within macrocytes, and there was a microglial reaction. No Lewy bodies were present. Multiple sections of brainstem and serial sections of the medulla including myelin and Holzer stains revealed no gliosis or decrease in nuclear masses. Cell counts of neurons in the intermedialateral columns at eight thoracic levels of the spinal cord were performed. There was a loss of cells, when compared to counts from identical levels from a normal patient of similar age. The thoracic ganglia were the sites of a mononuclear cell infiltrate. The vagus, phrenic, peroneal, and femoral nerves showed axonal loss and disruption. Samples of skeletal muscle as well as diaphragm showed changes consistent with denervation atrophy.

**DISCUSSION**

The central clinical features of this case include dysautonomia, parkinsonism, and abnormalities in respiratory control. Unlike previous reports, in this patient, the medulla was morphologically intact. Instead, there was a widespread neuropathy, as well as the classic pathologic findings of Shy-Drager. The moderate abnormalities in respiratory mechanics do not, by themselves, explain the presence of hypercapnic respiratory failure. Although there was evidence of phrenic and intercostal nerve pathologic conditions, the preservation of vital capacity with changes in posture, the lack of paradox thoracoabdominal movements, and the presence of substantial maximal inspiratory and expiratory pressures are indications of neuromuscular apparatus sufficient to provide an adequate minute ventilation gas exchange.

Correlation of findings of respiratory abnormalities during sleep with findings at autopsy can be approached through the concept of feedback control in the respiratory system (Fig 3), where abnormalities in respiration are considered to result from functional instabilities inherent in the organization of respiratory rate and rhythm. The patient did show significant physiologic evidence for absence of chemosensitive feedback control to the central respiratory generator. Patients with selective defects in afferent feedback, such as seen in bilateral anterior cordotomy for relief of pain, exhibit respiratory irregularities during sleep, occasionally leading to respiratory failure and death. In addition, this patient had significant peripheral nerve disease. This presumably could have involved feedback control from tendon organs and muscle spindles in the muscles and structures of the chest wall. Absence of nonchemical feedback control from these and other sensory nerves might also have contributed to the abnormalities in respiratory control during sleep.

We speculate that the behavior of respiration present during sleep in this patient results from an absence of feedback control which in turn uncovers or promotes periodic behavior of respiration. One possibility is that absence of afferent feedback allows oscillatory patterns from other brain centers to influence central respiratory drive centers. Alternatively, the absence of afferent information or of autonomic efferent activity could amplify oscillations of the respiratory controller because of an inability to maintain lung volume or cardiovascular homeostasis.

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**Angiosarcoma Presenting as Diffuse Alveolar Hemorrhage**

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Angiosarcoma has been reported as occurring in both postirradiation and postradical mastectomy patients. Described is a patient, postmastectomy and irradiation, with alveolar hemorrhage secondary to angiosarcoma. Angiosarcoma, primary or metastatic to lung, should be included in the differential diagnosis of diffuse alveolar hemorrhage in this patient population.

Angiosarcoma has been reported as occurring in both postirradiation patients and postradical mastectomy patients with ipsilateral upper extremity lymphedema. The case presented here describes a patient, both postirradiation

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and postradical mastectomy, with diffuse alveolar hemorrhage secondary to angiosarcoma. Angiosarcoma, either primary or metastatic to lung, should be considered when diffuse alveolar hemorrhage is encountered in this patient population.

CASE REPORT

A 72-year-old nonsmoking woman with a past medical history significant for right radical mastectomy and radiation 17 years earlier presented with malaise and dyspnea. She had been well until one month earlier, when she had been hospitalized with a centrally displaced fracture of the right acetalum and culture negative fevers which resolved with institution of ibuprofen (Motrin). The acetabular fracture was attributed to stress, secondary to past degenerative joint disease. Chest x-ray film showed a mild degree of increase in interstitial markings. Past medical history was also significant for hypertension and right upper extremity lymphedema postmastectomy. Other medications were digoxin, Lasix, potassium, topical nitrates, and iron. The patient denied cough, hemoptysis, or hematemesis.

Physical examination was remarkable for conjunctival pallor, a grade 2/6 systolic ejection murmur at the left sternal border (present on previous exams), right mastectomy, and lymphedematous right upper extremity. In addition, crackles were evident at the bases of both lungs.

Chest x-ray film was remarkable for bilateral alveolar infiltrates, predominantly upper lobe, markedly changed from earlier roentgenograms (Fig 1). The patient's hemoglobin value was 10.5 g/dl, with coagulation studies and platelets within normal limits. A room air arterial blood gas analysis showed marked hypoxemia, which corrected with 2 L O2 via nasal cannula.

