

Case Report

Regional Lymphadenopathy after COVID-19 Vaccine in a Cancer Patient: A Case Report

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Abstract

Background

The COVID-19 pandemic has led to more than 233 million confirmed cases and more than 4.7 million deaths (at the time of writing this case report) [1,2]. The U.S. Food and Drug Administration (FDA) authorized the emergency use for three vaccines against COVID-19 (Pfizer-BioNTech, Moderna and Johnson & Johnson's Janssen) [3-5]. More than 92% of consistently high efficacy was described across age, sex, race, and different ethnicity, as well as among individuals with underlying medical conditions. In

addition, efficacy was similarly observed in a secondary analysis where participants with or without evidence of previous SARS-CoV-2 infections were included [6]. Per the recommendations of Pfizer-BioNTech, the COVID-19 vaccine is administered as 2 doses separated by 21 days. The Pfizer-BioNTech vaccine has common side effects reported, which typically lasted several days and included pain at the injection site, muscle pain, chills, joint pain, tiredness, headache and fever [7]. Typically, most individuals experienced these side effects after the second dose

compared to the first dose [8]. The objective of this clinical case report is to highlight a potential new side effect of the Pfizer-BioNTech vaccine against COVID-19 in cancer patients.

Case summary

Patient presented with Axillary puffiness associated with discomfort when touched after she has received the second dose of the Pfizer-BioNTech vaccine. She was diagnosed with Stage III rectosigmoid cancer in 2018 and was treated with rectosigmoid segmental colectomy. Surveillance Computed Tomography (CT) of the chest, abdomen and pelvis were done every six months. The most recent scans in September 2020 showed no evidence of disease. On December 19th 2020, the patient received the first dose of Pfizer-BioNTech vaccine against COVID-19 with no notable side effects. The second dose was received on January 8th 2021. The day after vaccination, the patient presented to clinic with complain of feeling discomfort in her right axilla associated with pain to light touch. The patient had no history of recent infection or fever. On clinical examination, swelling and tenderness were notable over patient's right axilla that was associated with mild lymphadenopathy on the right axilla, but not abnormal findings in the left axilla. CT was done and revealed multiple enlarged right axillary, as well as subpectoral lymph nodes, without evidence of local recurrence or metastatic disease in the abdomen or pelvis. A week later, the patient had a follow-up clinic visit where it was noted that her symptoms of right axilla resolved.

Conclusions

Regoinal (axillary) lymphadenopathy, that lasted approximately one week, can be seen in a cancer patient after she received the second dose of the Pfizer-BioNTech vaccine against COVID-19. These findings should be taken into consideration when

oncologists conduct their surveillance and/or restaging scans for patients who are actively being treated for or have prior history of cancer.

Key Words: Oncology; Cancer; Coronavirus; COVID-19 Vaccine; Lymphadenopathy; Advert Events.

Case Presentation

A 49-year-old female presented to our clinic with Axillary puffiness associated with discomfort when touched after she has received the second dose of the Pfizer-BioNTech vaccine. Patient was diagnosed in February 2018 with Stage III rectosigmoid cancer, with multiple regional lymph nodes; the largest was about 1.0 cm with extracapsular extension, however, she had negative margins and no LVI or PNI. Patient was treated with rectosigmoid segmental colectomy. Pathology showed microsatellite stable and MMR proficient tumor. In addition, her molecular testing for KRAS, NRAS, BRAF and HER2 resulted as wild type. Surveillance CT scan was done every six months. The last one in September 2020 (Figure 1A, C) showed no evidence of metastatic disease in the chest, abdomen or pelvis. On Dec 19 2020, the patient received her first dose of Pfizer-BioNTech vaccine against COVID-19 with no notable side effects. Per recommendations, the second dose of vaccine was received on January 8th 2021. On the next day, the patient presented to clinic with complains of feeling discomfort in her axilla that was associated with mild pain and tender to touch. Patient reported no recent history of infection or fever. Upon clinical examination, the swelling and tenderness were noticeable. CT (Figure 1B, D) was done and revealed an interval appearance of multiple enlarged right axillary, as well as subpectoral lymph nodes without evidence of local recurrence or metastatic

disease in the abdomen or pelvis. Two week later, the patient presented for follow-up visit where it was noted

that her symptoms of swelling, tenderness and discomfort were resolved.

