

Clinical Diagnosis of Covid – 19 in Karbala City with new protocol thereby

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Abstract:

Background: Coronavirus disease (COVID-19) is posing an unprecedented threat to global healthcare systems, it affected the entire world through short time and it spread rapidly. Transmission of the virus happens mainly through respiratory droplets and close contact. There is the possibility of aerosol transmission in a relatively closed environment for a long time exposure to high concentrations of aerosol. People are generally susceptible. There is no specific antiviral treatment recommended for COVID-19, and no vaccine is currently available, so the early diagnosis and treatment is very important to avoid the complication.

Aim: We aimed to further clarify the epidemiological and clinical characteristics of 2019-nCoV in Karbala city.

Patients and Method: A cross sectional study was conducted from 1st of March to May 14, 2020, at Imam Hussain medical city hospital in Karbala- Iraq. The patients have been admitted to isolation wards in local hospitals where their conditions are being closely monitored by medical teams.

Result: A total 107 covid -19 patients with mean \pm SD of 45.27 ± 20.33 years. Male to female ratio was 2.56: 1, also severity of disease more in male than female. About half of patients had history of chronic diseases. Three quarters of patients become symptomatic in less than 5 days prior to diagnosis and hospitalization (or they had no any symptoms). Sources of infection mainly Syria and Iran represented (29%, 5.6%) respectively. Most common symptoms among patients were fever 75.7%, cough 72%, and shortness of breath 68.2%. Antiviral therapy was given to 106 (99.1%) patients in form of Tamiflu, Kaletra or combination of them (73.8%, 0.9% and 24.3% respectively). Azithromycin, HCG and Antibiotics were given to 91.6%, 88.8% and 42.1% of patients respectively. Recovery and discharge from hospital occurred in 81(75.7%) cases, while death accounted to 8(7.5%) cases. About two thirds of patients 62 (70.5%) required between one to two weeks of hospitalization. Increasing age and having a chronic disease associated with severe or critical symptoms, and this association is statistically significant ($p= 0.001, 0.0001$ respectively).

Conclusion: the novel virus, Covid-19 had shown more likely effect elderly male underlying chronic diseases, most common symptoms fever, cough, and shortness of breath. Supplement treatment, antiviral and antibacterial were used according to the severity of infection.

Key words: Coronavirus, Covid- 19, Symptoms, Treatment and severity.

Introduction:

During Covid-19 pandemic, Iraq was generally one of the countries affected by the virus and the holy city of Karbala in particular, due to religious tourism and its contents of many factories that are managed by foreign labor, in addition to the travel of large numbers of its population to the affected areas at that time according to [1] In the 3rd of March 2020 first case of confirmed Covid-19 patient was reported in Karbala, the patient was with a travel history to the Islamic Republic of Iran during the last 2 weeks. The etiology of this infection was a novel coronavirus (2019-nCoV), it belongs to Coronaviridae family [2]. Most infections are self-limiting. COVID-19 tends to cause more severe illness in the elderly population or in patients with underlying medical problems [3].

In this outbreak, all ages are affected particularly middle ages but compared with adult cases, there are relatively fewer cases of children, they exhibiting milder symptoms and better prognosis, according to China -WHO Joint Mission Expert Group, children account for 2.4% of all reported cases, and no deaths had been reported [4] .

In the management of COVID19 disease many laboratory examinations and radiological investigation was used such as White Blood Cell Count (WBC), serum procalcitonin, C-reactive protein (CRP), and the gold standard for COVID19 diagnosis the real-time polymerase chain reaction (RT-PCR) [5] .

Sampling of upper respiratory tract by single swab for throat then nose into one container of viral transport medium, generally it need a relatively long time reaching two days, a single positive test should be confirmed by a second RT-PCR test, WHO recommend re-sampling if initial testing is negative [6]. Another lab test used is the COVID-19 Rapid Test which qualitatively detects IgG and IgM antibodies to SARS-CoV-2 in human whole blood, serum and plasma samples [7] .