The patient was felt to be in congestive failure, and initially received diuretics with improvement in both symptoms and gas exchange. The ECG was unchanged from prior hospitalization, and an echocardiogram was essentially normal, except for mitral anulus calcification and a mildly enlarged left atrium. Despite symptomatic improvement, the patient's chest x-ray film worsened. In view of her past history, bronchoscopy was performed, revealing diffuse hemorrhage. Ibuprofen was discontinued, and a regimen of high dose steroids was instituted. Pulmonary function tests were performed and showed a mild to moderate restrictive defect, with a DCO of 230 percent of predicted. Subsequent tests for anti-GBM antibodies were negative, and serum complements, SPEP, and urinalysis results were all normal.

Steroids were tapered, but the patient continued to bleed as documented by persistently elevated Dcos and a fall in hemoglobin value, requiring transfusions. Cytologic and microbiologic findings of bronchoscopy specimens were negative, and it was elected to send the patient for open lung biopsy. At surgery, the lung was studded with multiple red nodules. Electron microscopy of material from the biopsy showed tumor cells of vasosformative nature infiltrating vascular walls, diagnosed as angiosarcoma of primary pulmonary origin. Review of tissue by the Departments of Pulmonary and Mediastinal and Soft Tissue Pathology of the Armed Forces Institute of Pathology confirmed the diagnosis of angiosarcoma, either primary or metastatic in origin (Fig 2 and 3).

Postoperatively, the patient continued to deteriorate, developing diffuse intravascular clotting, progressive hypoxemia requiring mechanical ventilation, and hypotension refractory to pressors. She died two days after the operation.

DISCUSSION

Diffuse alveolar hemorrhage is associated with many clinical disorders and is an entity that has been extensively reviewed.1 Primary pulmonary angiosarcoma, a rare tumor usually presenting as a lobulated hilar mass,5 has been described once before as a cause of alveolar hemorrhage.6 Angiosarcoma arising at postirradiation sites is a previously described phenomenon, dating to 1904.3 The majority of cases occurred in the abdominal wall, postirradiation for pelvic tumors. Angiosarcoma arose eight to 42 years posttherapy, with survival one and one-half months to one year postdiagnosis in patients with known follow-up. Angiosar-
Angiosarcoma of the Heart

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A 23-year-old man died from the pulmonary manifestations of cardiac angiosarcoma. The absence of all cardiac signs and symptoms was an unusual feature. The clinical outcome was rapidly fatal. Apparently, the presence of cardiac symptoms in a patient with primary cardiac angiosarcoma is not obligatory.

Angiosarcoma of the heart is a disease rarely diagnosed before death. Although it is the most common malignant primary cardiac tumor, its rare occurrence probably leads to a low index of suspicion. However, clinical symptoms of the disease are reported to be remarkably consistent. In the series described by Strohl, 86 percent of the patients presented with symptoms of pericardial disease or right-sided congestive heart failure caused by obstruction of the vena cava or obstruction of the outflow tract of the right ventricle. The right atrium is by far the most common site of origin of the disease. Metastases can be found in lungs, lymph nodes and liver.

We describe a patient without any cardiac symptoms, in whom angiosarcoma was diagnosed by means of an open lung biopsy. At postmortem, a primary tumor of the right atrium was found. The patient died of intractable respiratory failure.

CASE REPORT

A 23-year-old man was in good health until October, 1986, when he presented with hemoptysis. He had not noted any shortness of breath, chest pain, fatigue, weight loss, cough or fever. The patient had not been involved with IV drug abuse, nor did he have a homosexual history or association with prostitutes. He had not received blood products of any kind. Physical examination revealed a healthy-looking young man. Blood pressure was 150/75 mm Hg, without pulsus paradoxus; rectal temperature was 36.6°C. There was no elevation in jugular venous pressure. The heart rhythm was regular; no murmur or friction sound was heard. Fine crackles were heard over the base of the left lung. The liver and the spleen were not enlarged. No clubbing, cyanosis or peripheral edema was noted. Examination of the skin was unremarkable.

The erythrocyte sedimentation rate was 4 mm/h; hemoglobin was 16.3 g/100 ml. Blood urea nitrogen was 16.6 mg/100 ml; serum creatinine was 1.2 mg/100 ml. The findings from urinalysis were normal. Antinuclear antibodies, antibodies against DNA and antibodies against glomerular basement membrane: were not detected. Arterial blood gas levels on room air were: PaO₂ 89 mm Hg; PaCO₂ 35 mm Hg; oxygen saturation, 96 percent. There was a decrease of arterial PaO₂ to 63 mm Hg during physical exercise. Results of putnum smears were negative; no acid-fast bacilli were seen.

A chest x-ray film (Fig 1) showed bilateral nodular infiltrates. The heart was not enlarged and the electrocardiogram was normal. Bronchoscopic examination showed blood in the basal airways. Biopsy findings were normal except for an increase in the number of hemosiderin-laden macrophages. A tentative diagnosis of idiopathic pulmonary hemosiderosis was made.

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