

Metastatic pulmonary calcification in patients on long-term dialysis

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Case 1

A 72-year-old woman was on dialysis for 44 years. Chest radiography revealed hazy opacity in the upper lung field (**Figure 1A**). Chest computed tomography (CT) showed patchy ground-glass opacities and fusion with overt calcification (**Figure 1B**). She had mild hypoxemia and impaired diffusing capacity. ^{99m}Tc-HMDP scintigraphy showed a prominent uptake in the lung fields corresponding to the patchy opacities (**Figure 1C**), indicating the accumulation of calcium in the lung parenchyma.

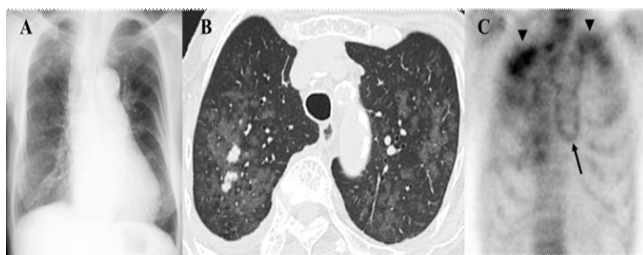


Figure 1: Chest radiography, Chest CT and ^{99m}Tc-HMDP scintigraphy of Case 1

A: Chest radiography shows hazy opacities in both upper lung fields. B: Axial section of chest CT shows 7-12 mm diameter patchy ground-glass opacities and their fusion in the upper lobes. C: Single-photon emission computed tomography using ^{99m}Tc-HMDP (SPECT) shows high uptake in the upper lung field (arrow heads) corresponding to the area of lung opacities on chest CT. The arrow shows the uptake of radioisotopes in the sternum.

Case 2

A 50-year-old woman was on dialysis for 11 years. Chest CT showed patchy ground-glass opacities (**Figure 2A**), and ^{99m}Tc-HMDP scintigraphy showed prominent uptake in the lung field corresponding to the CT images (**Figure 2B**). The patient had hyperparathyroidism because of a parathyroid tumor. Oral administration of the allosteric activator of the calcium-sensing receptor improved hypercalcemia and ground-glass opacities (**Figure 2C**).

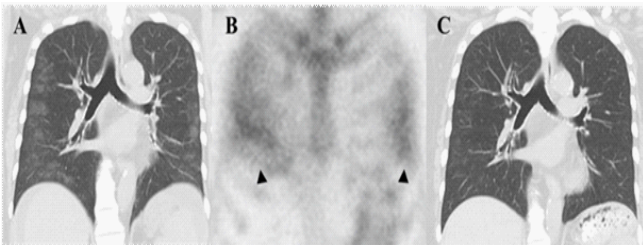


Figure 2: Chest CT and ^{99m}Tc-HMDP of Case 2

A: Coronal section of chest CT showing patchy ground-glass opacities in the upper and middle lobes. B: SPECT using ^{99m}Tc-HMDP shows uptake in both lungs (arrowheads) corresponding to the patchy ground-glass opacities on chest CT. C: Chest CT after treatment for hyperparathyroidism shows a marked reduction in patchy opacities.

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Both patients were diagnosed with metastatic pulmonary calcification (MPC). Although most patients with MPC are asymptomatic, some patients show restrictive pulmonary impairment, decreased diffusivity capacity, and hypoxemia, as observed in Case 1. The differential diagnosis of patients with ground-glass opacities of the lung parenchyma covers a wide range of diseases [1], and invasive examinations such as trans-bronchial biopsy or bronchoalveolar lavage are often required for diagnosis. On the other hand, the unique patchy ground-glass opacities in the chest CT of patients on long-term dialysis or hypercalcemia can guide the diagnosis of MPC using 9mTc-HMDP scintigraphy. Hypercalcemia treatment can improve or prevent MPC [2].

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Author Contribution: All authors contributed to prepare figures and manuscript.

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