Regarding radiological diagnosis, Chest Computed Tomography exhibiting high sensitivity and low specificity for COVID-19[8] . Lung ultrasound. (USG) also was used in some centers [9] .

The therapeutic strategies to transact with the infection are only supportive, and prevention purposed at decline transmission in the community is our best weapon. Aggressive isolation measures in China have led to a progressive reduction of cases [10] .

Purpose: Clarify the epidemiological and clinical characteristics of 2019-nCoV in Karbala city.

Method and patients:

Setting and design: this cross –sectional description study was based of the registration the data of Al Hayat ward in Imam Hussain medical city hospital. Registry data are gathered, unified and analyzed. The study covered the period from 1st of March to May 14, 2020.

Ethical considerations: Use of these data approved by the Public Health Directorate, and the Research Center of the Ministry of Health and Imam Hussain Medical City Hospital.

We include all the patients who admitted to al Hayat ward after proved diagnosis by PCR positive, CT scan done for them with exception the contraindication cases.

Statistical analysis:

Data was entered and analyzed through the Statistical Package for the Social Sciences (SPSS version 23). Descriptive statistics presented as frequency and percentage in appropriate tables and graphs. Chi-square test or Fisher's exact test were used to find association between the categorical variables. The association was considered to be statistically significant when the P-value was found to be less than 0.05.

Result:

The study includes a total of 107 COVID-19 confirmed patients were the age ranged from 3 to 85 years and a mean ± SD of 45.27 ± 20.33 years.

Male to female ratio was 2.56:1 where 77 (72%) of the patients were men. as demonstrated in (table-1) below:

Table-1: Socio-demographic characteristics of COVID-19 confirmed patients

Characteristics	No. (%)
	mean ±SD
Age (in years)	45.27±20.33
	Range
	3- 85
	< 10
	6 (5.6)
	10-19
	6 (5.6)
Age groups (years)	20-29
	12 (11.2)
	30-39
	21(19.6)
	40-49
	11 (10.3)

	50-59	16 (15)
	60-69	18 (17.8)
	≥ 70	16 (15)
Gender	Male	77(72)
	Female	30(28)
Residence	Center sector	72(68.6)
	Al-Hindia sector	18(17.1)
	Al-Hur sector	11(10.5)
	Al-Hussainia sector	4(3.8)
Employment	Employed	57(53.3)
	Non-employed	38(35.5)
	Student/child	12(11.2)
Smoking habits	Nonsmokers	78 (72.9)
	Former smokers	19 (17.8)
	Current smokers	10 (9.3)
History of chronic diseases	Present	54(50.5)
	Absent	53(49.5)

About half of the patients had history of chronic diseases whereas Diabetes mellitus and hypertension contributed to the largest proportion of the patients (29%, 25.2% respectively) as illustrated below in (figure-1).

