collection, transportation, and kit performance. In this study, all patients were evaluated for clinical manifestations and radiological examination. One of the studies in Wuhan revealed that a considerable ratio of COVID-19 patients may have had an initial negative result for RT-PCR test and that the Positively diagnosed patients had a higher tendency to turn into more serious/ severe cases. This study stated that patients with negative RT-PCR who presented with typical clinical manifestations should not be ignored and the PCR test should be repeated for them.

In our hospital patients were admitted on the basis of clinical manifestations, laboratory test results and positive C.T. scan corresponding to COVID-19. Most of them were RT-PCR positive and some of them were RT-PCR negative but there was a only a slight difference in their vital signs, co-morbidities and laboratory findings. Thus we decided that the RT-PCR negative patients should not be discharged from the hospital if presenting with similar manifestations to RT-PCR positive patients.

CONCLUSION

As clinical characteristics and vital signs in both RT-PCR positive and negative patients were similar initially most of them with mild symptoms were discharged. But some of them turned back with increased severity and even became RT-PCR positive. Thus we concluded that the decision on COVID-19 patients should not exclusively depend upon RT-PCR positivity during the pandemic. Clinical manifestations, laboratory findings and positive C.T. results play a critical role in clinician's decisions especially in cities with high prevalence of COVID-19 with lower medical facilities. Patients with symptoms like cough, sore throat, fever, dyspnea etc. whether RT-PCR positive or negative should be kept isolated from other healthy individuals, treated properly and then discharged from the hospital until fully recovered.

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