Original Article

Clinical and demographic characteristics of patients with coronavirus disease 2019 in Security Forces Hospital, Riyadh, Saudi Arabia

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Abstract

Background: Corona virus disease (COVID-19) is a global pandemic public health problem which affected more than 5 million worldwide and caused more than 500,000 deaths. Disease presentations varied from a symptomatic or mild to severe illness which leads to death. **Aim:** The study describes the demographic and clinical characteristics patients with coronavirus disease 2019 (COVID-19) admitted to Security Forces Hospital in Riyadh, Saudi Arabia between 15th March till 30th of June 2020. **Methods:** Study group studied a case series of 566 consecutive patients with COVID-19 evaluated at Security Forces Hospital in Riyadh, Saudi Arabia from 15th March and 30th June 2020. **Main Outcomes:** Demographic data, underlying co-morbidities, clinical presentation, and treatment were collected. **Results:** Demographically, COVID-19 was more prevalent in male, Saudi, nonsmokers with blood group O + ve patients. It's more common in patients with co-morbidities like diabetes and hypertension. Fever, cough, and shortness of breath are the most common presenting symptoms. ESR, CRP, LDH, and Ferretin are the commonest laboratory abnormalities found. **Conclusion:** Totally, 556 case series patients showed more prevalence in aged male with diabetes as co-morbidity. Fever and cough are the most presenting symptoms with high inflammatory markers.

Keywords: Characteristics, COVID-19, Saudi Arabia, Security Forces Hospital

Introduction

Coronavirus disease (COVID-19) is a global pandemic public health problem. Defined by the World Health Organization, COVID-19 is caused by a virus named as 2019-novel corona virus (2019-nCoV).[1] However, thereafter named as "SARS-CoV-2" by the International Committee on Taxonomy of Viruses.[2]

On the 2nd of March, Saudi Ministry of Health confirmed the first case in a Saudi citizen coming from Iran, tested positive for COVID-19.[3] In the US the first confirmed case of corona virus disease 2019 (COVID-19) was reported from Washington State on January 31, 2020.[4]

It was reported that the incubation period of 2 to 14 days, with clinical presentations varies from mild infection to severe disease to even fatal illness.[5] The most commonly reported symptoms are fever, cough, and dyspnea. Myalgia, headache and gastrointestinal symptoms as diarrhea and nausea or vomiting, are also common.[6]

Asymptomatic cases of COVID-19 were noted during the outbreak journey. A Korean study found that as much as twenty

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percent (20%) of individuals with COVID-19 kept asymptomatic from potential exposure to laboratory positive confirmation and hospital admission.[7] On the other hand, Corona viruses can cause multiple system infections and mainly respiratory tract infections in humans, such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS).[8]

In Saudi Arabia, COVID-19 infections continues to spread after the first 4 weeks. Fever and cough were common clinical symptoms, but fortunately not many COVID-19 patients developed vital sign abnormalities.[3]

Observational studies from Wuhan province, China, reported that infants and children infrequently experience severe disease from COVID-19 compared with adults.[5]

It was suggested that factors were reported to strongly increase the dying risk from COVID-19 are male sex, advanced age (i.e., >60 years), and the presence of co-morbidities such as diabetes, hypertension, chronic respiratory diseases, cardiovascular disorders, and cancer.[9] Estimates vary widely, but COVID-19 could directly cause up to 510,000 deaths in the United Kingdom. and 2.2 million in the United States.[10] The current understanding of this infectious disease is gradually evolving, one leading aspect that remains uncovered is the difference in mortality rates between worldwide countries.[10] It could be explained based on the differences in COVID-19 testing and the reporting between countries with lots of missing data. On the other hand, the disease severity may be affected by some specific population characteristics, which would enhance individual's vulnerability to the virus.

Patients in the severe illness group had numerous laboratory abnormalities, such as higher neutrophil counts, NEU%, fibrinogen levels, lower lymphocyte counts, and lower LYM%. IgM was lower while IgG was higher in patients with severe symptoms.[11]

Primary Care and Emergency physicians are the gate keeper of the health system. So, they should be aware with the disease variability and presentations which enable them to pick up the infected patients early and stop the spread up of the virus with the isolation precautions and management as needed.

