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CASE IMAGE

WILEY

Lung metastases from sinonasal leiomyosarcoma masked by organizing pneumonia

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A 70-year-old man was referred to our institution for lung biopsy. The patient was status post resection of sinonasal leiomyosarcoma (SLMS) followed by radiation therapy (RT) at 6.27Gy for 33 fractions, which he completed one month prior to onset of progressive dyspnea, cough, and low-grade fever. Testing for the severe acute respiratory syndrome Coronavirus-2 infection was negative. Chest radiograph showed bilateral airspace opacities in a peripheral distribution (Figure 1(a)). He was prescribed multiple courses of antibiotics for bacterial pneumonia

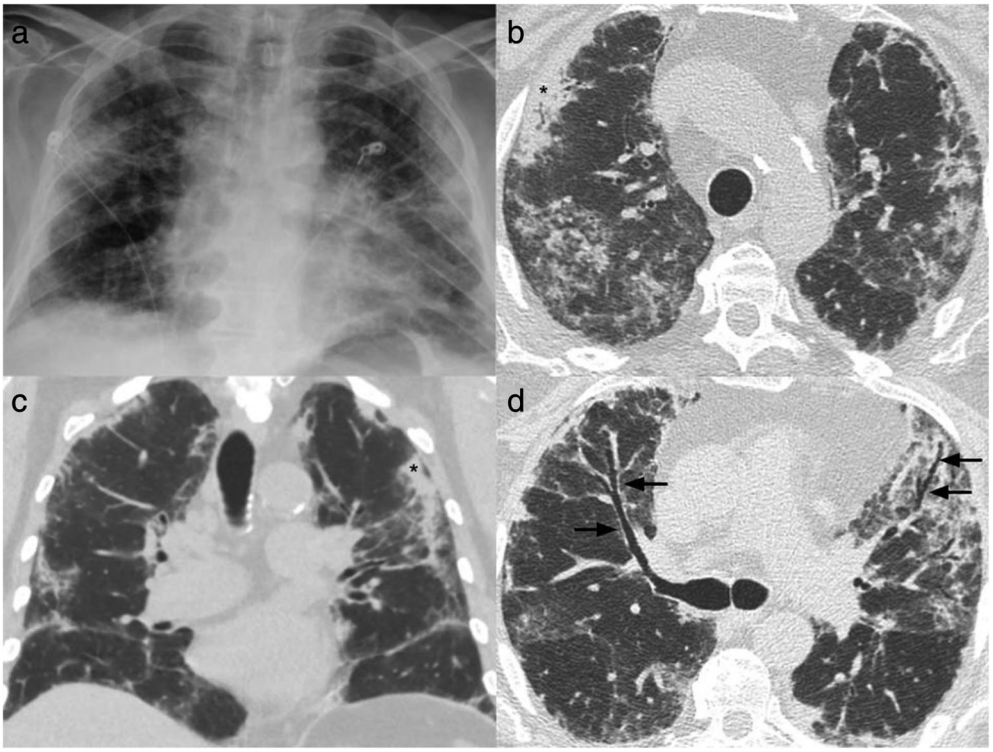

FIGURE 1 (a) Anteroposterior chest radiograph shows extensive bilateral airspace opacities with a predominantly peripheral distribution. Representative axial (b) and coronal (c) sections of chest computed tomography set to lung window at the level of the upper lobes are most notable for patchy bilateral consolidations with a subpleural localization. The best example of this finding in the right and left lung is marked with an asterisk in panels (b) and (c), respectively. (d) Prominent traction bronchiectasis (arrows) is present in both upper lobes on a computed tomography section