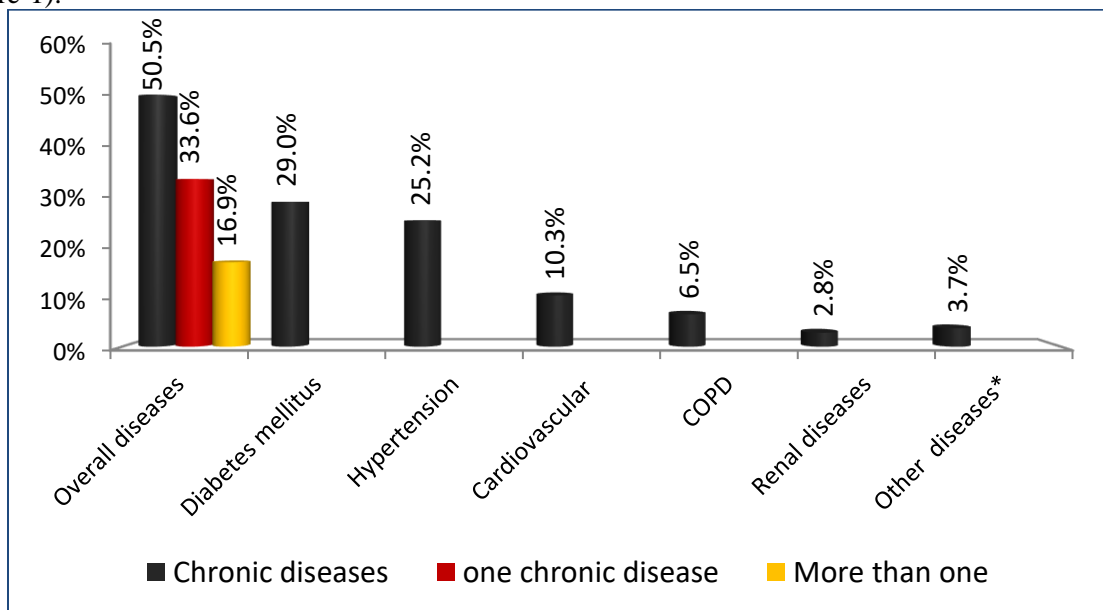


Figure-1: The past medical history of COVID-19 patients

*Other diseases includes; Scleroderma and Thyroiditis.

About three quarters of patients (73.8%) become symptomatic in less than 5 days prior to diagnosis and hospitalization (or they had no any symptoms). Patients with previous history of travel to Syria and their contacts accounts for 29%, 45.7% respectively, while those with previous history of travel to Iran represent only 5.6% from total cases and only 6.5% of total cases from their contacts (as illustrated in table-2 below).

Table-2: Time of presentation of COVID-19 confirmed cases and Source of infection

Characteristics	No. (%)	
Time of presentation	0-4 days	79(73.8)
	5-9 days	24(22.4)
	More than 9 days	4(3.7)
Source of infection	History of travel to Syria	31(29)
	Contact to traveler to Syria	49(45.7)
	History of travel to Iran	6(5.6)
	Contact to traveler to Iran	7(6.5)
	History of travel to India	1(0.9)
	Unknown source	13(12.1)

The most common symptoms among patients were fever (75.7%), cough (72%) and shortness of breath (68.2%), followed by headache, sore throat and fatigue (39.3%, 38.3% and 36.4% respectively) as showed in (figure-2) below.

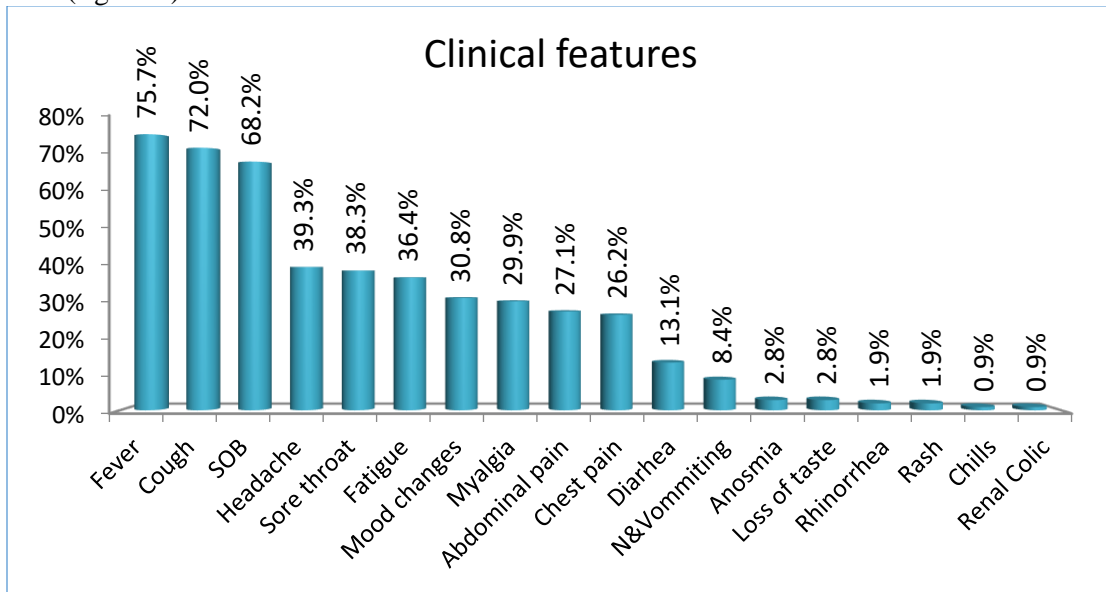


Figure-2: Percentages of the clinical features of the COVID-19 confirmed cases

Antiviral therapy was given to 106(99.1%) patients in form of Tamiflu, Kaletra or combination of them (73.8%, 0.9% and 24.3% respectively). Azithromycin, HCG and Antibiotics were given to 91.6%, 88.8% and 42.1% of patients respectively (figure-3).

