COVID Vaccination and Myocarditis, Is it real?

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INTRODUCTION
SARS-CoV-2 first emerged during the coronavirus pandemic in Wuhan, China. The period from outbreak to aftermath was December 21, 2019, the first case occurred with association of seafood marketplace. The maximum not unusual place signs and symptoms are dyspnea, fever and cough. The novel COVID-19 disease has been also linked to cardiovascular disease. Myocarditis is an inflammation of cardiac muscle which can arise due to microorganism infection, publicity to poisonous substances, and stimulation of the immunity system. Many pharmacological establishments and academic foundations from everywhere in our world are working together to develop a vaccine for the new coronavirus infection.

AIM OF THE WORK: Study the prevalence of myocarditis in healthy subjects after COVID vaccination due to an increase with inside a variety of cases.

MATERIALS AND METHODS: A retrospective scientific work of the predominance of myocarditis after vaccination against COVID-19 in Tobruk. The study included medical archives of all patients treated for myocarditis in the ICU and CCU of Tobruk Medical Center, including gender and age group from 17 to 64 years. Samples were collected. From January 1, 2020 to December 31, 2021, the total number of cases was 63. All necessary basic information and data were obtained from medical documents. Excel was used for data collection and descriptive analysis.

RESULTS: Our study included 63 patients. Of these, 51 (81%) were male and 12 (19%) were female. Male gender is predominant on female gender as ratio 1.6:1. Ages of patients tested in this study ranged from 17 to 64 years (mean age; 49 years). Highest age group observed to have a higher incidence of myocarditis after COVID-19 vaccination was 20-29 years (34.9%). According to the data, all patients (63 patients, 100%) experienced palpitations, 52 patients (82.5%) experienced mild fatigue, and 46 patients (73%) experienced shortness of breath. Our patients were taken Pfizer-BioNTech COVID vaccination (mRNA vaccine). Myocarditis occurred in 56 patients (89%) after second dose and 7 patients (11%) after first dose. Echocardiograms of all these patients showed no irregularities with conserved left ventricular ejection fraction. All recovered within 6 days of onset.

CONCLUSION: Cardiac symptoms in the form of myocarditis occur after COVID-19 vaccination and require further investigation to determine the actual mechanism and appropriate treatment.

KEYWORDS: COVID-19; Vaccination; Myocarditis; Left ventricular ejection fraction.

1. Introduction

International Committee on Taxonomy of Viruses at 2019 represents Beta CoV gene for the acute respiration syndrome coronavirus-2 (SARS-CoV-2) [1].

SARS-CoV-2 first emerged during the coronavirus pandemic in Wuhan, China: from origins to consequences, on December 21, 2019, the first case occurred with association of seafood marketplace [2].

SARS-CoV-2 seems to have a lesser mortality rate than MERS. That is considerably quicker and additional broadly transmitted, causing a worldwide health and economic disaster [3].

After infection of the human body, further spread of SARS-CoV-2 happens with direct contact infection, direct contact via respiratory dewdrops, or touching polluted exteriors. It occurs through indirect contact [4].

The maximum not unusual place signs and symptoms are dyspnea, fever and cough, but occasionally gastrointestinal symptoms such as diarrhea may also occur [5]. COVID-19 is also associated with cardiovascular involvement [6].

The gene arrangement of SARS-CoV-2 was published on 11-1-2020. Many pharmacological establishments and academic foundations from everywhere in our world are working together to develop a vaccine for the new...
coronavirus infection. Auspiciously, some applicants conceded the clinical experimental assessment and progressed to stage 3 [7].

Myocarditis is inflammation of cardiac muscle which can arise due to microorganism infection, publicity to poisonous substances, and stimulation of the immunity system [8] and is classified as secondary by 1996 World Health Organization classification as one of the cardiomyopathies [9]. Myocarditis has extensive variety of scientific manifestations and courses, and most patients are self-limiting. It is likewise incredibly not unusual reason of unexpected sudden cardiac death (SCD) in younger people (6%–10% in autopsy-based series) [10].

Primary factor of acute myocarditis is viral infections accompanied by the typical same manifestations of lymphocytic infiltrate inflammation with injury of the cardiac myocytes without any relation to ischemia and vascular diseases [11].

Immune eosinophilic myocarditis associated with antiviral vaccines is rare in healthy volunteers, but has been formerly informed in healthy adults who received smallpox and seasonal influenza vaccinations [12].

Due to the increasing number of cases, we are investigating the prevalence of myocarditis in healthy subjects after vaccination against the new coronavirus.

