shows conduction delay within the bundle of His and proximal bundle branches with normal configuration of QRS complexes. Localization of the block within the atrioventricular node would have been anticipated had only the standard ECG been available. The impulse propagation through the atrioventricular node was normal, as was reflected by the normal LRA-H conduction.

Involvement of the distal conduction system has usually been considered to be uncommon in patients with inferior infarction.9,10 The blood supply to most of the human His bundle and its proximal branches is dual in origin. Anatomically, this can best be explained on the basis of transient, but unequal, ischemia of the His bundle selectively inhibiting conduction to the distal His bundle and its proximal branches.11 The atrioventricular node may be ischemic but survives because of its relatively low oxygen requirement compared to those of the contractile systems.12 It has also been suggested that release of potassium from the surrounding infarct tissue or of lysosomal enzymes from the polymorphonuclear leukocytic infiltrate may also play a part.9,18

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REFERENCES

Unusual Roentgenographic Manifestation of Pneumocystis carinii Pneumonia

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An immunologically deficient patient had two large nodular densities on the chest x-ray film. On autopsy, large solid accumulations and diffuse pneumonitis with Pneumocystis carinii were found. This represents an unusual manifestation of Pneumocystis carinii.

Pneumocystis carinii pneumonia is an infection that becomes apparent clinically in patients with impaired host defenses. Roentgenographic abnormalities may precede symptoms by months and usually consist of soft infiltrates spreading from the hilum to the base and later to the entire lung. Rarely, small nodular densities have been reported. It is the purpose of this presentation to report a case of Pneumocystis carinii infection manifested as diffuse pneumonitis and solid accumulation of the organism. This is an unusual radiographic manifestation of the organism.

CASE REPORT

This 28-year-old woman had systemic lupus erythematosus diagnosed at the University District Hospital in 1974. Since the patient had severe renal impairment, she began to receive hemodialysis three times weekly. The patient was being observed while receiving 100 mg of cyclophosphamide (Cytoxan) and 50 mg of prednisone daily.

Twelve hours prior to admission, she developed severe pleuritic chest pain accompanied by shortness of breath, fever, and palpitations. There was no history of cough or hemoptysis. Upon admission the patient had blood pressure of 150/70 mm Hg, pulse 120 beats per minute, temperature 37.7°C (99.9°F) and a respiration rate of 26/min. Findings from physical examination were unremarkable, except for a prominent butterfly rash and an arteriovenous fistula in the left thigh, which was surgically induced to be used for hemodialysis. Cyclophosphamide therapy was discontinued. The patient had marked leukopenia and thrombocytopenia, and a bone-marrow aspiration showed a reactive marrow. The findings from a lung scan and chest x-ray film were normal.

A reactivation of the systemic lupus erythematosus was considered, and the prednisone dosage was increased to 100 mg daily. The high fever, pleuritic chest pain, and palpitations persisted. Therapy with 100 mg of gentamicin sulfate (Garamycin) injected intramuscularly every 72 hours was started. Blood, sputum, and urine cultures for aerobic and anaerobic organisms were reported as negative. Therapy did not improve the patient's condition, and the prednisone dosage was increased to 150 mg for 10 days. The patient had a fever of 39°C (102°F), a blood pressure of 120/70 mm Hg, a pulse of 120/min, and a respiratory rate of 26/min.

The patient had received 100 mg of prednisone daily. The high fever, pleuritic chest pain, and palpitations were observed. The patient had a fever of 39°C (102°F), a blood pressure of 120/70 mm Hg, a pulse of 120/min, and a respiratory rate of 26/min.

The patient died 48 hours after admission. At autopsy, the lungs showed diffuse pneumonitis with large nodular densities and solid accumulations. The organism was identified as Pneumocystis carinii.
The patient improved and became afebrile.

Two weeks later, the patient again developed pleuritic chest pain, mostly on her right side, accompanied by higher fever, shortness of breath, and bloody sputum. A chest x-ray film was reported as normal. Therapy with 1 gm of cephalothin (Keilin) sodium every four hours was added to the gentamicin regimen.

Ten days later, a chest x-ray film revealed two large densities, one measuring 7 cm in diameter in the left upper lobe and another smaller (3 cm in diameter) round density in the left lower lobe (Fig 1). Again, blood, urine, and sputum cultures for fungi and aerobic and anaerobic organisms were reported as negative. The patient continued to deteriorate, and four days later she sustained a cardiorespiratory arrest and died.

