



## Clinical Presentation, Comorbidities, Radiological features and Outcomes of One Hundred COVID -19 patients in Saudi Arabia

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### Abstract

**Context:** A novel Coronavirus disease (COVID 19) emerged in Wuhan, China in late 2019 which caused severe respiratory symptoms and eventually death. According to reports the virus emerged from wet food markets of Wuhan. However, these claims are still contested. The infection spread quickly to neighboring countries and eventually to Europe, Australia and Americas as well causing a full blown pandemic.

**Aim:** Very little is known about the clinical presentations, treatment and outcomes of COVID 19. There have been many studies from US and China regarding COVID 19, but in our region very less has been studied and reported.

**Methods and Materials:** In this retrospective study we analyzed 100 COVID 19 positive patients who were admitted in East Jeddah General Hospital. We analyzed data from hospital electronic records for each admitted patient who was swabbed for nasopharyngeal aspirate and tested positive through Polymerase chain reaction (PCR) for COVID 19. Patient demographics, Presenting symptoms, Comorbidities, Imaging features, laboratory investigations and outcomes were studied for each patient. Data was put in Microsoft Excel ® Ver 2013. Results were calculated and drawn against each column.

**Results:** The median age was 41 years old. The most common presenting symptoms were cough, fever and dyspnea. Hypertension and Diabetes were two main comorbidities associated with COVID 19. Most of patients in our case series were expatriates. 44% of the patients had normal chest X rays or with very subtle findings. Patients who needed mechanical ventilation demonstrated significant mortality rate.

**Conclusion:** Our study demonstrated a very young median age as compared to studies performed elsewhere in USA and China. Imaging pattern is very varied and cannot be solely relied upon. Upper respiratory symptoms are unusual in our patients. Those requiring mechanical ventilation have very high mortality rates. Till a comprehensive vaccine and treatment is available preventive measures like social distancing, masks and hand washing remain the main tool to fight against COVID 19.

### Background

As of now Coronavirus 2019 (COVID 19) pandemic has surpassed 16 million cases

worldwide and has caused more than 650,000 deaths<sup>1</sup>. The first confirmed case of COVID 19 case in Saudi Arabia was reported on 02 March

2020<sup>2</sup>. Soon after, it started to rise exponentially. The most affected areas include the South-western cities like Mecca, Jeddah, Medina and the central capital city of Riyadh<sup>3</sup>. As per the Ministry of Health data total confirmed cases in the kingdom are more than 268,000 and there have been 2,760 deaths<sup>4</sup>. In one of the earliest studies done in Wuhan China the median age of hospitalized patients was 56 years and men were predominantly affected with a mortality rate of 28%<sup>5</sup>. A similar study conducted in the New York City also indicated a male predominance with a median age of 63 years and death rate was 21%<sup>6</sup>. Limited information is available to describe the clinical and radiological features, comorbidities and outcomes of patients in our region. In this study we look at the demographics, clinical presentations, comorbidities, imaging findings, medications used and outcomes of patients who were confirmed COVID 19 in a large teaching hospital in Jeddah, Saudi Arabia. Jeddah is a major metropolitan city in Saudi Arabia and is the gateway to holy city of Mecca which attracts millions of pilgrims from all over the world.

## Methods

In this retrospective study conducted at a major teaching hospital in Jeddah we analyzed 100 COVID 19 patients who were admitted in the month of April. Data was collected from the electronic health records and entered manually for the statistical analysis. Patients were considered to have confirmed COVID 19 if the polymerase chain reaction of nasopharyngeal swab was positive. Data collected included demographics, native or non-native, comorbidities, laboratory investigations, imaging results, medications and ward or ICU admission. Patients were categorized as mild, moderate or severe based on clinical judgement, combined laboratory and radiological findings. We also took note of epidemiological history of the patients if they had a close contact with a confirmed COVID 19 patient or not. All of the presenting clinical characteristics of the patient were included in the data regardless of the

severity. All of the patients who were in ICU needed mechanical ventilation. Chest X-rays were obtained in Posterior-anterior view in stable patients and for those who were unstable a supine view was acquired. We did not perform routine chest CT scans for our patients unless required for other reasons. Medications were tailored as per the hospital infectious disease committee according to present understanding of our disease. They included Azithromycin, hydroxychloroquine, and Ritonavir/lopinavir or a combination. Disposition of stable patients with minimal symptoms was to specific quarantine hotels approved by Ministry Of health. This study is under approval by Ministry Of Health Kingdom of Saudi Arabia and Institutional Review Board. Informed consent was taken from all the patients who were admitted.