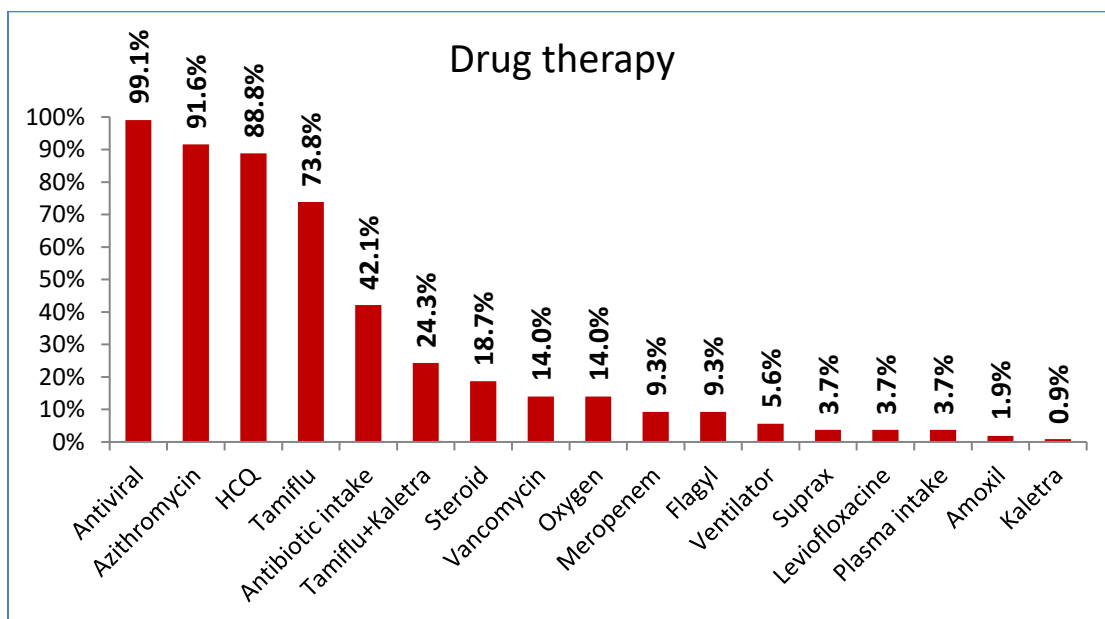


Figure-3: Percentages of drug therapy of COVID-19 confirmed patients

Out of the 107 total confirmed cases, there were 19 (17.8%) patients presented without any symptoms, while severe and critical cases accounted for 9(8.4%) and 8(7.5%) cases respectively. Recovery and discharge from hospital occurred in 81(75.7%) cases, while death accounted to 8(7.5%) cases. About two thirds of patients 62(70.5%) required one to two weeks of hospitalization. Complications occurred in one quarter of the patients. The most frequent complications were pneumonia, hypoxia and ARDS (table-3 and figure-4 below).