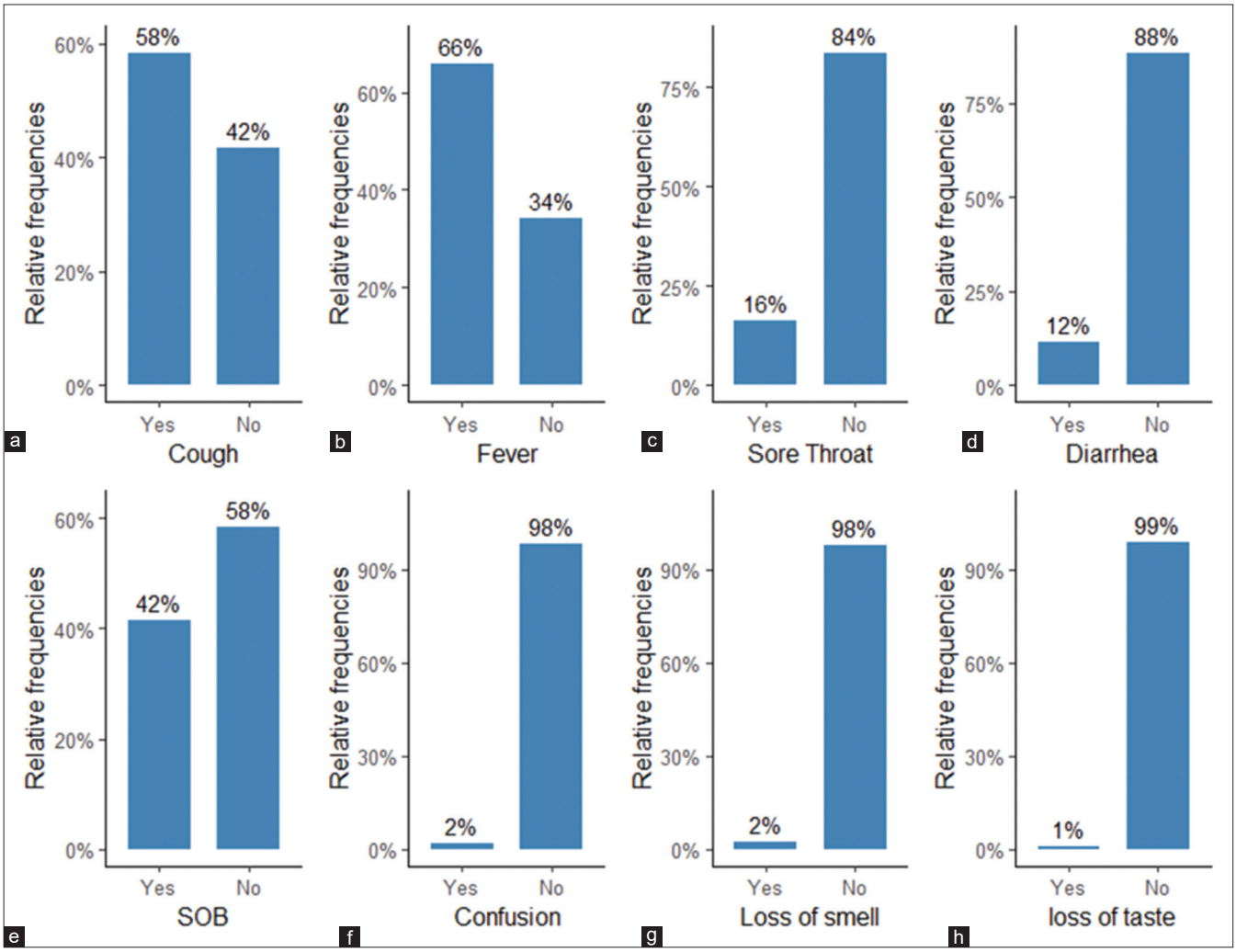

Figure 1: Symptomatic characteristics of patients infected with 2019 nCoV

Materials and Methods

This is a descriptive cross-sectional study carried out at Security Forces Hospital in Riyadh, between 15Th March and 30th of June 2020. The study protocol was approved by the research and ethic committee of the hospital. Convenient sample technique was used as all patients confirmed positive for SARS CoV-2 were included in the study. Data were collected through medical record (MR-V) computerized program, which is used to monitor and follow up the patients including all their laboratory, radiological investigations as well as any medication patients received either as outpatients or during hospital admissions. We got ethical approval at 01/03/2020.

