

中文題目：新冠肺炎疫苗引起的淋巴結病變對甲狀腺癌病人的正子造影產生臨床上的陷阱

英文題目：Clinical pitfall for COVID-19 vaccination related lymphadenopathy on 18F-FDG PET/CT with thyroid cancer

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Introduction: The Coronavirus-19(COVID-19) pandemic has affected our lives and health systems. Widespread use of vaccines will lower the risk of severe illness or death. However, common side-effects of COVID-19 vaccines included pain and swelling at the injection site, fever, headache and fatigue were reported. Notably, post-COVID vaccine lymphadenopathy has been described in the literature. In clinical practice, these reactive lymph nodes may be confused with metastatic lymph nodes in patients with cancer if they receive F18-fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) scan after COVID-19 vaccination. Herein, we present a case of papillary thyroid cancer who was found to have reactive unilateral lymphadenopathy on PET/CT scan after receiving the first dose of the Pfizer-BioNTech COVID-19 vaccine.

Case presentation: A 29-year-old female with the medical history of left papillary thyroid cancer status post total thyroidectomy and central neck dissection in 2018, and postoperative remnant ablation with I-131 30mCi in 2019/9/2, complicated with structural and biochemical incomplete response (thyroglobulin <0.1 ng/ml, a significant increase in thyroglobulin antibody with 71.02 IU/ml on 2021/10/7). She was underwent imaging with FDG PET/CT scan on 2021/10/22 for re-staging of thyroid cancer. The FDG PET/CT scan detected multiple abnormal hypermetabolic enlarged lymph nodes in left neck level V, left subpectoral space, and left axilla. The patient revealed she had received the first dose of the Pfizer-BioNTech COVID-19 vaccine on the left shoulder intramuscular 8 days before FDG examination. In order to exclude lymph nodes metastasis due to her thyroid cancer history, we performed a chest CT 12 weeks after vaccination, which reported most above mentioned lymph nodes seemed to have regressed in size with preserved hila except one lymph node in level V of left neck. We did not perform fine needle aspiration to that exceptional lymph node because it had small in size (0.31cm), ovoid shape and echogenic hilum. Six months after COVID-19 vaccination, the repeat PET/CT scan showed no evidence of local regional lymph node or distant metastasis.

Discussion: We report a case of papillary thyroid cancer developed with reactive ipsilateral lymphadenopathy on PET/CT scan after the first dose of the Pfizer-BioNTech COVID-19 vaccination. These reactive lymph nodes gradually resolved a few weeks later except one reactive lymph node in neck still persisted for 3 months after the vaccination. Recently, there have been reports of regional lymphadenopathy following COVID-19 vaccination in cancer patients. The most common cancer types of reported cases are skin cancer, head and neck cancer, breast cancer, lung cancer and hematologic malignancies. We found thyroid cancer is less to be mentioned. Keshavarz et al showed in their report that lymphadenopathy was observed in imaging examinations after the first and second dosages of Pfizer-BioNTech vaccine with median days of 10.5 (range, 5-18 days) and 5 (range, 1-7 days), respectively. Eshet et al. reported ipsilateral avid axillary lymph node uptake at FDG PET/CT persists in 29% (49/169) of

patients between 7-10 weeks after the second dose of Pfizer-BioNTech COVID-19 vaccination. Our case revealed a much longer duration of vaccine-related lymphadenopathy after the first dose of Pfizer-BioNTech vaccine. In the absence of established guideline, McIntosh et al. proposed performing FDG PET/CT at least 2 weeks after vaccination in patients with cancer, but optimally 4-6 weeks after vaccination to avoid potential confounding findings. In our opinion, a recall for ultrasound or CT assessment of lymph node morphology might be still required if the abnormal nodes persist over 3 months.

Conclusion: We highlight a case of thyroid cancer with reactive lymphadenopathy after the first dose of Pfizer-BioNTech COVID-19 vaccine. Enlarged lymph nodes that are observed in the axillary, supraclavicular, or cervical areas with laterality can pose a challenge in the PET/CT interpretation. A careful vaccination history taking (ie, the date and the side of the vaccination) should be acquired before FDG-PET/CT scan. In addition, counseling patients with cancer to receive vaccine in contralateral arm if their diseases have laterality will be helpful.