Short Communications

Myocardial infarction following COVID-19 vaccination

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Abstract

Deaths from the COVID-19 virus have prompted communities to think of ways to prevent the spread of the epidemic. Vaccination was introduced as the most effective method of prevention along with general quarantine. Myocardial infection (MI) was a complication that was seen in the elderly population with common underlying diseases. Patients developed symptoms shortly after receiving the vaccine and usually improved within a few days. Kounis syndrome, prothrombocytopenia, and sensitivities causing cardiovascular complications in these patients are debatable. Examining the conditions that cause MI after receiving the vaccine can pave the way for promoting community health.

Key Words: COVID-19, COVID-19 vaccine, Infection, Myocardial infection

Introduction

The rapidly spreading COVID-19 virus has killed millions(1). Vaccination is the best way to prevent severe illness and death(2). Local reactions at the injection site and nonspecific systemic effects (myalgia, chills, fatigue, headache, and fever) are common side effects of this vaccine(3). There are rare cases with serious complications such as thrombotic thrombocytopenia, cerebral venous sinus thrombosis, and myocardial infarction (MI)(4–6). Our study clarifies the relationship between MI and the induction of the COVID-19 vaccines.

MI associated with COVID-19 vaccination

Nine case reports were published in the population receiving AstraZeneca, Moderna, and Chovichild vaccines. Four female patients and five male patients, ranging in age from 40 to 96 years, are included in the research, with the ages of the three cases not being disclosed. Except for a 40-year-old smoker, none of the individuals have a history of surgery, smoking, heart failure, MI, or infection with the COVID-19 virus, and six SARS-COV-2 tests have come back negative. There's no medical history given in three of the cases. Four had diabetes and high blood pressure, two had dyslipidemia, and the rest had comorbidities such as gastric ulcers, diabetic peripheral neuropathy, chronic obstructive pulmonary disease, and branching vascular disease. One day after having the covid-19 vaccine, five people had symptoms, one after two days, and three after more than six days. People who received the first or second dose of the vaccine experienced a myocardial infarction (MI) between one hour and 12 days after getting the vaccine(5,7–11). According to the findings, 35 patients with MI were seen with symptoms at least one day after receiving the vaccine in the population receiving Pfizer Biotech vaccine (88%), Oxford-AstraZeneca vaccine (11%), and Moderna vaccine (3%), with the majority of these patients being men(12). In another study of 14 patients with MI, we encountered findings similar to those mentioned, such as the majority of MI in middle-aged men and having high blood pressure as the most common comorbidities. Effective measures for these patients included endotracheal intubation and the use of glucocorticoids(13).

According to the CDC, more than 33% of MI occurs in the elderly annually, and other studies have shown that the incidence of MI in young people is relatively low(14,15). Most patients covered by this article have at least one comorbid condition that may lead to significant adverse effects(5). Examining these people would be a sensible decision because vaccination conditions are stressful and therefore may affect older people with a history of the disease and even cause significant conditions such as ischemia and MI. A 72-year-old patient had a poor treatment history of dyslipidemia, hypertension, and diabetes. The patient developed dyspnea due to a myocardial infarction just minutes before having the COVID-19 vaccine. The case would be categorized as a COVID-19 vaccination side effect if the dyspnea happened a few minutes later(16). Because other people developed symptoms of MI in less than a day, it has the potential to be an unintentional match between COVID-19 and MI immunizations

Kounis syndrome, a hypersensitivity reaction caused by medicines or other chemicals, is another possibility. Excipients (pharmaceutical compounds other than the active ingredient) are thought to produce hypersensitivity in all currently used vaccines, which can lead to oxidative stress, thrombotic and cardiovascular events(17). Vaccine interaction determines the degree of immune response and the subsequent inflammatory state with a rise in C-reactive protein (CRP). CRP has

been related to CAD in studies because it co-localizes in the intima of blood vessels with the terminal component of complement, initiating the complement-mediated atherosclerotic process(18). There is a theory that prothrombocytopenia develops after vaccination by an autoimmune response to platelets, which is comparable to autoimmune heparin-induced prothrombocytopenia(19).

Summary and Future Research

The benefits of the COVID-19 vaccination outweigh the hazards. It's vital to emphasize that immunization is an effective way to avoid CO-VID-19 infection. A better understanding of the various causes of MI and giving the right information to people can help to improve the health of the community. Although more information we need from patients receiving the COVID-19 vaccine, some findings have linked inflammatory responses and oxidative stress to MI. Extensive studies and guidelines are needed to manage and control the prevalence of MI, correct prevention, and timely and effective treatment of this side effect in the future.

Conflicts of Interest

None.

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