Data collected included patient demographic information, co-morbidities, vital signs, initial laboratory tests, inpatient medications, treatments (including mechanical ventilation). Initial laboratory testing was defined as the first test results done in the hospital.

Statistical analysis: We summarized categorical data with absolute numbers and percentages where continuous data were summarized using mean, median, standard deviations, and interquartile ranges. SAS version 9.4 (SAS Institute, Inc, Cary, NC) and R software (R foundation for statistical computing, Vienna, Austria) were used to perform the data.

Results

A total of 567 patients were included (median age 41 years, interquartile range {IQR}, 28.00; (62.3%) female and (37.7%) male, 81.0% of these patients were Saudi while 19.0% were Non-Saudi nationalities. Out of 567 patients, 550 were nonsmoker while 17 were smoker (97.3%) and (2.7%), respectively. Out of the available data, 51 patients (9.0%) were with O + ve blood group, 30 patients with A + ve (5.3%) and 28 patients (5.0%) with B + ve blood group, however, many patients have missing data about their blood groups as shown in Table 1

The most common co-morbidities were diabetes 123 (21.8%), hypertension 120 (21.2%), and bronchial asthma 33 (5.8%) Table 2.

At presentation, 372 patients(65.8%) were febrile, mean temperature 37.66°c, median 37.50, interquartile range {IQR} 1.3, while cough was the second presenting symptom in 329 patients (58.2%) , shortness of breath in 235 patients (41.6%), sore throat in 92 patients (16.3%), and diarrhea in 66 patients (11.7%) as in Table 3 and [Figure 1 a-h].

Patients presented with mean systolic blood pressure of 128.83 mmhg while mean diastolic was 74.87mmhg; moreover, median was 129.00 and 76.00, respectively. Most important aspect for admission decision and management was oxygen saturation at presentation which was with mean 74.04% and median of 98.00. Respiratory rate and heart rate were with mean and median of 20.16, 20.00 and 94.84, 91.00, respectively [Table 4].

Interestingly, there were laboratory findings for the 567 patients at presentation as erythrocyte sedimentation rate ESR was with mean 30.58 and {IQR} 39.00, C-reactive protein CRP with mean of 48.85 and {IQR} 59.50, Ferritin with mean of 476.74 and {IQR} 434.00, LDH with mean of 261.17 {IQR} 121.00, while the D-dimmer test was with mean of 0.92 and {IQR} 0.52 Table 5.

In terms of admission and management, 55 patients (9.7%) admitted to Intensive Care Units and 30 patients (5.3%) need ventilators. Regarding pharmacological medication, we have got 253 patients (44.9%) received antibiotics, 127 patients (22.5%) given antiviral, 109 patients (19.3%) treated with hydroxychloroquine,

Table 1: Baseline Characteristics of Patients Infected With 2019-nCoV

Variable	Level	N=567	%
Gender	Male	353.00	62.3
	Female	214.00	37.7
Nationality	Non-Saud	108.00	19.0
	Saudi	459.00	81.0
Occupation	Civil	493.00	86.9
	MILITARY	74.00	13.1
Smoking	No	550.00	97.3
	Yes	15.00	2.7
Blood Group	A+	33.00	5.8
	A-	1.00	0.2
	AB+	4.00	0.7
	B+	30.00	5.4
	B-	4.00	0.7
	O+	54.00	9.5
	O-	9.00	1.6
Contact with COVID	No	267.00	47.3
	Yes	297.00	52.7
AGE	Mean	41.88	-
	Median	41.00	-
	Std Dev	18.32	-
	IQR	28.00	-

Table 2: Co-morbidities of Patients Infected With 2019-nCoV

Variable	Level	N=567	%
CVD	No	546.00	96.6
	Yes	19.00	3.4
Diabetes	No	442.00	78.2
	Yes	123.00	21.8
Hypertension	No	445.00	78.8
	Yes	120.00	21.2
COPD	No	563.00	99.6
	Yes	2.00	0.4
Br Asthma	No	532.00	94.2
	Yes	33.00	5.8
CKD	No	547.00	96.8
	Yes	18.00	3.2
Hepatitis	No	562.00	99.5
	Yes	3.00	0.5
Other illness	No	365.00	64.4
	Yes	202.00	35.6

50 patients (8.8%) managed with Toclizumab and same number with Corticosteroids. The majority of the patients 434 of (76.8%) were given anticoagulants Table 6 and [Figure 2 a-h].

