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Case report

COVID-19 vaccine induced Axillary and Pectoral Lymphadenopathy on PET scan [☆]

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ABSTRACT

Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused the ongoing global pandemic. It can manifest a wide range of complications depending upon the severity of infection and comorbidities of the patient. Vaccines are very important measure to provide protection against COVID-19. We report a case of 72-year-old female with past medical history of hypertension and diabetes mellitus who underwent imaging with positron emission tomography (PET) scan imaging for staging of her small cell urinary bladder cancer and was found to have hypermetabolic uptake in the deltoid muscle of the left shoulder and hypermetabolic left axillary and pectoral lymph nodes due to mRNA BNT-162b2 (Pfizer-BioNTech COVID-19 vaccine) vaccine administered 3 days ago prior to PET scan.

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Introduction

The novel corona virus termed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread throughout the globe and has caused enormous burden of morbidity and mortality and disrupting societies and economies worldwide. Initially considered a respiratory disease, it can manifest with a wide range of complications (gastrointestinal, neurological, thromboembolic, immune and cardiovascular)

leading to multiple organ dysfunction. Vaccines to prevent severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection are considered the most promising method for controlling the pandemic. Both local and systemic adverse effects can occur after vaccination, but usually are not severe. We report a 72-year-old female who developed left (ipsilateral) axillary and pectoral lymphadenopathy detected on positron emission tomography (PET) scan 3 days after administration of Pfizer-BioNTech COVID-19 vaccine.

[☆] Competing Interest: None of the authors have conflicts of interest

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E-mail address: bsriar9@gmail.com (B. Singh).<https://doi.org/10.1016/j.radcr.2021.04.053>1930-0433/© 2021 Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Case report

We report a 72-year-old female with past medical history of hypertension and diabetes mellitus presented to emergency department with generalized weakness and poor appetite of 6 days duration. Review of systems positive for on and off hematuria for last few months. The patient underwent computed tomography of the chest, abdomen and pelvis without contrast which showed prominent patchy subpleural ground-glass opacity at the lungs bilaterally and solid mass 2.6×1.8 cm within the bladder on the right. The patient was diagnosed with COVID-19 pneumonia and was managed with 2 weeks self-quarantine at home and provided follow up with urologist for the bladder mass. Outpatient cystoscopy revealed large necrotic tumor involving the right lateral sidewall. The path was consistent with small cell carcinoma of the urinary bladder. On March 13, 2021, the patient underwent PET scan which showed hypermetabolic uptake in the deltoid muscle of the left shoulder and hypermetabolic left axillary and pectoral lymph nodes (Figs. 1,2,3). The patient was administered first dose of mRNA BNT-162b2 vaccine on March 10, 2021 (3 days ago prior to PET scan). The other findings were considerable clearing of the bilateral ground-glass pulmonary infiltrates and improving hypermetabolic pulmonary hilar adenopathy and mild subcarinal lymphadenopathy secondary to prior COVID-19 pneumonia and hypermetabolic area (SUV- 32) identified along the right-side of the urinary bladder. The patient got the second dose on March 27, 2021. The patient was seen in the outpatient clinic and was doing well and exam was negative for lymphadenopathy. Plan is to start chemotherapy with carboplatin and etoposide and radiation for the management of the small cell carcinoma of the bladder tumour.

Discussion

Vaccines are very important measure to provide protection against COVID-19. COVID-19 and being developed using several different platforms (RNA vaccines, replication-incompetent vector vaccines, recombinant protein vaccines, and inactivated vaccines). In the United States, the [COVID-19 mRNA vaccines](#) BNT162b2 (Pfizer-BioNTech COVID-19 vaccine) and mRNA 1273 (Moderna COVID-19 vaccine) and the [COVID-19 adenovirus vector vaccine](#) Ad26.COV2.S (Janssen COVID-19 vaccine) have received emergency use authorization.

Both local and systemic adverse effects can occur after vaccination, but usually are not severe. In the clinical trial among BNT162b2 recipients, mild-to-moderate pain at the injection site within 7 days after the injection was the most commonly reported local reaction. The reported systemic events include fatigue, fever, chills, headache and myalgias. Four related serious adverse events reported among BNT162b2 recipients (shoulder injury related to vaccine administration, right axillary lymphadenopathy, paroxysmal ventricular arrhythmia, and right leg paresthesia) [1].