Postmortem studies revealed the classic changes of systemic lupus erythematosus. The lungs showed diffuse bilateral pneumonitis with Pneumocystis carinii and cytomegalovirus organisms. The two large densities seen in the chest x-ray film were composed of solid masses of Pneumocystis carinii (Fig 2). Cytomegalovirus organisms were also found in the adrenal glands, pancreas, and kidneys.

**DISCUSSION**

This particular case represents an unusual radiographic manifestation of Pneumocystis carinii pneumonia.1,2 Usually, Pneumocystis infections appear as diffuse infiltrates; and rarely, small nodular densities have been reported. Recently, localized nodular densities representing Pneumocystis carinii were reported by Steigbigel and Cross.3 Our patient, however, had much larger nodular densities, which are very unusual for Pneumocystis carinii.

As is frequently seen, cytomegalovirus organisms were also isolated in this patient post mortem. Even though cytomegalovirus organisms may present as diffuse nodular shadows usually up to 2 mm in diameter, the large size of the densities and the overwhelming presence of Pneumocystis carinii in the lesions led us to conclude that it was Pneumocystis carinii that was responsible for the radiographic manifestations.

It is interesting to see the protean manifestations of Pneumocystis in the same patient. Postmortem, the lungs showed diffuse pneumonitis and solid accumulation of the organism, making it harder to suspect the diagnosis. Another puzzling aspect of this strange case is the rapid development of the solid masses in the left lung.

We think, as others, that aggressive diagnostic studies should be performed in immunologically deficient patients who present with unusual chest x-ray film findings,4 because a wide gamut of opportunistic organisms have been described in such patients, as well as the development of neoplasms.5,6 A precise diagnosis is mandatory because of the specific treatment required in...
each case. Among the many possibilities, the presence of Pneumocystis organisms should always be suspected and searched for, since it is not uncommon in these types of patients.

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Cardiac Motion in Total Electrical Alternans*

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Gross pendular motion of the heart at half the heart rate was observed during cardiac catheterization and pericardiectomy in a patient with massive pericardial effusion and electrical alternans in the electrocardiogram. These observations support the hypothesis that total electrical alternans in pericardial effusion is a result of alternate change in cardiac position.

Electrical alternans, that is, alternate change in the P, QRS, or T waves of the electrocardiogram, has been reported most often in patients with pericardial effusion or tamponade.1,2 In this report a patient with massive pericardial effusion and total electrical alternans demonstrated gross pendular motion of the heart during cardiac catheterization and pericardiectomy.

CASE REPORT

A 41-year-old Puerto Rican woman was admitted to the hospital because of shortness of breath after one week of dry cough and fever. Her blood pressure was 110/68 mm Hg, and her pulse was 90 beats per minute, with 23 respirations per minute and a temperature of 38.0°C (100.4°F). There was marked distention of the veins in the neck, hepatomegaly, and distant heart sounds. The ECG showed normal sinus rhythm and total electrical alternans (Fig 1). The chest x-ray film and echocardiogram were compatible with massive pericardial effusion. The white blood cell count was 8,200/mm³, with 18 percent lymphocytes. The findings from anti-streptolysin O titer, antinuclear antibody, latex fixation test, lupus erythematosus preparation, and skin test with purified protein derivative of tuberculin were negative. There was no rise in antibody titer to Coccabide B type 1-6 viruses, toxoplasmosis, or cytomegalovirus. The findings from pleural, liver, and bone biopsies were normal.

The patient's condition deteriorated despite treatment with salicylates and digoxin. During cardiac catheterization, the heart was observed to move in a pendular anteroposterior direction at a rate one-half of the heart rate. Each extreme of the swing correlated with total electrical alternans in the ECG. Thoracotomy for pericardial-window formation was performed, during which exaggerated cardiac motion at half the pulse rate was noted. After 1,500 ml of serosanguinous fluid was removed, both the electrical alternans and the exaggerated motion ceased. Microscopically the pericardium showed only acute inflammation. Pericardial fluid failed to grow bacteria, L-forms, acid-fast organisms, or fungi. Cytologic findings were normal.

The patient improved rapidly and at ten months after surgery remained clinically well with normal heart size on the x-ray film and normal ECG.

DISCUSSION

In 1955, McGregor and Baskind1 proposed that electrical alternans might be caused by alternate change in cardiac position. This hypothesis received support in 1966 when Feigenbaum and associates8 demonstrated, by means of echocardiography, gross anteroposterior cardiac motion at half the heart rate in two patients with pericardial effusion and electrical alternans. Several additional case reports have confirmed such motion using

![Figure 1. Total electrical alternans.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/20978/ on 06/27/2017)