Alveolar Cell Carcinoma Associated with Rheumatoid Nodule*

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We report a young woman with rheumatoid arthritis whose solitary pulmonary lesion was composed of an alveolar cell carcinoma in intimate association with an apparent rheumatoid nodule. Rheumatoid disease is thus added to a growing and diverse list of disorders wherein pulmonary fibrosis can give rise to this neoplasm. A solitary lung nodule in a patient with rheumatoid arthritis cannot be categorically regarded as benign.

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One of the well recognized extra-articular manifestations of rheumatoid disease is the pulmonary nodule. To our knowledge, this is the first reported case wherein an alveolar cell carcinoma was intimately associated with an apparent rheumatoid nodule.

CASE REPORT

A 44-year-old housewife had been in good health until June, 1969, when she developed episodic pain and swelling in the wrists and small joints of her hands. She had experienced morning gelling lasting an hour with mild generalized fibrositis the remainder of the day. By January, 1970, her symptoms had become constant and progressive with involvement of the knees. In July, 1970, she was hospitalized for treatment. The systemic review was negative. Both parents had died of cancer.

The physical examination was normal with the exception of her joints. The findings included synovial thickening of the wrists, knees, and second and third metacarpophalangeal joints bilaterally; tenderness and swelling of the knees and the second, third, and fourth proximal interphalangeal joints of the fingers; and a Baker's cyst behind the left knee. The metatarsal heads were tender with associated soft tissue swelling. There were no subcutaneous nodules. Prior medications had included mepromazine, phenylbutazone and indomethacin, all of which had failed to provide symptomatic benefit. She had never taken corticosteroids or regular doses of salicylates.

The latex flocculation test was positive with a titer of 1:2560, and the erythrocyte sedimentation rate was 32 mm/hr (Westergren). PPD intermediate strength and histoplasmin 1:100 skin tests produced no induration.

Chest roentgenograms revealed a solitary, noncalcified, pulmonary nodule 1.5 cm in diameter and contained central, firm, dry, white areas surrounded by thin, soft, trabeculated lung tissue. The re-

Figure 1. Close-up view of chest roentgenogram showing nodule in right upper lung.
mainder of the right lower lobe was subsequently removed and appeared normal.

Histologically, the biopsy specimen contained a central granulomatous inflammation with eosinophilic necrosis (Fig 2). A suggestion of radial arrangement of histiocytes was present. Surrounding the inflammatory reaction the alveolar walls were lined by large epithelial cells containing hyperchromatic nuclei which varied markedly in size and shape. More peripherally, the alveolar wall lining abruptly changed to normal. Stains for acid-fast bacilli and fungi were negative. (Because frozen sections had shown malignancy, cultures of the specimen were not done.) The histologic findings were interpreted as necrotizing granulomatous inflammation compatible with a rheumatoid nodule (Fig 3) with an adjacent alveolar cell carcinoma (Fig 4).

There is general agreement that the granulomatous reaction found in rheumatoid arthritis is not specific for that disease. However, the absence of clinical or histologic evidence of other causes of granulomatous inflammation in the presence of a firm diagnosis of rheumatoid arthritis makes the diagnosis of rheumatoid nodule tenable. Indeed, in a different location—eg, about the elbow—similar changes would be readily interpreted as characteristic of a rheumatoid nodule.

Figure 2. Photomicrograph of pulmonary nodule. The rheumatoid nodule on the left is immediately adjacent to an alveolar cell carcinoma (H and E stain; original magnification × 15).

Figure 3. High power view of area labelled A in Figure 2 showing rheumatoid nodule (H and E stain; original magnification × 100).

Figure 4. High power view of area labelled B in Figure 2 showing alveolar cell carcinoma (H and E stain; original magnification × 250).

Following discharge from the hospital, the patient took aspirin to maintain therapeutic plasma salicylate levels and became asymptomatic. Twelve months postoperation there was no evidence of recurrent cancer or objective signs of rheumatoid disease.