Table-3: Assessment and outcome of COVID-19 confirmed cases

Variable	No. (%)	
Severity of infection	Asymptomatic	19(17.8)
	mild	49(45.7)
	moderate	22(20.6)
	severe	9(8.4)
	critical	8(7.5)
Outcome	Recovery	81(75.7)
	Active	18(16.8)
	Death	8(7.5)
Length of stay at hospital	< one week	10(11.4)
	1-2 weeks	62(70.5)
	More than two weeks	16(18.2)
Complications	Absent	80(74.8)
	Present	27(25.2)

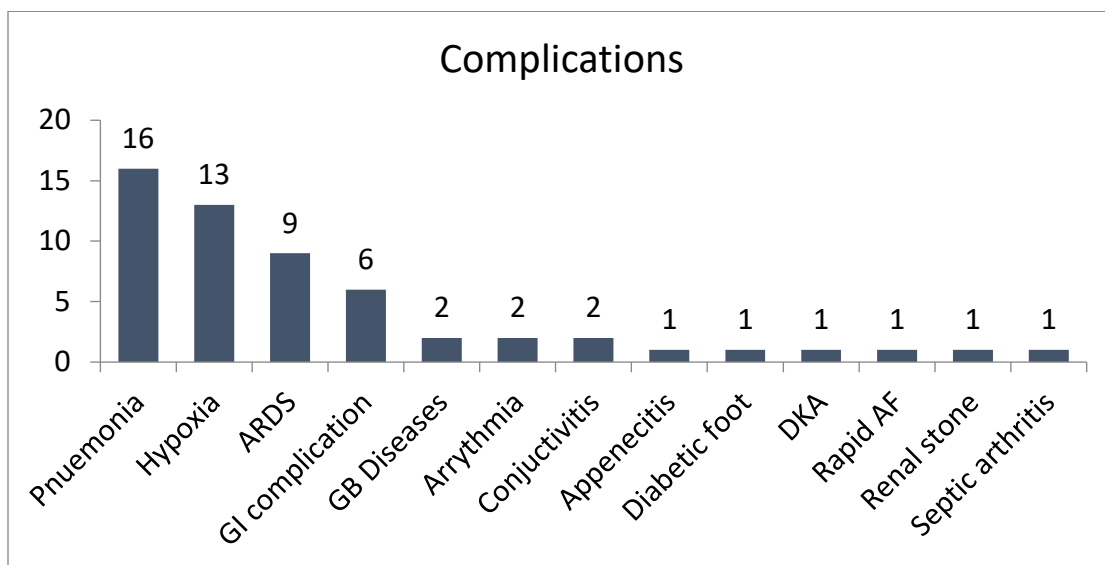


Figure-4: Frequency of complications of COVID-19

Table-4 below clarifies that increasing age and having a chronic disease associated with severe or critical symptoms, and this association is statistically significant (p= 0.001, 0.0001 respectively).

Table-4: Association of the severity of COVID-19 confirmed cases with some possible socio-demographic characteristics and related factors

Independent variables	Severity		P value
	Mild/moderate (n=90)	Severe/critical (n=17)	
Age			
Mean ±SD	42.38±19.79	60.59±16.20	0.001*
Gender			
Male	64(83.1)	13(16.9)	0.7
Female	26(86.7)	4(13.3)	
Smoking			
Non-smoker	69(88.5)	9(11.5)	0.07
Smoker	21(72.4)	8(27.6)	
Chronic diseases			
No	52(98.1)	1(1.9)	0.0001*
Yes	38(70.4)	16(29.6)	

* Chi- square test was used with a significant P value of less than 0.05.

Discussion:

Our center; Al-Imam Al-Hussein medical city is the biggest medical center in our governorate and is the only hospital dealing with COVID-19 patients, atotal of 107 patients diagnosed as COVID-19 were admitted from 1st of March to May 14, 2020. There was wide range of age distribution from 3 to 85 years, children account for 11% of patients which mean that COVID-19 virus has little or limited effects on children and the rate of infection increasing with age, certainly this related to the adult's activities and less international traveling of children, this accepted with whatLee *et al.*, found[11].

Male to female ratio was 2.56:1 where 77 (72%) of the patients were men, may be due to social habits that's men spend more times out of door this agree with Sultan[12]but not agreed with Wenham [13],however the susceptibility to infection should be equal for both sexes, but men prone for worse

disease and bad outcomes, as seen by Jian-Min [14], this was also seen in this recent study where severe disease seen in 17% of men and 14% of women (table-4). About half of the patients had history of chronic diseases, whereas Diabetes mellitus and hypertension contributed to the largest proportion of the patients (29%, 25.2% respectively), this result corresponded with Yang [15], this feature of COVID-19 resembling what happened in MERS at 2011 where Middle East respiratory syndrome coronavirus (MERS-CoV) is linked with life-threatening severe illnesses and a mortality rate as seen by [16-17].

