



The risk of confusion between AstraZeneca COVID-19 vaccine side effects and signs of COVID-19 infection: a case report

Mahin Nomali¹, Mahdiah Afzali²

¹Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran; ²Department of Neurology, Yas Hospital Complex, School of Medicine, Tehran University of Medical Science, Tehran, Iran

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Corresponding author: Mahdiah Afzali, MD
 Department of Neurology, School of Medicine,
 Yas Hospital, North Nejatollahi St., Kharim Khan
 Ave., Tehran, Iran
 Tel: +98-912-7294976, Fax: +98-88948217
 E-mail: m.afzali2219@gmail.com

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Post-vaccination side effects of AstraZeneca (AZ) coronavirus disease 2019 (COVID-19) vaccine are common. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) infection immediately after the first dose of AZ COVID-19 vaccine has not been reported. In this case, a 30-year-old female without a past medical history of SARS-CoV2 infection presented to an outpatient clinic with lightheadedness and weakness 2 hours after getting the first dose of the AZ COVID-19 vaccine. Blood pressure (BP) was 80/60 mm Hg, and oxygen saturation (SpO₂) was 98%. After administering normal saline intravenous fluid, the BP was 110/80 mm Hg. On the first day, fever (oral temperature of 39°C), sweating, dry cough, sore throat, and injection-site pain were presented. On the second day, diarrhea, productive cough, and hypotension occurred in addition to fever (oral temperature of 39.9°C). The fever did not stop and productive cough, change in smell, and fatigue were reported. SpO₂ was 96%. On the third day, no abnormality of the spiral lung computed tomography and the positive reverse transcriptase-polymerase chain reaction (RT-PCR) test were reported. Simultaneously, two out of three members of the family became symptomatic on the second day and their RT-PCR tests were positive. Dexamethasone ampule, Cefixime tablet, Acetaminophen tablet, and Diphenhydramine syrup were prescribed. After a week, fever subsided and SpO₂ was 98%. After 3 weeks of self-quarantine at home, her general condition improved. Despite the similarity between SARS-CoV2 infection signs and symptoms and AZ COVID-19 vaccine side effects, none of the approved vaccines contain the live virus that causes disease. Therefore, any unusual post-vaccination signs and symptoms should not be attributed to the vaccine itself and need to be considered for further evaluations and early actions in order to prevent the spread of the disease in society.

Keywords: SARS-CoV2 infection, AstraZeneca COVID-19 vaccine, Side effect, Case report

Introduction

In Iran, the first case of coronavirus disease 2019 (COVID-19) was confirmed in February 19, 2020 [1]. From 3 January 2020 to 30 July 2021, there have been 3,826,447 confirmed cases of COVID-19 with 90,074 deaths. As of 26 July 2021, a total of 10,168,674 vaccine doses have been administered [2]. In Iran, AstraZeneca (AZ) COVID-19 vaccine is one of the vaccines are being administered, currently. Side effects of COVID-19 vaccines are still a controversial issue and a continuously evolving situation [3]. According to the Centers for Disease Control and Prevention (CDC), possible side effects after getting COVID-19 vaccine include pain, redness, and swelling at injection site, as

well as fatigue, headache, muscle pain, fever, chills, and nausea [4]. More than 80% of individuals received AZ COVID-19 vaccine experienced side effects [5]. Although severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) infection has been reported by 0.9% of AZ vaccinated individuals after 14 days from the first dose [6], no positive reverse transcriptase-polymerase chain reaction (RT-PCR) test immediately after AZ COVID-19 vaccine has been reported. Here, an unusual case of COVID-19 infection immediately after the first dose of AZ COVID-19 vaccine in a 30-year-old female has been reported.

Case Report

A 30-year-old Iranian female without past medical history of SARS-CoV2 infection and with no history of travel to infected areas and direct contact with infected persons presented to an outpatient clinic with lightheadedness and weakness on 7 July 2021. She reported that she got her first dose of AZ COVID-19 vaccine 2 previous hours before coming to the clinic. According to her self-report, during vaccine injection and 15 to 30 minutes after it, there was no symptoms of allergic reactions. Vital signs revealed a forehead temperature of 36.5°C (centigrade), heart rate 86 beats per minute (bpm), respiratory rate 18 breaths per minute, blood pressure (BP) 80/60 mm Hg, and oxygen saturation (SpO₂) 98% on room air. An intravenous (IV) access was obtained and normal saline (NS) IV fluid with vitamin B complex and vitamin C were administered. After receiving IV fluid, the BP was 110/80 mm Hg. The first day after vaccination, signs and symptoms including fever (oral temperature of 39°C), sweating, dry cough, sore throat, and injection-site pain were presented. A Diclofenac suppository (100 mg, rectal, single dose) and Diphenhydramine syrup (5 mL, per oral [PO], twice a day) were used and oral temperature decreased to 37.3°C. The second day after vaccination, diarrhea, productive cough, and hypotension occurred in addition to fever (oral temperature of 39.9°C). NS IV fluid and Diclofenac suppository (100 mg) were administered. The fever did not stop and she reported productive cough, change in smell, and fatigue, too. There was no shortness of breath and SpO₂ was 96%. In the third day, because of the reduction in SpO₂ from 98% to 96%, RT-PCR test was asked and the anterior nasal swab sample was obtained. In addition, spiral computed tomography (CT) of thorax without IV contrast was carried out. No chest CT abnormality was reported. However, diagnosis of SARS-CoV2 infection was confirmed by posi-

