International Journal of PharmATA

2022; 2(2): 44-49

Case Analysis

A Case Report of a Nurse Who Received the Covid-19 Vaccine

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ABSTRACT:

Tarragon, or Artemisia dracunculus, is a member of the Asteraceae family that grows wild in Eastern Anatolia of Turkey. According to previously published studies, Artemisia dracunculus extracts possess antibacterial, antifungal, antioxidant and anti-inflammatory effects. Thus, these extracts can be used to heal wounds. Nanoemulsion (NE) is a suitable dosage form for the application of active substances/compounds via the skin. The aim of this study is to develop and in vitro characterize NE and NE

Throughout history, societies have struggled with infectious diseases. It is important to prevent the spread of infectious diseases. Vaccination is the major tool of defense that prevents the rapid spread of infectious diseases in society. Therefore, the successful implementation of the vaccination program during the pandemic is very important. A variety of vaccines has been available for Covid-19, one of the biggest pandemics of the last century. This study was conducted to determine the side effects of Sinovac, one of the COVID -19 vaccines, in humans. The case presented is a 40-year-old male patient who had a blood pressure of 190/110 mmHg and a heart rate of 140 beats per minute (bpm) measured 10 minutes after vaccination on January 15, 2021. Describing dizziness, palpitations, and darkening of the eyes, the patient stated that he had never had a cardiac problem before. He applied to the emergency department of Dr. Siyami Ersek Thoracic and Cardiovascular Surgery Education Research Hospital. Sinus tachycardia was diagnosed as a result of electrocardiography (ECG). For 20 days, blood pressure ranged between 150/90 mmHg and 140/90 mmHg while the average heart rate was generally measured to be 140 bpm. He used Metoprolol 25 mg tablet for 20 days. According to the findings of this study, Sinovac has an effect on blood pressure. However, it is recommended that larger-scale studies be conducted.

Keywords *:* Adverse effects, COVID-19, health personnel, vaccine, vaccine hesitancy.

Received	Accepted	Published
20.03.2022	02.04.2022	06.04.2022

To cite this article:

Kaya L, Kaya Z. A Case Report of a Nurse Who Received the Covid-19 Vaccine. International Journal of PharmATA. 2022; 2(2); 44-49.

1. INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus [1]. COVID-19 has caused 6,063,809 deaths as of March, 13 2022 [2]. The World Health Organization (WHO) has reported that vaccinating the global population against COVID-

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19 is the only way to control the coronavirus [3]. In their fight against COVID-19, many countries have started developing vaccines to provide immunity against the virus and stop transmission. Vaccines are biological preparations that provide active acquired immunity to a particular infectious disease. They do so by stimulating an immune response to an antigen, a molecule found on the pathogen [4]. The Turkish Medical Devices Agency granted emergency use authorization to the vaccine on January 13, 2020 [5]. In Turkey, the Sinovac CoronaVac was firstly administered to healthcare workers on January 14, 2021 [6]. The most commonly reported side effects were injection site pain, headache, fatigue as well as others including injection site swelling, itching, myalgia, nausea, diarrhea, arthralgia, cough and chills [7]. When the first dose of Coronavac vaccine was administered, tachycardia was reported within 10 minutes and one hour [8]. This study presents the case report of a nurse who experienced tachycardia after receiving the Coronavac vaccine.

2. CASE REPORT

The 40-year-old male patient with no allergic or chronic diseases is married with one child and has been working as a nurse for 14 years. He has been smoking for 20 years and smokes 15 cigarettes a day. Before vaccination, his blood pressure was generally around 120/80 mmHg. Within 10 minutes following the vaccination of the nurse on January 15, 2021, her blood pressure was 190/110 and her heart rate was 140. He reported dizziness, palpitations, and darkening of the eyes, stating that he had never had a cardiac problem before. He applied to the Emergency Service of the Hospital for Cardiovascular Surgery. Sinus tachycardia was diagnosed as a result of electrocardiography (ECG). Despite taking Metoprolol 25 mg oral tablets for 20 days after vaccination, the evaluation revealed a blood pressure of 150/90 mmHg-140/90 mmHg and an overall heart rate of 140 bpm. Within 21 days post-vaccination, the evaluation revealed a blood pressure of 90/60 mmHg and an average heart rate of 80 bpm. Following this period, he has not experienced a health problem. The patient has no history of allergic reactions to vaccines and no family history of COVID-19. He is not planning to have the second dose of the vaccine due to his health problems. Furthermore, the patient does not find the COVID-19 vaccines safe.

