



# Interstitial Densities Following Radiotherapy

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R.D. is a 51-year-old man who presented to his local rural hospital in April 2002 with facial flushing, shortness of breath, cough, and a syncopal episode. He reported that his symptoms had persisted for three weeks, and he had been treated for a sinus infection three times prior to this admission. Because of fatigue, he was being evaluated for possible thyroid dysfunction. He also had a past medical history of long-term smoking and coal dust exposure. A chest x-ray (see Figure 1) and a computerized tomography (CT) scan were ordered. A large mediastinal mass was noted as well as marked obstruction of the superior vena cava from the mass. R.D. was transferred immediately to a regional medical center where a mediastinoscopy for biopsy was performed; a Groshong catheter also was inserted. He received three radiation treatments to the chest over the course of a weekend. A diagnosis of stage III-B non-small cell carcinoma of the lung was confirmed, and the patient's treatment plan consisted of 28 days of radiotherapy to the mediastinum and six cycles of paclitaxel and carboplatin. R.D. received his first cycle of chemotherapy in the hospital and was discharged on April 12 with continued outpatient radiotherapy; his next cycle of chemotherapy was scheduled for mid-May. R.D. and his family planned to stay in town Monday through Friday for his daily radiation treatments and return to their home community on Saturdays and Sundays.

R.D. received his second cycle of paclitaxel and carboplatin as scheduled on May 8 and returned to his hometown for the weekend on May 11. He was near completion of the thoracic radiotherapy. On May 12, he presented to his local emergency department with complaints of fever and shaking chills.



FIGURE 1. APRIL 2002 CHEST X-RAY SHOWING LARGE MEDIASTINAL MASS

His diagnostic studies revealed the following: white blood cell count 2,900/mm<sup>3</sup>, hemoglobin 13.2 g/dl, and platelet count 311,000/mm<sup>3</sup>. His physical examination showed significant erythema and purulent drainage at the mediastinal incision. He was transferred to the regional medical center with a diagnosis of febrile neutropenia and wound sepsis. Upon his arrival, admitting orders included wound cultures, initiation of antibiotics and filgrastim, placement on neutropenic precautions, and a surgical consult. The mediastinal incision was opened, and a deep abscess on the anterior chest wall was drained. A CT scan was performed at that time that revealed a decrease in the tumor mass. R.D.'s recovery was uncomplicated, and he was discharged from the hospital on May 17 with IV antibiotics and dressing changes to the mediastinal wound. The last of his radiotherapy was not administered.

On June 14, R.D. was scheduled to receive cycle three of his chemotherapy. An oncolo-

gist examined the patient and admitted him to the regional medical center to evaluate his increasing shortness of breath and fatigue that had worsened over the past week. In addition to his deteriorating respiratory condition, R.D. had developed herpes zoster and had been started on famcyclovir approximately four days prior. His chest wound that developed in May remained open and draining. A decision to hold chemotherapy was made by the oncologist until the patient's condition improved. Admitting orders included laboratory tests, a chest x-ray, a CT scan, and an ultrasound. Results of his diagnostic studies were as follows: white blood cell count 10,100/mm<sup>3</sup>, platelet count 461,000/mm<sup>3</sup>, partial thromboplastin time 157 seconds, and prothrombin time

(PT) 14.1 seconds. R.D.'s chest x-ray revealed interstitial densities with extensive infiltration through the right lung and left perihilar area. Although his chest x-ray revealed that the mass was smaller, new central interstitial densities were more prominent on the right and his right diaphragm was elevated. The radiologist's report further stated that the findings were consistent with pulmonary edema or more likely, lymphangitic spread of neoplasm or post-radiation pneumonitis (see Figure 2). The CT scan results were consistent with radiation pneumonitis and multiple bilateral pulmonary emboli. An ultrasound of R.D.'s chest was significant for clots in the left internal jugular

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