Discussion

This case adds rheumatoid disease to the growing list of conditions which may predispose to the development of alveolar cell carcinoma. Indeed, the mere presence of chronic parenchymal inflammation and fibrosis, whatever the etiology, seems to carry with it the potential, admittedly rare, for the malignant transformation of regenerating alveolar or bronchiolar epithelial cells. Hence, alveolar cell carcinoma has been clearly documented as arising in intimate association with fibrosis and/or chronic inflammation due to such diverse processes as pulmonary infarcts, bronchiectasis, tuberculosis, chronic organizing pneumonia, chronic lung abscess, lipid pneumonia, scleroderma, and diffuse interstitial fibrosis of the Hamman-Rich type. Such coincidences, sufficiently convincing to give rise to the term “peripheral scar cancer,” have suggested a parallel with primary hepato-biliary malignancies which also develop in a similar environment of parenchymal injury and regeneration.

Although a rheumatic syndrome simulating rheumatoid arthritis clinically and serologically can occur as a feature of various malignancies, especially those arising in the lungs or kidneys, and subside with their surgical removal, there is as yet no convincing evidence of an increased incidence of cancer in rheumatoid disease.

Unfortunately, when one looks to establishing guidelines for management of solitary pulmonary nodules in patients with rheumatoid disease, the natural history of these nodules is that they spontaneously enlarge, regress, cavitate, or multiply on serial chest roentgenograms. Clearly, experience indicates that very few of these lesions will be associated with a malignancy. Nonetheless, the findings of a solitary pulmonary nodule, particularly a recent or enlarging one, in a patient with...
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rheumatoid arthritis carries no reassurance that the process is benign. Indeed, as in nonrheumatoid patients, such nodules should be excised both for diagnosis and early treatment of a possible carcinoma of the lung.

REFERENCES


Bullet Embolus of the Heart*

Ralph J. Lewis, M.D., F.C.C.P.* and
Philip J. Kunderman, M.D., F.C.C.P.*

A 27-year-old man survived a documented bullet wound of the left atrium with embolization to the right femoral artery. Thoracotomy with plication of the atrial wound and right femoral embolectomy were required. The patient had an uneventful recovery. Survey of the literature failed to reveal a similarly documented case.

Intracavitary bullet wounds of the heart are rarely reported, since few patients survive long enough to reach a hospital. According to statistics from the New York Medical Examiner's Office, only 30 percent of all patients with heart wounds are living when first seen in the emergency room and in only 40 percent of these cases can therapy be instituted before death occurs.

Garzon et al reviewed the literature and found 29 cases of bullet embolus. There was no evidence to indicate that the bullet had initially entered the heart in any of the nine survivors, but of 19 patients who died and were autopsied, only two revealed a bullet wound of the heart with peripheral embolization.

This case is unusual, therefore, and of particular interest since an intracavitary bullet wound of the heart with peripheral embolization has been well documented in a patient who survived.

CASE REPORT

While stalking a deer, this 27-year-old man noted a sharp pain in the left deltoid area. Blood was immediately noted on his clothing and he fell to the ground calling for help. The patient lay there for one-half hour and since his cries went unanswered, arose and walked to his house which was one mile away. Upon arriving home, he was immediately taken to a physician where x-ray films approximately one hour following injury revealed a metallic fragment within the heart (Fig 1). His general condition was stable at this time and he was immediately sent to St. Peter's General Hospital.

In the emergency room the patient was alert, responsive, and without any evidence of shock. Blood pressure was 120/80; pulse, 80 and regular. Skin was warm and dry. A 1 cm puncture wound was present 3 cm below the left acromion. Lungs were clear. Heart had a normal sinus rhythm without murmurs. Abdomen was soft; no organs or masses were palpable. Pulses were present and equal in all extremities. Urinalysis: negative; blood chemistries: normal; ECG: normal sinus rhythm, normal tracing.

A second chest x-ray film six hours following injury revealed a linear infiltrate in the left lung field, but no foreign body was noted. Fluoroscopy at this time showed a pulsating bullet at L-2 (Fig 2) and although angiocardiology revealed no abnormalities of the heart, a partial obstruction of the right femoral artery was demonstrated.

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FIGURE 1. Chest x-ray film reveals metallic fragment within the heart.