3. DISCUSSION

CoronaVac is a vaccine developed using the conventional method, by growing the SARS-CoV-2 virus and then inactivating it in a laboratory environment [9]. Inactivated vaccines are made from microorganisms that have been killed through physical or chemical processes, eliminating their disease-causing capacity. When they are injected into the body, they only produce antibodies against the surface antigens of the virus. One of the undesirable side effects of vaccination is that it can cause hypersensitivity [10]. Factors related to the host and the health system affect the response generated by the vaccines. Among the factors related with the vaccine are its type (live, inactivated, protein, polysaccharide, conjugate), route of administration (injection, mucosal route), dose and

adjuvant content. Factors related with the host include age, genetic factors, concomitant diseases, medications used, nutritional status and exposure to disease agent while the health system related factors are the cold chain, the vaccination scheme and the competency of the healthcare professional who prepares and administers the vaccine [11].

Tachycardia is defined as an atrial and/or ventricular rate of >100 bpm. It may be of importance as it can cause myocardial ischemia, hypotension, low cardiac output, peripheral hypoperfusion, severe symptoms (chest pain, weakness, syncope, lightheadedness), cardiomyopathy, cardiac arrest and even death [12]. In sinus tachycardia, the heart rate is usually between 100 and 150 beats/minute [13]. Symptoms such as palpitations, dyspnea, chest discomfort, and lightheadedness may be observed [14]. In hypertension, the diastolic blood pressure is measured as ≥90 mm Hg while the systolic blood pressure is ≥140 mm Hg [15].

Tachycardia is a predictor of both hypertension and cardiovascular risk [16]. According to numerous studies, future hypertension has been observed in individuals with tachycardia [16,17]. Beta blockers are used to treat tachycardia as they reduce heart rate, heart contractility, atrioventricular conduction, and ectopic activity [18].

In Hong Kong, a 61-year-old man has been hospitalized 11 days following the administration of the Sinovac Covid-19 vaccine due to chest pain and left shoulder pain. The patient was transferred to the intensive care unit and suffered from tachycardia and cardiac arrest during treatment. He died 12 days after vaccination. The man was said to be a chronic smoker [19].

In Turkey, An 85-year-old female patient with obesity and coronary artery disease was admitted to the emergency department with dyspnea 11 days after the second dose of CoronaVac® administration. Despite the oxygen therapy, the patient continued suffering from tachycardia and tachypnea leading to intubation in the intensive care unit. It was reported that the patient died on the 11th day of her follow-up [20].

Tachycardia was observed in two female patients out of 3354 healthcare workers who were vaccinated with the first dose. The first patient was 28 years old and had chronic urticaria. She was under regular antihistamine treatment at the time of vaccination. Within 1 hour following the administration, the patient reported itchy hives over her chest area and tachycardia which did not require any intervention and resolved in a short time The patient did not prefer to have the second dose of the vaccine. The second patient, who was 29 years old, had a history of allergy to several muscle relaxants. She reported urticaria and tachycardia ten minutes following the administration. The patient was admitted to the level 1 intensive care unit, where she received 45.5 mg of intravenous diphenhydramine and 80 mg of methylprednisolone. She recovered in 3 hours. The second dose of the vaccine was administered in graded doses under observation and no symptoms were observed [8].

Increased blood pressure has been continuously reported as one of the most important adverse reactions to all vaccine platforms. Thus, monitoring blood pressure has become a crucial point to be taken into consideration regarding the COVID-19 vaccination program. [21]. Since the resting heart rate is a prognostic factor regarding cardiovascular morbidity or fatal events in many conditions including hypertension, it is important to perform routine measurements together with blood pressure measurements [16,22].

More than 10.9 billion people in 184 countries have been vaccinated so far [23]. The safety regulations of the vaccine is crucial as people are hesitant to get the vaccine [24]. Vaccination is very important for public health as it reduces mortality and morbidity from infection [25]. Health professionals are influential in terms of creating behavioral changes in society [26]. Awareness campaigns should be launched to fight misinformation regarding vaccines and build trust in public so that they would demand vaccination for their own health. This will not only ensure the safety and efficacy of the vaccine but also provide transparency regarding the vaccine production process [27].

4. CONCLUSION

Although vaccines are very important in the prevention of communicable diseases, they can lead to hesitancy and anti-vaccination attitudes. The reasons why vaccines may not be accepted or rejected are based on vaccine safety and side effects. Scientifically unproven sources of information may result in the development of false beliefs in society. Targeted campaigns to provide the public with evidence-based information on vaccine side effects and safety may prevent vaccine opposition. Designing education plans and strategies to determine the reasons for vaccine refusal is of utmost importance for public health.

The incidence of tachycardia after Sinovac CoronaVac vaccination remains unclear; however, it indicates the need for caution regarding adverse cardiovascular effects. Nevertheless, it is a rare side effect. Since the COVID-19 vaccine is important for the immunity of the community, patients with heart diseases should not be prevented from vaccination. Reporting the vaccine-related side effects is important for public health. The purpose of this case report is to raise awareness among healthcare professionals regarding a potential rare side effect that may be associated with the COVID-19 vaccine.

Conflict of Interest

Author has no personal financial or non-financial interests.

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