tive result of RT-PCR from nasal swab. Simultaneously, two out of three members of the family (i.e., a 48-year-old female with history of diabetes controlled by antidiabetic drugs and no history of COVID-19 vaccine, and a 27-year-old female, vaccinated with the first dose of AZ COVID-19 vaccine 80 days ago) became symptomatic in the second day and their RT-PCR tests were positive. Medications including Dexamethasone ampule (8 mg/2 mL, intramuscular injection, single dose), Cefixime tablet (400 mg, PO, once a day), Acetaminophen tablet (500 mg, PO, every 8 hours), and Diphenhydramine syrup (5 mL, PO, twice a day) were prescribed. After 1 week, the fever subsided and SpO₂ was 98%. After 3 weeks of self-quarantine at home, her general condition improved and she came back to normal life. It should be noted that the patient provided written informed consent for publication of the research details.

Discussion

AZ COVID-19 vaccine was found to be the most significantly associated vaccine with post-vaccination side effects [3] and it has been reported that more than 80% of individuals received AZ COVID-19 vaccine experienced side effects [5]. A study among Jordanian healthcare workers indicated that 97.8% of whom received the first dose of AZ COVID-19 vaccine experienced side effects. Injection site pain (91.1%) and sore throat (0.6%) were the most and least common side effects, respectively. Others were fatigue (84.9%), myalgia (79.9%), fever (73.7%), headache (68.7%), joint pain (57.5%), bone pain (44.1%), arm numbness (22.9%), diarrhea and shortness of breath (9.5%), nausea (6.1%), dizziness and vomiting (3.4%), and ear symptoms (1.1%) which were significantly associated with AZ COVID-19 vaccine ($p=0.000$) [3]. In an Iraqi population study, it has been shown that fever (68.4%), fatigue (64.9%), myalgia and injection site reaction (54.2%), headache (48.0%), chill (28.0%), nausea and vomiting (10.3%), cough (4.5%), shortness of breath (4.1%), loss of smell and taste (2.0%), diarrhea (0.5%), and tachycardia and allergic reaction (0.1%) were the most common AZ COVID-19 vaccine side effects [7]. According to another study in Iraq in 2021, local reactions at the injection site and systematic events such as fatigue, body pain, headache, muscle pain, fever, and gastrointestinal effects (nausea, vomiting, anorexia, and diarrhea) were the most common side effects among whom received AZ and Pfizer COVID-19 vaccines. In addition, sweating, dizziness, dry cough, anxiety, shortness of breath, tachycardia, abdominal pain,

sore throat, joint pain, and nasal discharge were most common side effects associated with AZ COVID-19 vaccine [5]. In Iran, the first day after AZ COVID-19 vaccine, at least one local or systemic event occurred in 90.6% of individuals which was decreased to 12.5% 1 week after vaccination [6].

Previous studies reported the variety of post-vaccination signs and symptoms with different percentages at different regions [3,5,7]. On the other hand, SARS-CoV2 infection signs and symptoms are fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, and diarrhea [8]. In this case, both local and systemic events including high grade fever (oral temperature of more than 39.5°C), a decrease of SpO₂ level and positive result of the RT-PCR test immediately after the first dose of AZ COVID-19 vaccine occurred simultaneously that need to be considered as unusual signs. Despite this similarity between SARS-CoV2 infection signs and symptoms and vaccine side effects, post-vaccination side effects are mild to moderate in severity [3,5,7] and in more than 2/3 patients, symptoms lasted up to 48 hours [9]. While in this case, symptoms got worse after 24 hours and they did not go away after a few days which made the patient worried and made her seek care for the medical condition. According to a report of the active surveillance system in Iran released on 27 July 2021, 78 out of 8,994 (0.9%) of AZ vaccinated individuals infected with SARS-CoV2 infection, 14 days following the first dose of vaccine [6]. In addition, hospital admission due to the positive result of SARS-CoV2 infection, severe chest pain, and nasal bleeding were such unusual symptoms reported by the participants received AZ COVID-19 vaccine in Iraq [5]. According to the CDC, none of the approved and recommended COVID-19 vaccines contain the live virus that cause individuals to test positive on viral tests, which are used for current infection [10]. AZ is a chimpanzee adenovirus vectored vaccine [11] and it seems unlikely to produce disease itself.

The simultaneous occurrence of COVID-19 vaccine side effects and SARS-CoV2 infection signs and symptoms and their similarities, make both individuals and clinician confused and unable to differentiate between those in the first few days after vaccination, which can result in the spread of the disease in the society as this case infected two members of the family at the same time. If RT-PCR was done before vaccination to rule out the existence of SARS-CoV2 infection, it could be detected earlier and suffering to the patient and her family could be prevented. However, due to the limited num-

ber of RT-PCR test, allocated to the countries and logistic limitations, it may not be practical by governments. Instead, recommendation to self-quarantine and use of face mask up to 24 hours after vaccination can be a practical and easy to implement strategy in the society in order to prevent the spread of disease among family members.

As a conclusion, despite similarity between SARS-CoV2 infection signs and symptoms and AZ COVID-19 vaccine side effects, none of the approved vaccines contain the live virus that cause disease. Therefore, any unusual post-vaccination signs and symptoms should not be attributed to the vaccine itself and they need to be considered for further evaluations and early actions in order to prevent spread of the disease in the society.

ORCID

Mahin Nomali <https://orcid.org/0000-0002-0773-4977>

Mahdieh Afzali <https://orcid.org/0000-0001-8688-0878>

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