## Results

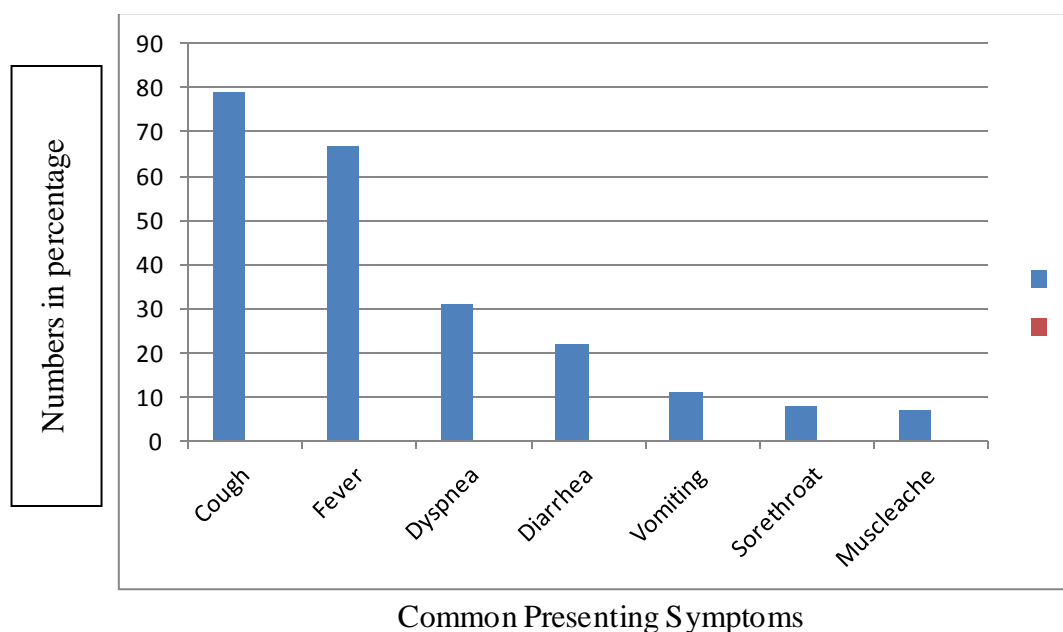
The demographics of the patients are summarized in table 1-1. Out of 100 patients, 78 % were male and 22 % were female. The median age was 41 years. Natives (Saudi citizens) constituted 17 % of total cases whereas expatriates (non-citizens) were 83 %. The most common presenting symptoms included Cough (79%), fever (67%), and dyspnea (31%) followed by diarrhea (22%) [Graph1-1]. Only 8% had Sorethroat and upper respiratory tract symptoms. The most common comorbidities were Hypertension (29%) and Diabetes mellitus (27%). Forty four (44%) patients had normal X rays and among those 15 patients had lymphopenia. Bilateral chest infiltration was found in 32 (32%) patients. Among those 32, 69% had documented lymphopenia [Table 1-2]. Fifteen patients (15%) who had radiological findings (unilateral or bilateral) were afebrile. 51% of patients were categorized as mild, 34% as moderate and 7% as critical. Eight percent were asymptomatic. Majority of the patients 65% did not reveal any epidemiological history. About fifty patients (50%) demonstrated high C reactive protein. Whereas, in majority of the patients D dimer (65%) and ferritin levels (51%) were within

normal levels. Forty eight (48%) patients did not receive any medication and received only supportive treatment. The most common drug regimen used was Azithromycin in combination with hydroxychloroquine (27%), followed by hydroxychloroquine alone (13%) and ritonavir/lopinavir (5%). Six patients were

admitted to Intensive care unit requiring mechanical ventilation and among them five died. As of now the remaining 94% of the patients are either being treated in the wards or are in specific quarantine centers. There have been no deaths in wards or in quarantine centers.

**Table 1** Demographic Characteristics and comorbidities of patients with COVID 19

Total Number	100
Age in years (median) [range]	41 [14 - 85]
Male	78%
Female	22%
Native	17%
Non native	83%
Hypertension	29%
Diabetes Mellitus	27%
Asthma	3%
Ischemic Heart Disease	2%
Congestive Heart Failure	1%
Stroke	1%
Pregnant	2%
Nephrotic Syndrome	1%



**Graph 1**

**Table 2** Radiological features and Inflammatory markers in COVID 19

Bilateral chest infiltration	32%
Unilateral chest infiltration	23%
Normal chest X ray	44%
Leucocytes (4.5-8000)	80%
Lymphopenia (< 1700)	47%
High D-dimer (>0.5)	34%
High Ferritin (>250)	46%
High CRP (>1)	50%

## Discussion

To our knowledge, this study is amongst the first case series of patients with confirmed COVID 19 in Saudi Arabia. Younger, male and non-natives were highly prevalent in our study which is in sharp contrast with the previously published literature elsewhere<sup>5,6,7</sup>. However, the comorbidities like hypertension and diabetes mellitus were also higher in this series as with other studies. One of the most commonly used medications in hypertensive patients alone or those with hypertension and diabetes are ACEi (angiotensin converting enzyme inhibitors) and ARBs (angiotensin receptor blocker) and our study further strengthens the role of these drugs in pathogenesis of COVID 19<sup>7</sup>. The most common presenting symptoms were cough, fever and dyspnea which correlate well with the studies done in Wuhan China and New York city<sup>6,8</sup>. Diarrhea was reported to be present in only 4% in Wuhan China, whereas our study demonstrates a much higher percentage of 22 which is comparable to that of New York City<sup>6</sup>. Interestingly as with previous studies our study also did not show high prevalence of COVID 19 with those having chronic respiratory ailments or in smokers which is a point of discussion and thought. Upper respiratory tract infections are by contrast very low in COVID 19 patients which were also reported from preliminary reports from Wuhan China<sup>10</sup>. There are varying reports about lymphopenia from New York City (60% - 90%) to lymphocytosis in Wuhan China (67%). In our cohort 47% demonstrated lymphopenia. CRP was high in most of our patients but other inflammatory markers such as d dimer and ferritin were not significantly elevated in most patients. A large number of our patients (44%) had normal X-ray findings followed by bilateral lung involvement and then unilateral lung involvement which is in contrast to the studies done in China where most patients had bilateral lung involvement<sup>8</sup>. In our series only six patients (6%) needed mechanical ventilation whereas in New York almost 33% required invasive ventilator

support<sup>6</sup>. This difference may be attributed to the comparatively younger age of our patients. Unfortunately as of now there is no effective vaccine or treatment available for COVID 19<sup>11</sup>. However, few treatments like azithromycin, Hydroxychloroquine, remdesivir and ritonavir/lopinavir have been proposed alone or in combination. The authors presently do not recommend any specific treatment and have no favorites till further large studies are available. Lastly, patients who needed invasive mechanical ventilation have high mortality.

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