Discussion

This study describes the demographic characteristics and clinical presentation of 556 consecutive cases confirmed with COVID-19 presented to Security Forces Hospital in Riyadh. Our findings support the observations reported from earlier studies which found high prevalence of patients with advanced age and co-morbidities.[6,12] Pre-existing conditions, diabetes was found the most common followed by hypertension, unlike the study that was done in Detroit in USA.[13] This result could be due to the high prevalence of diabetes Mellitus in Saudi Arabia. Although more than half of the patients (62.3) were male, (97.3%) of patients were non-smokers. Common symptoms at presentation were fever and cough which is in line with other study.[14] However, a significant proportion of patients 41.6% presented initially with shortness of breath which required oxygen therapy which is close to the study done in Wuhan, China.[13]

Table 3: Symptomatic Characteristics of Patients Infected With 2019-nCoV

Variable	Level	N=567	%
Cough	No	236.00	41.8
	Yes	329.00	58.2
Fever	No	193.00	34.2
	Yes	372.00	65.8
Sore Throat	No	473.00	83.7
	Yes	92.00	16.3
Diarrhea	No	499.00	88.3
	Yes	66.00	11.7
SOB	No	330.00	58.4
	Yes	235.00	41.6
Confusion	No	554.00	98.1
	Yes	11.00	1.9
Agitation	No	565.00	100.0
Loss of taste	No	559.00	98.9
	Yes	6.00	1.1
Loss of smell	No	553.00	97.9
	Yes	12.00	2.1
Skin rash	No	561.00	99.3
	Yes	3.00	0.5

Table 4: Vital signs Characteristics of Patients Infected With 2019-nCoV

Variable	Level	N=567	%
Systolic BP	Mean	128.83	-
	Median	129.00	-
	Std Dev	16.94	-
	IQR	21.00	-
Diastolic BP	Mean	74.87	-
	Median	76.00	-
	Std Dev	11.20	-
	IQR	14.00	-
SpO2	Mean	74.04	-
	Median	98.00	-
	Std Dev	41.25	-
	IQR	23.00	-
RR	Mean	20.16	-
	Median	20.00	-
	Std Dev	4.40	-
	IQR	1.00	-
HR	Mean	94.84	-
	Median	91.00	-
	Std Dev	17.00	-
	IQR	20.00	-

Table 5: Laboratory Characteristics of Patients Infected With 2019-nCoV

Variable	Level	N=567	%
ESR	Mean	30.58	-
	Median	19.00	-
	Std Dev	28.62	-
	IQR	39.00	-
CRP	Mean	48.85	-
	Median	9.60	-
	Std Dev	83.30	-
	IQR	59.50	-
Ferritin	Mean	476.74	-
	Median	190.00	-
	Std Dev	922.01	-
	IQR	434.00	-
D dimmer	Mean	0.92	-
	Median	0.43	-
	Std Dev	2.84	-
	IQR	0.52	-
LDH	Mean	261.17	-
	Median	222.00	-
	Std Dev	142.75	-
	IQR	121.00	-

Table 6: Management provided to Patients Infected With 2019-nCoV

Variable	Level	N=567	%
ICU	No	510.00	90.3
	Yes	55.00	9.7
Ventilator	No	534.00	94.7
	Yes	30.00	5.3
Antibiotics	No	311.00	55.1
	Yes	253.00	44.9
Antiviral	No	437.00	77.5
	Yes	127.00	22.5
Hydroxychlorquine	No	456.00	80.7
	Yes	109.00	19.3
Toclizumab	No	515.00	91.2
	Yes	50.00	8.8
Corticosteroids	No	514.00	91.1
	Yes	50.00	8.9
Anticoagulants	No	131.00	23.2
	Yes	434.00	76.8

