Study the relationship Between Severity of Post-Vaccination with Infection of COVID-19 and Vaccination

Abstract:

Background:

The pandemic illness of coronavirus 2019 is caused by (SARS-CoV-2), it was started from China in December 2019. It speedily disseminate in the world and became a general threat. More than 5 million persons have died in the world.

Aim of the Study: For assessments the relationship between vaccination and severity of post-vaccination with COVID-19 infection .

Methods: This study had been conducted on (120) qRT- PCR confirmed infected individuals by COVID-19 (55 females and 65 males) ages ranging in 18-80 years from September 2023 to December 2023.

Results: In the current study found from 120 patients positive with COVID-19, 65(54.16%) male and were female 55(45.86%), the difference was statistically not significant. The current study showed the age groups (20-30) years and (41-50) were the most affected (21.6%) and (18.6%) respectively. Present result showed that 28 (23.3%) had mild diseases, 40 (33.3%) had moderate diseases, 36 (30%) had severe diseases and16 (13.3) were admitted to critical care, that was statistically significant. In this study, 18\120 (15%) of patients who had received the vaccine against COVID-19 virus where 4\18 (22.22.%) received Pfizer and 14\18 (77.77%) Astra Zeneca.

Conclusion: These survey exhibited that there was no important difference between females and males.

Keywords: COVID-19, ACE2 receptor, SARS-CoV-2, Syndrome of Serious acute respiratory distress, co-infection, vaccination.

Comment [d1]: Title must be clear , you are trying to develop of what association betsween post vaccination and asymptomatic state of covid -19 with vaccination, so there must be some appropriate balance between using of words.

Comment [d2]: Study design is not mentioned as shortly you are describing the Methodology.

Comment [d3]: Some important objective are missed as mentioned in abstract what would be your hypothesis and objectives, must be mentioned there

Comment [d4]: Only percentages are described in results, no proper inferential statistics are present, even to check association what kind of test you have been used that is really unclear and not mentioned

1. Introduction

The pandemic illness of coronavirus 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus-2, it was started from China in 2019 December. It speedily disseminate in the world and

became a general threat. More than 5 million persons have died in the world (Razu *et al*., 2022). The major transmission route for SARS-CoV-2 infection is the transfer of respiratory droplets from asymptomatic and symptomatic persons to unaffected individuals (Jamnani *et al* ., 2022). Coronavirus disease 2019 has a mild infection similar to influenza or may be without symptoms; a low numbers of infected persons may have syndrome of acute respiratory distress, intense pneumoniae, failure of multiple organ, and can even die. During the spread of initial SARS-COV-1 in 2003, approximately 30 percent of patients were identified with secondary infection of bacteria and co-infection was positively connected with severity of illness (Vaillancourt and Jorth, 2020).

2. Materials and Methods

2. 1. Patients

This survey had been conducted on (120) qRT- PCR confirmed individuals infected by COVID-19 (55 female and 65 male) ages ranging in 18-80 years from September 2023 to December 2023. All 120 samples (sputum and blood) were collected from Al-Diwanyiah Technical Hospital, The City of Medicine in Baghdad, and AL-Amal Specialized Hospital in Najaf City.

Comment [d5]: Study methododlogy is still un clear

Comment [d6]: Statistical analysis is not presents

2.2. Blood sample

A vein blood specimen was collected in the test tube. Blood was placed on the gel tub, left at laboratory temperature for 15-20minutes and then centrifuged at a speed of 3000(rpm). The serum was isolated by pipetting the top portion .After centrifugation, the serum was stored in the refrigerator.

3. Results and Discussion

3.1. Demographic clinical features of COVID-19 patients

The present study enrolled 120 patients with COVID -19 infection. In the period from September 2023 to December 2023. All 120 confirmed COVID-19 patients were collected from Al-Diwanyiah Technical Hospital, The City of Medicine in Baghdad and AL-Amal Specialized Hospital in Najaf City. All Patients were asked if they had been vaccinated for COVID-19 and, if so, to record the type of vaccine. Two types of specimens were collected, including a sputum sample and blood sample.