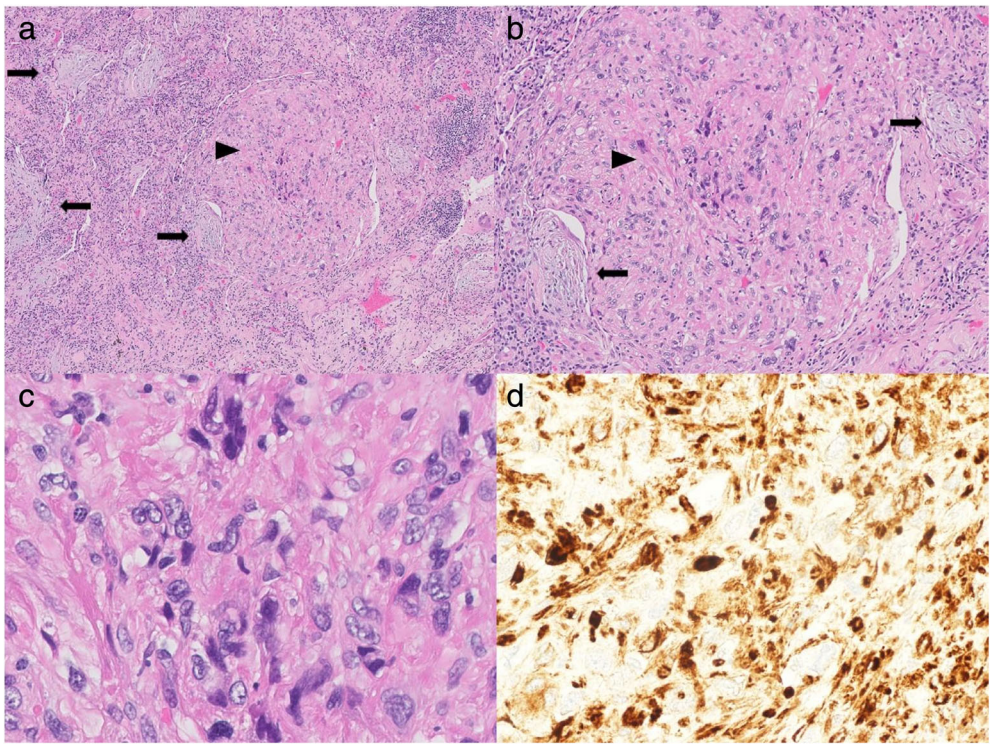

FIGURE 2 Microscopic section of lung tissue at (a) low power (hematoxylin and eosin [H&E], original magnification x40), and (b) intermediate power (H&E, original magnification x100) shows airspace filling by fibroblastic plugs (arrows), corresponding to foci of organizing pneumonia, adjacent to a cluster of atypical spindle cells (arrow head). (c) At high power (H&E, original magnification x400), the spindle cells are observed to be pleomorphic with an irregular nuclear membrane, vesicular nuclei, and prominent nucleoli, a morphology consistent with leiomyosarcoma. These malignant cells are immunohistochemically positive for desmin, confirming their smooth muscle origin (d)

without improvement. Chest computed tomography (CT) revealed bilateral consolidations most prominent in the upper lobes with a predilection for the subpleural regions (Figure 1(b) and (c)) and traction bronchiectasis (Figure 1(d)), which were new as compared to prior imaging from three years previously. The impression based on these findings was the presence of a non-infectious diffuse parenchymal lung disease with organizing pneumonia (OP) being a primary consideration, triggered perhaps by the recent radiation therapy. The patient underwent video-assisted thoracoscopic surgery (VATS) with biopsy of the left upper and lower lobes. Representative microscopic sections of lung tissue are shown in Figure 2. As predicted, foci of OP were indeed present. Unexpectedly, however, interspersed with lesions of OP were islets of neoplastic spindle cells morphologically consistent with metastatic deposits of the patient's known SLMS.

OP is a clinicopathological entity characterized by bronchiolar and alveolar filling by loose connective tissue plugs composed of type III collagen. It typically presents with subacute cough and dyspnea together with low-grade fever. It represents a response by the lung to a variety of insults, including thoracic and extrathoracic malignancy,[1] as well as RT.[2] In the case of RT, OP is almost exclusively associated with thoracic radiation, especially for breast carcinoma, so the RT for head and neck cancer with minimal scatter, which was administered to our patient, was an unlikely culprit. In a series of 43 cancer patients with OP from Memorial Sloan Kettering Cancer Center, 27 had solid tumors, of which four (15%) were sarcomas,.[1] Detailed descriptions of OP adjacent to primary or metastatic lung sarcoma are extremely limited,[3] and entirely nonexistent for such rare types as SLMS, of which there are fewer than 100 cases reported in the literature.[4] As illustrated by our case, OP can be the dominant radiological pattern when it is enmeshed with lung malignancy, masking the latter and thus potentially leading to delays in its recognition. Therefore, a clinicoradiographical picture of OP in a patient with cancer should prompt investigation for malignant lung involvement whether or not such involvement was previously suspected.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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