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Research article

Demographic data and renal function tests among Covid-19 patients

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Abstract

Introduction: Millions of people had been infected by COVID-19 world- wide. There is a certain percentage of patients who progressing to severe condition requiring intensive care. identification of patients who are at a high risk of severe infections could play a role in good management. Associated comorbidities in Covid-19 patients may play an important role in patient deterioration to more severe condition. among such comorbidities; impairement of renal function. **Aim of the work:** is to show demographic data and the difference of renal function tests among Covid-19 patients and correlation between them and their severity. **Subjects and methods:** The present study was carried out at the Clinical Pathology Department, Chest department, Faculty of Medicine, Minia University, Minia, Egypt through the period from May 2021 to March 2022. It was conducted on 70 individuals after ethical committee approval and a written consent was obtained from relatives of each patient. The subjucts of the study were devided into control group (group II) and diseased patient group(group I),the latter was subdivided according to severity into 3 groups (moderate,severe and critical). All the study subjects were submitted to history taking considering age and sex and submitted to routine laboratory investigations that include CBC, Random glucose level, coagulation profile and liver function tests. **Results:** There was statistical significant difference between the studied groups regarding serum urea and creatinin , but no regarding demographic data .

Key words: Covid-19 patients and renal function tests .

Introduction

Since December 2019, unexplained pneumonia cases had been started to appear in Wuhan, Hubei Province, China. It is identified as a pneumonia caused by a novel coronavirus infection [1, 2]

COVID-19 disease is a respiratory and systemic disease by which millions of people had been infected world- wide [3, 4]. There is a very wide range of variation among individuals in the picture by which they are presented[5, 6]. For facilitating providing better patient management and effectively improving outcomes, early identification of patients who may be more risky to develop severe infection could play an important role[7-10]

Males have been consistently observed as a risk factor for poor outcome. Males were the majority observed in the total number of cases, complications, and deaths amongst COVID-19 pneumonia patients [11]

With the increased number of COVID-19 patients, all individuals have a theoretical risk of being contact with virus carriers or cases, major risk factors for developing severe infection were suggested to include old people and the presence of comorbidities or underlying diseases, such as cardiovascular disease, hypertension and diabetes. [12, 13]

Multi-organ failure is considered the major cause that lead to death in COVID-19. It was reported by the latest researchs that the incidence of COVID-19 associating organ dysfunction represents nearly 33%, of which the acute renal injury represents nearly 3~7% [14, 15]

Aim of the work

The aim of this study is to show the difference of renal function tests among Covid-19 patients and correlation between them and severity of their medical condition.

Subjects and methods

The present study was carried out at the Clinical Pathology Department, Chest department, Faculty of Medicine, Minia University, Minia, Egypt through the period from May 2021 to March 2022. It was conducted on 70 individuals after ethical committee approval and a written consent was obtained from relatives of each patient.

The subjucts of the study were devided into control group(group II) and diseased patient group (group I), the latter was subdivided according to severity that based on clinical presentation and the P/F ratio (the arterial pO2 (“P”) divided by the FIO2 (“F”) fraction inspired O2 ratio) into 3 groups :

- group Ia; critical cases : P/F ratio < 100
- group Ib; severe cases : P/F ratio < 200
- group Ic; moderate cases : P/F ratio < 300

All the study subjects were submitted to history taking considering age and sex and to general clinical examination. Also all subjects submitted to routine laboratory investigations that include CBC, Random glucose level, coagulation profile and liver function tests and specific marker (serum urea and serum creatinin)

Table (I): Demographic data of all studied subjects :

	Cases (Group I) N= 50	**Control (Group II) N= 20**	**p value**
Age (years):			
Median	59	53	0.176
IQR	(48 – 67)	(34 – 64)	
Sex (N %)			
Males	26 (52.0%)	10 (50.0%)	0.88
Females	24 (48.0%)	10 (50.0%)	

Table (I) shows that the age of the studied patients had median of 59 years and IQR of (48 – 67) and the age of the control group had median of 53 years with IQR of (34 – 64). The studied patients were 26 males (52%) and 24 females (48%) while the control group were equal (50%). There were no statistically significant difference between the studied groups regarding the age and sex (p=0.176 , 0.88 respectively).

Table II: Comparison among studied groups as regarding Renal function tests .

	Group Ia N= 7	Group Ib N= 8	Group Ic N= 35	Group II N= 20	p value
	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	
Creatinin (mg/dl)	1.6 (1.3 – 2.0)	1.5 (1.1 – 2.9)	1.0 (0.9 – 1.4)	1.0	**0.001***
Urea (mg/dl**)**	68 (66 – 111)	47 (39 – 152)	46 (37 – 60)	29 (26 – 35)	**0.0001***

•As regarding the renal function tests ,urea was ranged from (66 – 111) mg/dl with median of (68) in **Group Ia** ,while in **Group Ib** it was ranged from (39 – 152) mg/dl with median of (47), in **Group Ic** ranged from (37 – 60) mg/dl with median of (46) , in **Group II** ranged from (26 – 35) mg/dl with median of (29) .

• Serum creatinin was ranged from (1.3 – 2.0) mg/dl in **Group I**a , with median of (1.6) , while in **Group Ib** it was ranged from (1.1 – 2.9) mg/dl with median of (1,5), in **Group Ic** ranged from (0.9 – 1.4) mg/dl with median of (1.0) , in **Group II** , it had a median of (1.0) .

There was statistical significant difference between the studied groups regarding serum urea and serum creatinin (p=0.0001,0.001) respectively.

Discussion

The biggest threat which had been faced by the world recently is the outbreak of novel coronavirus (COVID-19) that had been originated in Wuhan, Hubei Province, China, in December 2019 and spread rapidly all over the rest of the world in a short time. It can best be characterized by pneumonia-like symptoms that may further extending up to major several cardiovascular complications and hypoxia **(10)**

The age of the our studied patients had median of 59 years and IQR of (48 – 67) and the age of the control group had median of 53 years with IQR of (34 – 64). The studied patients were 26 males (52%) and 24 females (48%) while the control group were equal (50%). There were no statistically significant difference between the studied groups regarding the age and sex (p=0.176 , 0.88 respectively).

There was no statistically significant difference between the studied groups regarding the age and sex, and this is in disagreement with **[16]** who reported that Covid 19 infection, disease severity, ICU admission and death were more likely to occur among men and patients aging 70 years or above .

As regarding the renal function tests ,urea was ranged from (66 – 111) mg/dl with median of (68) in Group Ia ,while in Group Ib it was ranged from (39 – 152) mg/dl with median of (47), in Group Ic ranged from (37 – 60) mg/dl with median of (46) , in Group II ranged from (26 – 35) mg/dl with median of **(29)** .

Serum creatinin was ranged from (1.3 – 2.0) mg/dl in **Group I**a , with median of (1.6) ,while in **Group Ib** it was ranged from (1.1 – 2.9) mg/dl with median of (1,5), in **Group Ic** ranged from (0.9 – 1.4) mg/dl with median of (1.0), in **Group II** , it had a median of (1.0) .

There was statistical significant difference between the studied groups regarding serum urea and serum creatinin (p=0.0001,0.001) respectively.

This was in agreement with [17] who reported that a significantly higher mortality rate was found in the acute kidney injury and the chronic kidney disease groups versus normal renal function

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