Medical Image of the Month: Metastatic Pulmonary Calcifications in a Kidney Transplant Recipient

Figure 1. Axial and coronal views of thoracic CT scan showing upper lobe predominant centrilobular ground glass nodules

Figure 2. Transbronchial biopsy yielded nine tissue fragments, each of which demonstrated moderate to marked interstitial calcification (amorphous purple material) along the alveolar septae, perivascular spaces and within the bronchioles consistent metastatic calcification. There were secondary changes of mild alveolar fibrosis and interstitial hemosiderin laden macrophages (golden brown pigment). There was no evidence of an inflammatory response or malignancy to otherwise explain the CT findings in this patient.
A 40-year-old man presented with shortness of breath, cough and abnormal imaging. He had a past medical history of end stage renal disease (ESRD) secondary to Alport syndrome and underwent three kidney transplants in 2004, 2010 and 2016. He was intermittently on dialysis between the transplants. He also had a history of coronary artery disease, congestive heart failure and parathyroidectomy. His CT scan (Figure 1) from 2019 showed diffuse centrilobular ground glass opacities sparing the peripheral lung and lung bases. Pulmonary function testing showed obstruction, with reduced diffusion capacity. Bronchoscopy with bronchoalveolar lavage and transbronchial biopsy of the right upper and middle lobes was consistent with metastatic pulmonary calcification (MPC) (Figure 2).

MPC is a rare metabolic pulmonary disease which is usually found incidentally or on autopsy. It occurs with chronically elevated calcium and phosphorus levels (1). It is very commonly associated with ESRD and rarely in primary hyperparathyroidism, osteoporosis, sarcoidosis, renal and liver transplant and hematological malignancies (2-5). CT shows diffuse, nodular areas of ground-glass opacity or consolidation seen in the upper lung zones with pleural sparing. Diagnosis is made on histopathology. There is no definitive treatment for MPC. MPC should be considered with radiological nodular ground glass opacities, particularly in the context of chronic kidney disease or kidney transplant.

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References