2. Patients and Methods

A retrospective scientific work of the predominance of myocarditis after vaccination against COVID-19 in Tobruk. The study included medical archives of all patients treated for myocarditis in the ICU and CCU of Tobruk Medical Center, including gender and age group from 17 to 64 years. Samples were collected. From January 1, 2020 to December 31, 2021, the total number of cases was 63. All necessary basic information and data were obtained from medical documents. Excel was used for data collection and descriptive analysis.

3. Results

This study was conducted on 63 patients. As shown in (Figure 1), 51 (81%) of these were male and 12 (19%) were female. Male gender is predominant on female gender as ratio 1.6:1.

![Figure 1](image_url). The overall prevalence of Myocarditis next to vaccination of COVID19 in male genders to female genders
The age of the patients in this study is from 17 to 64 years. Mean age is 49 years. The prevalence between age groups is shown in Table 1. The highest observed age group for myocarditis next to COVID-19 vaccination was aged 20 to 49 years. 29 (34.9%), followed by 30-39 (27%) and 40-49 (14.3%). The final number of patients with myocarditis (4.8%) was in the younger age group, ranging from 10 to 19 years.

Table 1. Prevalence of myocarditis according to patient age and gender next to COVID-19 vaccination

<table>
<thead>
<tr>
<th>Group of Age (By Years)</th>
<th>Male</th>
<th>Female</th>
<th>Total Number and Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-19</td>
<td>3</td>
<td>-</td>
<td>3 (4.8%)</td>
</tr>
<tr>
<td>20-29</td>
<td>18</td>
<td>4</td>
<td>22 (34.9%)</td>
</tr>
<tr>
<td>30-39</td>
<td>14</td>
<td>3</td>
<td>17 (27%)</td>
</tr>
<tr>
<td>40-49</td>
<td>8</td>
<td>1</td>
<td>9 (14.3%)</td>
</tr>
<tr>
<td>50-59</td>
<td>6</td>
<td>2</td>
<td>8 (12.7%)</td>
</tr>
<tr>
<td>60-69</td>
<td>2</td>
<td>2</td>
<td>4 (6.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>12</td>
<td>63 (100%)</td>
</tr>
</tbody>
</table>

Patient's main complaint with myocarditis next to vaccination with the new coronavirus was evaluated. According to the data, all patients (63 patients, 100%) experienced palpitations, 52 patients (82.5%) experienced mild fatigue, and 46 patients (73%) experienced difficulty breathing (Figure 2).

Figure 2. The main complains of Myocarditis after COVID vaccination patients

All patients had COVID vaccination of Pfizer-BioNTech (mRNA Vaccine). 56 patients (89%) after second dose while 7 patients (11%) after first dose as shown in (Figure 3).
Echocardiograms of all these patients showed no irregularities with conserved left ventricular ejection fraction. The exact LVEF values reported were a mean LVEF of 58% and variety of 51% to 65%. No local wall abnormalities occurred in all patients. All improved in 6 days of commencement.

4. Discussions

Presence of numerous vaccines against COVID-19 has significantly reduced morbidity and mortality related with the disease worldwide. All approved vaccines against COVID-19 disease have been eliminated. Vaccines have been shown to offer help that compensate the possible risks. Altered age assemblies are predominant among them [13],[14]. New scientific researches put a spot on myocarditis associated with various kinds of COVID-19 vaccines. But, the data is very limited about this situation [15].

The benefits of vaccination in older adults during the pandemic have been clearly recognized, as mortality rates from COVID-19 have increased significantly in people aged 70 years and older, especially those with underlying health conditions. In contrast, symptomatic disease associated with SARS-CoV-2 with the disease severity needs hospital admission, life-saving treatment, and relatively rare mortality in children and adolescents, and vaccination is not recommended in these age groups. He was hesitant about vaccinations and had limited concentration. This is further exacerbated by the fact that a predominantly without symptoms or predominantly mild upper respiratory system infection progresses and regresses in a short time. Although the number of serious illnesses leading to death is low in children, it is more common in young people who are already suffering from serious life-threatening illnesses [16].

Our study included 63 patients. Of these, 51 (81%) were male and 12 (19%) were female. Male gender is predominant on female gender as ratio 1.6:1. The age of the patients in this study was from 17 to 64 years. Mean age is 49 years. The highest age group observed to have a higher incidence of myocarditis after COVID-19 vaccination was 20-29 years (34.9%). Data showed that all patients (63 patients, 100%) experienced palpitations, 52 patients

Figure 3. The prevalence of Myocarditis after COVID vaccination patients who had Pfizer-BioNTech (mRNA Vaccine) first dose and second dose
(82.5%) experienced mild fatigue, and 46 patients (73%) experienced shortness of breath. Our patients were taken Pfizer-BioNTech vaccination (mRNA vaccine). Myocarditis occurred in 56 patients (89%) after second dose and 7 patients (11%) after first dose. Echocardiograms of all these patients showed no irregularities with conserved left ventricular ejection fraction. All improved in 6 days of commencement.