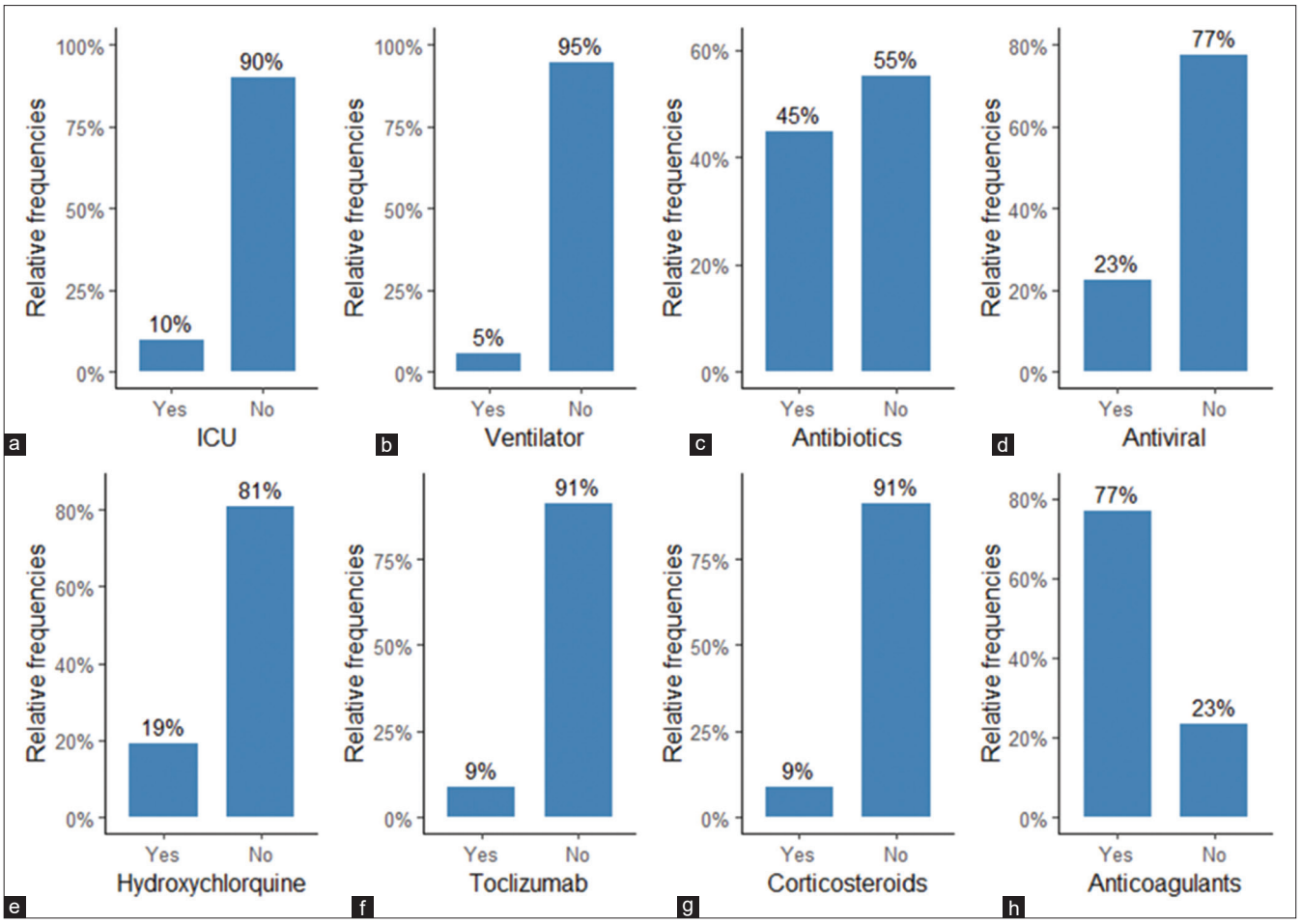

Figure 2: Management provided to Patients Infected With 2019 nCoV

In terms of laboratory results, there was an increase of CRP with mean of (48.85), increase of LDH with mean (261.17), ESR with mean of (40.58), Ferretin with mean of (476.74), and D-dimmer with mean of (0.92) were more common. Overall, all of them were consistent with respiratory virus infection.[15]

Until now, no specific treatment has been recommended for corona virus infection except for meticulous supportive care.[16] 76.8% of the patients in this study received anticoagulant agents, 44.9% received antibiotics therapy, 22.5% received antiviral, 19.3% received hydroxychloroquine and 8.9% received corticosteroids.

This study has a few limitations. It was conducted at a single large health system in Riyadh. In addition, this case series has no control group. We are missing demographic data of few patients who are ineligible to be treated in SFH but because of pandemic any patient with suspected case can walk in, and the findings may not be generalizable to other.

Conclusion

This case series provides demographic and clinical characteristics of sequentially 556 patients presented to single center health care facility in Riyadh which showed more prevalence in aged male with diabetes as co-morbidity. Fever and cough most presenting symptoms with high inflammatory markers.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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