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Gender Bias in Covid-19 Infection

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ABSTRACT

Coronavirus disease 2019 (COVID-19), a lethal respiratory infection caused by the coronavirus 2 (SARS-CoV-2) that causes severe acute respiratory syndrome, has spread over the world. The aim was to compare between male and female patients with COVID-19 or SARS. Serum samples were obtained from 58 patients with COVID-19 infection 27 female and 31 male with age median 53.2Years and a total mean concentration of CRP 113.6 mg / L where in females the mean was 90 mg/L while in males was 109 mg/L, the highest mean were 288 mg/L in age between 70_80 years. Conclusion; CRP showed different distribution feature and existed differences in various ages and according to genus.

Keywords- Covid-19, CRP, Gender, SARS-CoV-2.

I. INTRODUCTION

The high infectiveness and high fatality of the coronavirus pneumonia (COVID-19) in patients who are severe unwell (1) and high mortality of critical diseases are an emergency in public health. Diagnostic approaches and pathological and physiological processes of COVID-19 remain at the exploratory stage. In order to improve case fatality, clinical follow-up and proper treatment options were crucial. CT scanning was a significant part of the disease evaluation (2). Additional sensitive markers that could represent changes in lung lesions and the severity of the disease required to be investigated.

Early diagnosis of pneumonia can include C-reactive protein levels (CRP) and high levels of CRP in patients with serious pneumonia (3). The levels of CRP are connected with the level of inflammation and are not altered by age, sex and physical conditions variables (4). The CRP levels can activate and increase phagocytosis, therefore removing harmful body-invading bacteria. Early diagnosis of pneumonia can be made by CRP levels (3), with high levels of CRP in individuals with severe pneumonia. It is a major index for serious pulmonary infectious illness diagnoses and assessments (5). The importance of CRP in serious pneumonia was also demonstrated in the study of Matsumoto (6).

II. METHODS

In this work, blood samples were collected from 58 patients with covid-19 who undergoing Al-Alam hospital on October 2020. The determination of CRP was done automatically by ICHROMA II (ICHROMA II, Boditech / Korea).

III. RESULTS

Table 1: Distribution of Cases According to Age Groups

Age	*No. of patients*	Genus		CRP mean	Age median
		M	F		
10_20	4	2	2	33	53.2 Years
20_30	4	1	3	201	
30_40	2	0	2	12	
40_50	10	6	4	102.8	
50_60	16	6	10	92.3	
60_70	16	14	2	132.3	
70_80	4	2	2	288	
80_90	0	0	0	0	
90_100	2	0	**2**	48	
Total	**58**	**31**	27	**113.6**	

Table 2: CRP *average* in males and females

Genus	No. (%)	**CRP *Average***
Female	**27 (46.5%)**	90 mg/L
Male	**31 (53.4%)**	**109 mg/L**

IV. DISCUSSION

We have registered 58 positive test cases of SARS-CoV-2. The mean age was 53,2 close that of Ahnach M, et al (7) while the mean age, according to Chen N, et al (1) Yang X, and Yang, et al. (8), Zhang J, and others (9), was 50, and Luo X, et al (10) indicated that non-survivors' median age was 71 (64-80) years, much above 57 (40-69) years of age for survivors.

The median concentration of CRP was 113.6 mg/L in this investigation, about 40 times the upper limit of the normal laboratory. Similar to a study carried out by Smilowitz N R and al. (11) with a mean CRP 108 mg/l reported that the risk of venous thromboembolism (VTE), acute kidney injury (AKI), critical illness and inhospitable death during a subsequent hospital stay was greater in patients with elevated CRP concentrations above the median value than those with lower initial levels.

In severe VICs such H1N1 influenza pneumonia and SARSCoV-2 currently, increased CRP values have also been documented. (12, 13, 14) Patients who died had diametrically 10fold above the surviving CRPs (100.0 vs. 9.7 mg/L, p< 0.001) or CRPs, with an area under the receptor's operative feature curve (AUC) of 0,896.9, and were linked to death in previous research of 298 COVID-19 patients.

Recent investigations further show the connections of CRP with mechanical ventilation-related respiratory failure with almost fivefold increased ARDS risk observed in high-sensitivity CRP >5 mg/L patients, compared to lower CRP values. (15, 16) Ultimately, the CRP may be chosen as a biomarker as it is cheap and widely available in most medical institutions, making routine biomarker monitoring easier to apply in the clinical treatment of COVID-19 patients. (11)

The sensitivity for males to SARS-CoV-2 in the present study was 53,4 percent, which was nearly a trial conducted by Li Q and al. (17) of 425 patients with COVID-19 reported that 56 percent were males, while another study of 140 patients reported that 50,7 percent had been males (10). (51.2 percent males). Therefore, gender is, irrespective of age and susceptibility, a risk factor for increased severity and death in individuals with COVID-19.

This gender component as well as increased occurrences in men in the majority of cases of diseases might be correlated with a demographic fact that men have a shorter life expectancy than women in China and worldwide(18).

They have previously noted that elevated protein expression in several organs of the ACE2 receptor linked with organ failures indicated by corresponding clinical indicators in individuals with SARS (19). Circular ACE2 levels have been shown to be higher for men than for women and diabetes or cardiovascular illnesses patients (20).

Mainly women are more infection resistant than men and this can be mediated by numerous variables such as higher smoking and drinking levels among men than among women, not only by the high expression of coronavirus receptors (ACE 2) in men and sex hormones and also by the lifestyle. In addition, women are more responsible for the Covid-19 pandemic compared to males, which might reversibly impair the implementation of preventive measures such as frequent hand washing, facial masks and home order (21).

V. CONCLUSION

If the CRP levels are well correlated to the severity of the symptoms of COVID-19 patients, CRP is preferred as biomarker, as it is cheap and widely available at most medical facilities, and other healthcare results are used to assess conditions of a patient, which facilitate the speedy delivery of routine biomarker measurement to patients with COVID-19. Sex hormones, the little expression of ACE 2 (corona receptors), life style helps females to resist corona infection.

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