Three quarters of patients (73.8%) presented early this representing the hard efforts of the primary health workers in following all persons who had contact with any traveler to Islamic republic of Iran and Syria, where 29% of our patients had history of recent travel to Syria and 45% were contacts to them, only 5.6% were came from Iran and their contacts represent 6.5%, actually the higher Syrian percentage was due to closure of international border with Iran which forced our citizens to travel from Iran to Syria for returning to home.

As in most of published articles, the most common symptoms among patients were fever (75.7%), cough (72%) and shortness of breath (68.2%), followed by headache, sore throat and fatigue (39.3%, 38.3% and 36.4% respectively)[18-20].

Out of the 107 total confirmed cases, there were 19 (17.8%) patients presented without any symptoms, mild cases were 49 (45.7%), while moderate symptoms were 22 (20.6%), about severe and critical cases accounted for 9 (8.4%) and 8 (7.5%) cases respectively, that's mean the majority of patients were a symptomatic and have mild (62%), could be partly explained by the fact that all of the silent infectious cases from recent study were found from the screening of the close contacts of prove positive cases, agreed by Ferretti [21], our milder cases (62%) still lower than that proposed by the WHO that propose 80% of infections are mild or asymptomatic while 15% have severe infection requiring oxygen and 5% are critical cases that requiring ventilation [22]. These fractions of severe and critical infection would be higher than what is observed in our study depending on many factors like age, comorbidity, early diagnosis and others.

Recovery and discharge from hospital occurred in 81(75.7%) cases, while death accounted to 8 (7.5%) cases which is higher than mortality ratio that reported by WHO (between 3-4%), this probably due to late presentation of four of our patients, they reached hospital with severe dyspnea and hypoxia and they died on mechanical ventilators less than 24 hours from admissions.

About two thirds of patients 62 (70.5%) required one to two weeks of hospitalization according to severity of disease, our result matched with Feng [23] and his team that report 16 days admission.

Complications occurred in one quarter of the patients, the most frequent complications were pneumonia, hypoxia and ARDS, this corresponding with WHO assumptions where severe medical complications can lead to death in some older patients and who were complaining of chronic medical conditions, complications included: Pneumonia, organ failure, heart problems, severe lung condition like acute respiratory distress syndrome, blood clots, renal injury and additional viral and bacterial infections as shown in figure 4.

Antiviral therapy was given to 106 (99.1%) patients in form of Tamiflu, Kaletra or combination of them (73.8%, 0.9% and 24.3% respectively). Azithromycin, HCG and Antibiotics were given to 91.6%, 88.8% and 42.1% of patients respectively.

We managed our patients according to Iraq ministry of health management protocol for COVID-19 disease where all asymptomatic cases received tonics inform of vitamin C, zinc and D3 supplements, for mild cases we prescribed Tamiflu, Hydroxychloroquine, azithromycin and tonics, moderate cases treated in similar regime with kaletra, anti-thrombotic, I.V antibiotics and steroids accordingly, we added convalescent plasma, methylprednisolone and Actemra for severe and critical cases, the combined treatment reported in many epidemiological study as Chen *et al*[24], it was successful in treating COVID-19 disease, about 25% of the patients were provided with single antibiotic treatment, whilst 45% of the patients received multi-antibiotic treatments study.

The relationship between COVID-19 and smoking still a controversial concept, in this study 27% of our hospitalized patients were current or former smokers, 72% had mild symptoms, these numbers should not mean that smokers has a protective effect against COVID-19, it carries substantial uncertainty about this subject because we did not study the disease in between smokers themselves and many smoker patients may denial smoking for certain cause, same conclusion was agreed by [25].

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms.

Author's contribution:All gave a substantial contribution to the conception and design of the work. All authors gave final approval of the version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Conflicts of interest: There are no conflicts of interest.

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