Chronic Thromboembolic Disease (CTED) after COVID-19 vaccination without predisposing factors

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Background: Approximately 1/3 of all acute pulmonary thromboembolism (PTE) patients develop chronic thromboembolic disease (CTED), which is defined as PTE that does not resolve after standard anticoagulation therapy and must be free from resting pulmonary hypertension. Herein we present the case of CTED without any predisposing factors for PTE.

Case Presentation: A 62-year-old woman presented with ecchymosis, cough, and left chest pain. She was vaccinated with the ChAdOx1 nCoV-19 vaccine 14 days previously. According to chest CT angiography, eccentric filling defects on the main and left lower pulmonary artery, subpleural consolidation, and pleural effusion in the left lower lobe were observed (Figure 1). Following suspection of PTE and pulmonary infarction, the standard anticoagulation therapy was initiated. Pulmonary hypertension and RV dysfunction were not observed from the echocardiography, and deep vein thrombosis was excluded after the inspection with lower extremity doppler sonography. Laboratory findings showed that the patient did not have thrombophilia or connective tissue disease, and value of anti-heparin platelet factor 4 IgG and platelet count were within normal range. By PET-CT, we could rule out angiosarcoma by confirming mild uptake on main and left lower pulmonary artery (SUVmax=2.9, Figure 2). Ventilation/perfusion scan revealed mismatched perfusion defects in the left upper and lower lobes (Figure 3). The 3 and 6 months follow-up CTs after anticoagulation showed the resolution of filling defect on main pulmonary artery, however, filling defect on left lower pulmonary artery remained unchanged (Figure 4). Subsequent echocardiography still showed no evidence of resting pulmonary hypertension. From above findings, CTED was confirmed, and up to this point, the patient is maintained with the extended anticoagulation therapy.

Conclusion: CTED is increasingly encountered following acute PTE. The case presented shows that CTED can arise in patient after standard anticoagulation therapy even in the absence of predisposing factors.

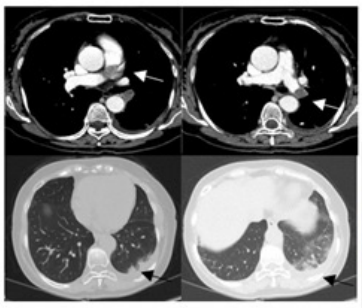

Figure 1. Initial chest CT angiography. CT scan shows that eccentric filling defects on main and left lower pulmonary artery, subpleural consolidation on left lower lobe, pleural effusion.

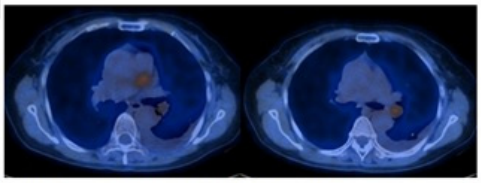

Figure 2. PET CT. PET CT shows that mildly and focally increased FDG uptakes in the main PA (SUVmax = 2.9) & left lower pulmonary artery (SUVmax = 2.6)

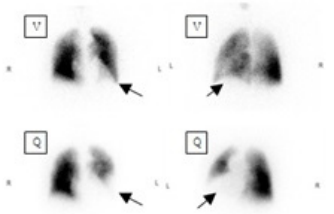

Figure 3. Ventilation/Perfusion scan with anterior and LPO view. Ventilation/perfusion scan shows that large mismatched perfusion defect in the entire LLL, and mild mismatched perfusion decrease in the entire LUL.

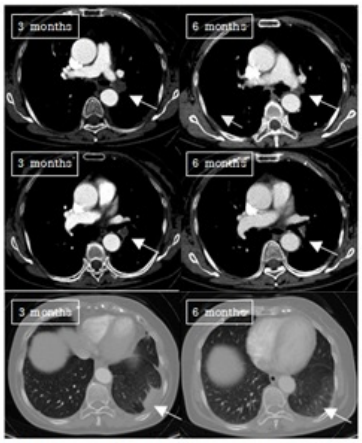

Figure 4. Follow up CTs show that main pulmonary artery's filling defect and pulmonary infarction was resolving, but left lower was remained.