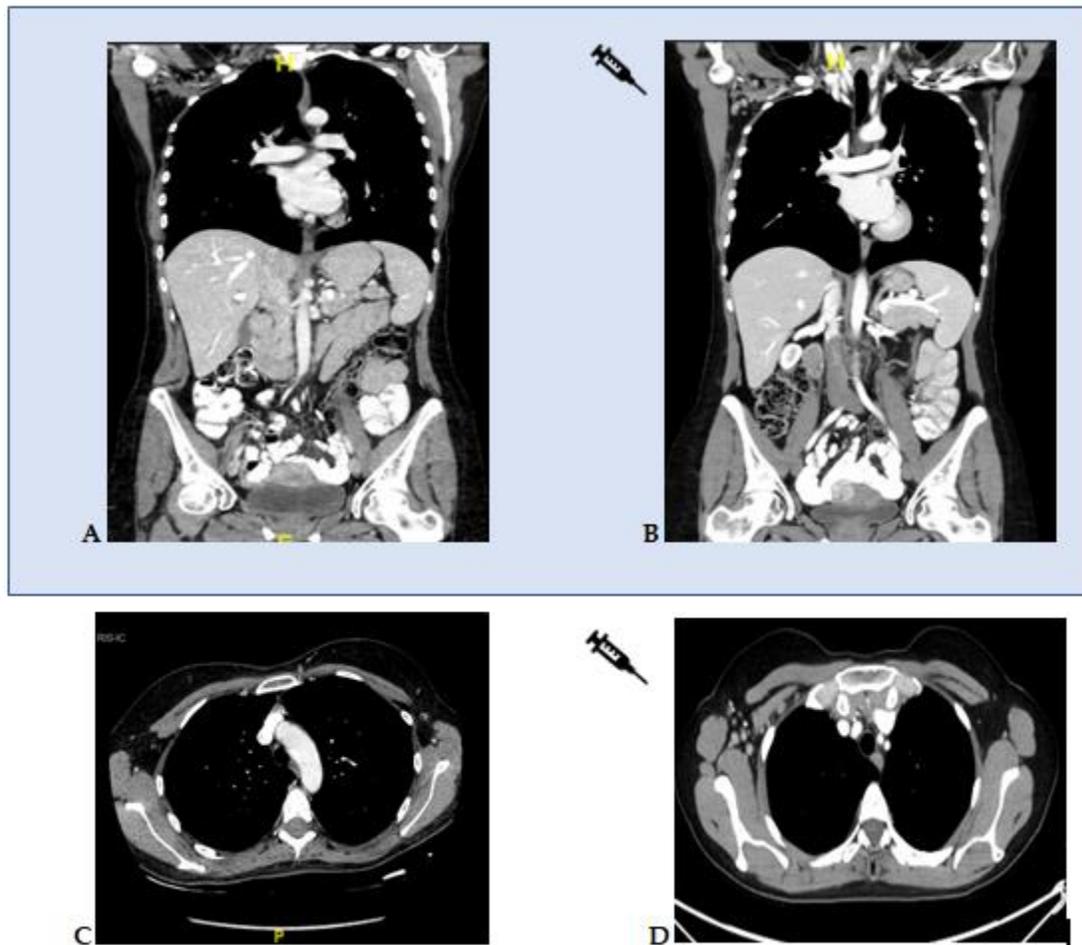


Figure 1: Computed tomography of the chest, abdomen and pelvis. A, B: Coronal view; C, D: Transvers view. A, C last surveillance scan with no evidence of disease and no lymphadenopathy (Captured in September,2020). B, D scan post COVID-19 vaccine with right regional lymphadenopathy (Captured in January, 2021).

Final Diagnosis

The final diagnosis of this case was regional lymphadenopathy which clearly correlated with the vaccination injection site and the timing of having received the second dose of the Pfizer-BioNTech vaccine against COVID-19.

Treatment

Patient was managed conservatively. No treatment was indicated as patient recovered from symptoms in a short period of time.

Outcome and Follow-up

The regional lymphadenopathy in this case resolved

without any interventions as evident at her physical exam during the scheduled follow-up visit a week after her last scan.

Discussion

This is a case report for a stage III colon cancer patient in remission with no evidence of disease recurrence who had received Pfizer-BioNTech vaccine against COVID-19. Cancer was treated with surgical resection followed by 6 months of adjuvant chemotherapy. Surveillance CT repeated every six months for follow-up revealed no evidence of disease recurrence. Patient was at her normal status of health with no sign or symptoms of cancer recurrence. The last cancer surveillance CT scan was done three months prior to patient's first dose of Pfizer-BioNTech vaccine against COVID-19 and it revealed no evidence of lymphadenopathy or any metastasis. She received the first dose of the Pfizer-BioNTech vaccine against COVID-19 in her left arm and it was tolerated very well. The patient denied any adverse events, such as pain at the injection site, muscle pain, chills, joint pain, tiredness, headache and fever. After she received the second dose of Pfizer-BioNTech vaccine in her right deltoid muscle, she had puffiness and tenderness in her right axilla. Work-up CT imaging revealed an interval appearance of multiple enlarged right axillary as well as subpectoral lymph nodes without evidence of local recurrence or metastatic disease in the abdomen or pelvis. Regional lymphadenopathy was resolved as evident at her physical exam during the scheduled follow-up visit a week after her scan.