3.2. Distribution of patients depending to gender

In the current study found from 120 patients positive with COVID-19, 65(54.16%) male and were female 55(45.86%) the difference was statistically not significant. figure (1).

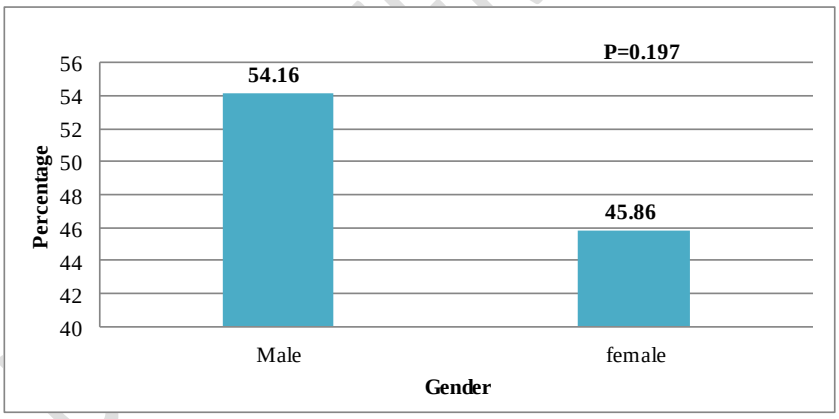

Figure (1): Distribution of COVID-19 patients according to gender

The findings here present agreement with the number of previous studies (Gomez *et al*., 2021; Ya'qoub *et al*., 2021), which found that men were more susceptible to infect with COVID- 19 than women that explained by the nature of men's work and their exposure to gathering

and mixing more than women, in addition, factors such as smoking and drinking alcohol that affects the strength of the immune system (AL-Furat 2020) addition chromosome X which encodes many genes involved in adaptive and innate immune function.

3.3. Distribution of COVID -19 patients according to age

The current study showed the age groups (20-30) years and (41-50) were the most affected (21.6%) and (18.6%) respectively, Figure (2).

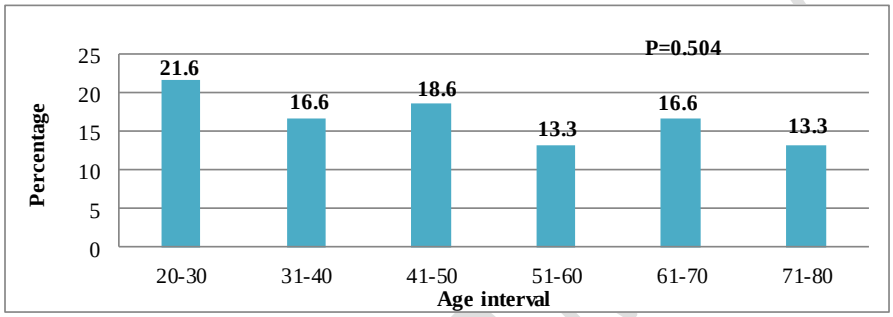

Figure (2) Patients distribution depending to age

The present study reported zero individuals in the age group less the 18 age-old because of school closure, and the connection between children and teens was diminished. This suggested that peer-based contacts were naturally decreased relative to pre-pandemic contact patterns, which may diminish the disease rate in children and teens (Wister and Kadowaki., 2021). The current results are near to another study done by Farghaly and Makboul (2021) from Egypt.

The present results disagree with European pandemic studies and the US, as infection and mortality rates were the highest among older individuals (Mueller *et al*., 2020). The reason behind the current result and the abovementioned one is the number of socioeconomic, geographical, and other genetic variances that are still undiscovered (Mills and Tropf, 2020).