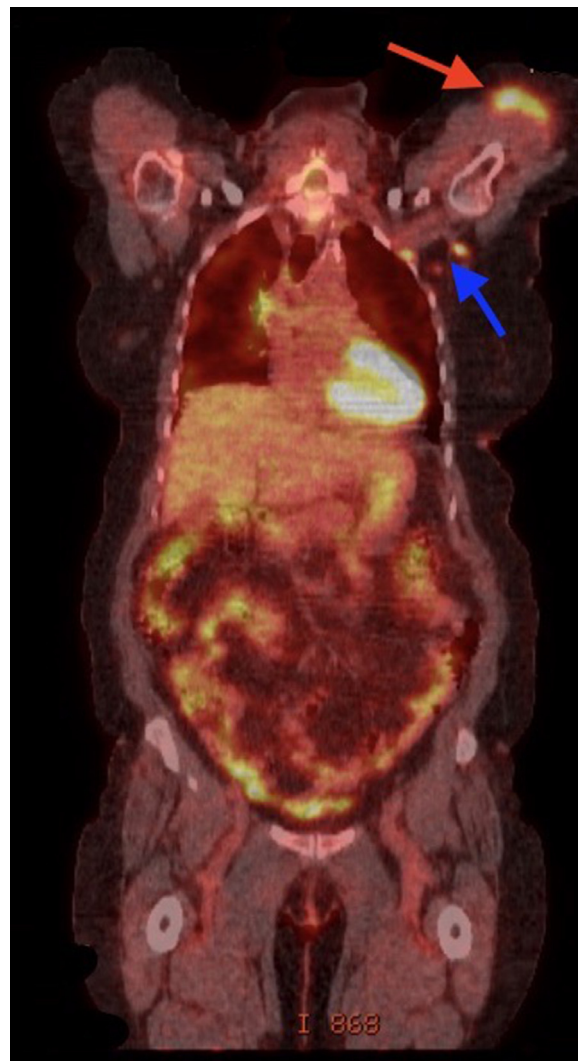


Fig. 1 – PET scan coronal view showing hypermetabolic uptake in the deltoid muscle of the left shoulder (red arrow) and hypermetabolic left axillary and pectoral lymph nodes (blue arrow).

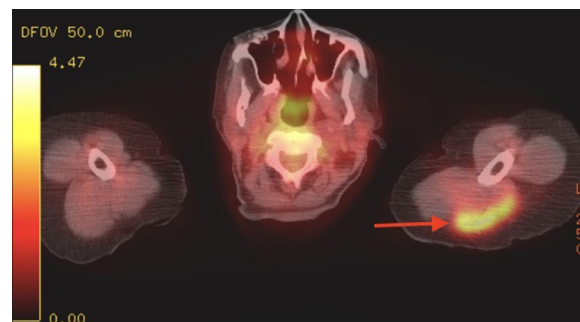


Fig. 2 – PET scan cross sectional view hypermetabolic uptake in the deltoid muscle of the left shoulder.



Fig. 3 – PET scan cross sectional view showing hypermetabolic left axillary and pectoral lymph nodes.

In clinical studies, ipsilateral injection side axillary lymphadenopathy has been reported. In the Moderna trial, clinically detected axillary and supraclavicular lymphadenopathy was reported in 1.1% of study participants within 2–4 days after vaccination [2]. In the Pfizer trial, 64 vaccine recipients (0.3%) and 6 placebo recipients (<0.1%) reported lymphadenopathy. Lymphadenopathy, which generally resolved within 10 days, is attributed to the robust vaccine-elicited immune response [2].

Fernandez et al report 20 cases of acute onset of a single supraclavicular lymphadenopathy manifesting between 24 hours and 9 days after ipsilateral intramuscular administration of an mRNA-based COVID-19 vaccine (Pfizer-BioNTech in 19 cases or mRNA-1273 Moderna in 1 case) [3]. Özütemiz et al reported five cases with ipsilateral axillary lymphadenopathy following administration of Pfizer-BioNTech vaccine. In two cases, pathologic examination was done which showed benign reactive lymphadenopathy secondary to vaccination was done [2].

Anaphylaxis a life-threatening allergic reaction has been reported after Pfizer-BioNTech COVID-19 Vaccine [4]. Most occurred in individuals with a history of allergic reactions including anaphylaxis [5]. Common signs and symptoms in anaphylaxis cases were generalized urticaria, diffuse erythematous rash, angioedema, respiratory and airway obstruction symptoms, and nausea [4]. Several cases of thrombotic events (cerebral venous thrombosis, splanchnic-vein thrombosis, pulmonary embolism) and thrombocytopenia have developed after vaccination with the recombinant adenoviral vector encoding the spike protein antigen of SARS-CoV-2 (ChAdOx1 nCov-19, AstraZeneca) [6].

Conclusion

We report a 72-year-old female who developed left (ipsilateral) axillary and pectoral lymphadenopathy detected on PET

scan 3 days after administration of Pfizer-BioNTech COVID-19 vaccine. Detailed history regarding COVID-19 vaccination inoculation time and injected arm should be obtained prior to imaging to ensure staging/restaging accuracy and to avoid unnecessary biopsy especially in oncology patients.

Patient consent statement

Patient consent has been obtained

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