

## Images in Medicine: Multiple cystic and cavitory lung lesions

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### Citation

B Creelan, B Vahid, B Awsare. *Images in Medicine: Multiple cystic and cavitory lung lesions*. The Internet Journal of Pulmonary Medicine. 2006 Volume 8 Number 2.

### Abstract

A 55 year old woman presented with progressive dyspnea and a new right-sided pleural effusion on chest radiograph. She had been diagnosed with invasive keratinized squamous cell carcinoma (SCC) of the head and neck 5 months before presentation. She was treated with local resection with reconstruction and radiotherapy. Lymph nodes were positive for metastatic cancer but no evidence of distance metastases was found. On presentation, the patient was febrile and tachycardic. She required mechanical ventilation for progressive hypoxemia. Computed tomography (CT) scan of chest showed a right pleural effusion, pleural thickening, and multiple thin-walled cavitory lung lesions (Figure 1 and 2).

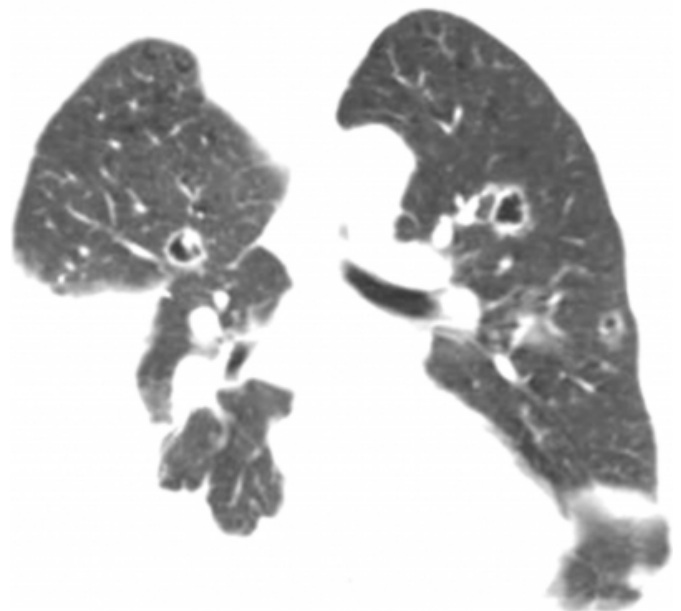
### Figure 1

Figure 1: A CT scan of chest showing cavitory lung lesions.



### Figure 2

Figure 2: Coronal re-construction of CT scan of chest showing multiple thin-walled cavities, pleural thickening and right pleural effusion.



She also had hypercalcemia and renal failure. Bronchoscopy with bronchoalveolar lavage (BAL) was performed. Cytology was positive for malignant squamous cells. BAL culture also grew *Pseudomonas aeruginosa*. Thoracentesis of pleural fluid showed exudative and bloody effusion, but cytology was negative. Eventually pleural biopsy was done that confirmed the presence of metastatic carcinoma. Repeat CT scan of chest showed increase in size and number of lung lesions. Because the patient was not candidate for more therapy, palliative care was offered to her.

Multiple cystic or thin-wall cavitory lesions are an atypical manifestation of metastatic head and neck carcinomas. About 4% of metastatic lung nodules have detectable

cavitation on a radiograph.<sup>1</sup> Squamous cell carcinomas (e.g.; head and neck, female genital tract) are the most common type of cavitating metastatic lesions.<sup>1,2,3</sup> CT scan also is very sensitive to detect cavitating metastatic adenocarcinomas. In one study, CT scan showed no statistically significant difference in the frequency of metastatic nodule cavitation between patients with metastatic adenocarcinoma and SCC (10% vs. 9.5%).<sup>1</sup> Cavitory lung metastases also have been described in sarcomas (angiosarcoma, fibrosarcoma, osteogenic sarcoma, malignant fibrous histiocytoma) and can be complicated by pneumothorax or hemothorax.<sup>4,5,6,7</sup> Rare cases of metastatic transitional cell carcinoma of bladder manifesting as cavitory lung disease have been reported.<sup>8</sup>

The mechanism of cavitation is presumed to be tumor necrosis and subsequent drainage of necrotic debris via communication with an airway. This process generally results in a thick and irregular cavity wall. On the other hand, thin-walled lesions form by a check-valve mechanism that develops by means of bronchial wall infiltration of tumor.<sup>1, 5</sup> Metastatic lung disease should be considered in differential diagnosis of multiple cystic and cavitory lung lesions.

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