Ipsilateral axillary lymphadenopathy as an advert event for other vaccines has been previously reported with many vaccines, such as the seasonal H1N1 Influenza-A, HPV and seasonal influenza vaccines [9-12]. The pathophysiology of the Ipsilateral axillary

lymphadenopathy seen in this case may be explained by some plasma and other cells in the interstitial space, along with certain cellular material and antigens that were created after the vaccine administration, entering the lymphatic vessels and becoming lymphatic fluid. Lymph nodes filter the lymphatic fluid that is on its way to the central venous circulation, removing cells and other materials. The filtering process also presents antigens to the lymphocytes contained within the nodes. The immune response from these lymphocytes involves cellular proliferation, which can cause the nodes to enlarge (regional reactive lymphadenopathy). Lymphadenopathy is usually an alarming sign and symptom of cancer recurrence in oncology. It creates a state of anxiety for cancer patients who are otherwise in remission. Symptoms of lymphadenopathy usually require work-up by appropriate imaging modalities and CT scans that are usually the starting points. Unexplained and unresolved lymphadenopathy on images for cancer patients are concerning for cancer recurrence. Lymph node biopsies, when feasible, are usually done to rule out cancer recurrence. Unnecessary work-up can be avoided for obvious and benign etiologies of temporary lymphadenopathy. This case report is to highlight the significance of lymphadenopathy that can occur post COVID vaccinations. The timing of surveillance or restaging scans can be adjusted to avoid overlapping with COVID vaccinations in an effort to obtain accurate and reflective images and avoid misleading incidental radiological findings. Lymphadenopathy in this case was regional and it clearly correlated with the vaccination injection site and its timing. However, more diffuse lymphadenopathy in the setting of hematological malignancies, like lymphoma, should be interpreted with caution (Figure 2).

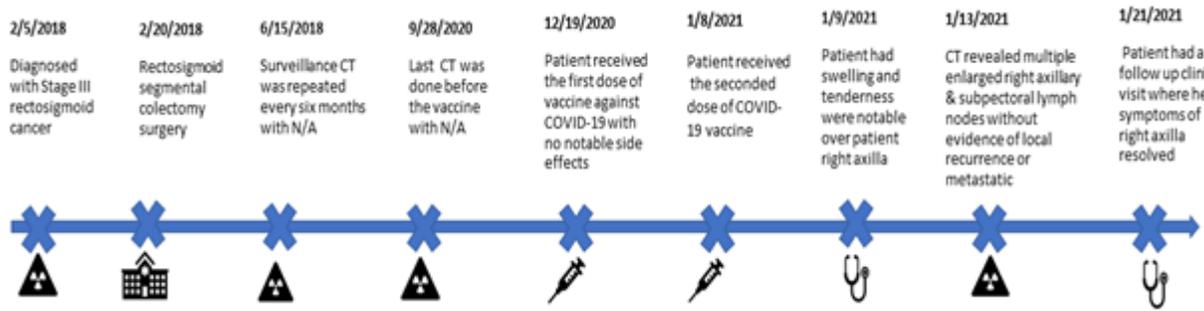


Figure 2: Summary of Regional Lymphadenopathy after COVID-19 vaccine in a cancer patient

Conclusions

Lymphadenopathy might be seen after receiving the second dose of the Pfizer-BioNTech vaccine against COVID-19, but it usually spontaneously resolves in 1-2 weeks without intervention. For cancer patients on active treatment, or in remission, interval development of new lymphadenopathy can be alarming and misleading in the setting of COVID vaccination. Interpretation of restaging or surveillance scans should be done with caution and taking into consideration the timing of the COVID vaccination.

Conflicts of interest/Financial disclosures

None reported. All authors have declared that there are no financial conflicts of interest with regard to this work.

Author contributions

Esmail A reviewed the literature; Esmail A and Abdelrahim M contributed to the design of the manuscript and manuscript drafting, and revision of the manuscript for intellectual content; Esmail A imaged analysis and interpretation; Abdelrahim M was the patient’s oncologist and was responsible for the critical revision of the manuscript for intellectual

content; and all authors issued final approval for the version to be submitted.

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