In Australia – 2021 - Department of Health's Therapeutic Goods Administration (TGA) had reported 288 adverse events next to mRNA COVID-19 vaccinations taken by 3.7 million persons with 50 records of assumed pericarditis or myocarditis that obtained from the Pfizer vaccine [17].

In the UK, as of July 7, 2021, approximately 19.7 million persons take Pfizer/BioNTech vaccine first doses, approximately 11.6 million persons with second doses had been taken, and Moderna COVID-19 vaccine first doses had been taken. Approximately 1.1 million doses had been taken [18]. UK Health and Social Care Agency lists prevalence of supposed pericarditis and myocarditis following vaccination with Pfizer/BioNTech vaccine. We have mentioned it (81 cases of myocarditis, 63 cases of pericarditis). The incidence for Moderna - 9 cases of myocarditis, 9 cases of pericarditis and 1 case of endocarditis - was 5.0 cases per million doses administered. Interestingly, myocarditis occurred (69 cases) after taken AstraZeneca vaccine of COVID-19 (adenovirus, not mRNA) next to first doses taken by 24.7 million persons and second doses taken by 22.3 million persons. There were also reports of pericarditis (107 cases) (incidence 1 case) (3.7 per million doses).

At the end of May 2021, The European Medicines Agency announced that Pfizer has around 160 million doses of its coronavirus vaccine, Moderna 19 million, AstraZeneca 40 million and Janssen 2 million. It was announced that the patients receive one dose of the vaccine [19]. The adverse data for the dose exposures reported myocarditis after vaccination with Pfizer (122 events), Moderna (16 events), and AstraZeneca (38 events).

Public Health Agency of Canada has applied about 41.5 million doses of corona virus vaccination as of July 9, 2021, and recorded 163 cases of "myocarditis/pericarditis" did. Cases were listed (age between 15–86 years with mean 39 years) [20]. According to Pfizer-BioNTech, there have been 111 cases, Moderna has had 40 cases, and AstraZeneca has had 11 cases. One of them was from an unspecified vaccine. This corresponds to prevalence of 3.9 cases per million doses administered. After vaccination, the time to beginning of manifestations is about 5 hours to about 92 days. Fifty two women (aged 15-86 years with mean age 49 years) and fifty nine men (aged 15-82 years with mean age 38 years). Fascinatingly, 67 patients complained next to first dose of vaccination while 26 patients complained next to second dose of vaccination. Detailed reporting of cases, medical control and consequences concerning the affiliation or causal dating among myocarditis/pericarditis and mRNA vaccines is ongoing as similarly statistics end up available.

At June 2021, the U.S. Centers for Disease Control and Prevention found that 1,226 patients of myocardial inflammation have been reported after 296 million mRNA Pfizer or Moderna vaccinations. Prevalence of 4.1 people per million doses administered. Patients' age is from 12 to 94 years with median age 26 years. First symptoms appeared a median of 3 days later (range, 0-179 years), meaning that more than half of the patients were in their third year of life. It is important to note that their age was 30 years; male gender is more than 2/3 of cases, and patients who take second dose vaccine is more than 3/4 of cases [21],[22].
As a result, physicians and cardiologists tested 484 patients below the age of 30, including 323 from Dallas and Lake Louise to define acute myocarditis or acute pericarditis [22]. Age was from 12 years to 29 years with mean age 19 years. Start of manifestations ranged 0-40 days with mean time 2 days, and 92% within 7 days. 96% of patients were immediately hospitalized. Most of patients were treated with mild manifestations, which subsequently improved upon discharge. There were no fatalities.

5. Conclusion

In conclusion, Cardiac symptoms in the form of myocarditis occur after administration of corona virus vaccine and require further investigation to determine the actual mechanism and appropriate treatment.

Declarations

Source of Funding

This study did not receive any grant from funding agencies in the public or not-for-profit sectors.

Competing Interests Statement

The authors have declared no competing interests.

Consent for Publication

The authors declare that they consented to the publication of this study.

Author’s Contribution

All authors took part in data collection, literature review, analysis, and manuscript writing equally.

References