3.4. Distribution of patients according to the intensity

In the present study, patients infected with COVID19 were classified according to the severity based on their clinical characteristics, ventilator support, CT scan, and ICU admission. A specialist physician completed the evaluation. Figure (3) show 28 (23.3%) had mild diseases, 40 (33.3%) had moderate diseases, 36 (30%) had severe diseases and16 (13.3) were admitted to critical care, that was statistically significant.

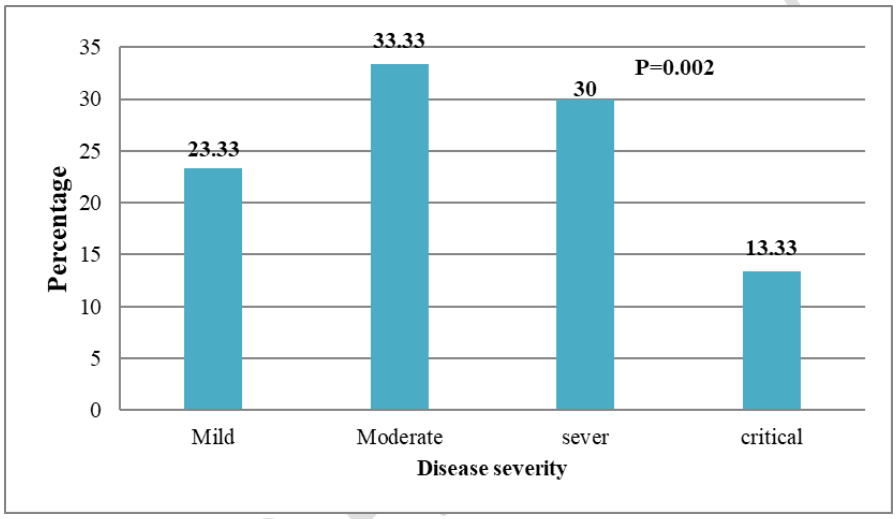

Figure (3) Distribution of COVID19 patients according to severity

This survey show (30%) of COVID-19 patients were severity ill patients, (13.33%) were critically ill patients, where (33.33%) were moderate and (23.33%) were mild . In assessing patients severity, most of the patients were in mild state at admission .Viral load can influence on the severity. Viral load on its own is not the only causes of the symptoms experienced by patients. distribution of COVID-19 patients according to severity by previous study done done by Chen *et al*., (2020) showed that up to 80 percent of affected individuals have a mild disease, 14% have an intense illness, and 5% have a dangerous disease.

3.5. Correlation Between Vaccination and Severity of Post-Vaccination Infection

In this study, 18\120 (15%) of patients who had received the vaccine against COVID-19 virus where 4\18 (22.22 %) received Pfizer and 14\18 (77.77%) Astra Zeneca, table (1).

Table (1): The post-vaccination infection in patients

Type of vaccine	No.	%
Pfizer	4	22.22
AstraZeneca	14	77.77
total	18	100
X^2	11.11	
P-value	0.001*	

***Important difference at P<0.05**

Many possible reasons for covid-19 infection after vaccination, such as the individual may have contracted the infection of SARS-COVID-19 a slight days before the immunization program and may be without symptoms, the affected individual then exhibit features of COVID-19 before the vaccine of this virus has started an immune response in the patients. (Jain *et al*., 2021) and the individual may grow this virus if there is an incomplete immune response and following least antibodies production versus SARS-CoV-2 (Toor *et al*., 2021). Suggest a large plurality of post-vaccine of these virus situations happened before the expected onset of entire, vaccine-derived immunity.

Comment [d7]: No inferential statistics are present

Conclusion

These survey exhibited that there was no important difference between females and males. However, Age, Gender and severity considered important factors in developing COVID-19 infection.

Comment [d8]: Conclusion is still not complete and there is gap between understandings

Comment [d9]: Major review is to be needed for statistical point of view

References

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