Sarcoidosis presenting as multiple pulmonary nodules and nephrotic syndrome

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Summary: A 56 year old man presented with thrombophlebitis, nephrotic range proteinuria and multiple pulmonary nodules. A renal biopsy showed membranous glomerulonephritis, and after a thoracotomy a diagnosis of sarcoidosis was established.

A pulmonary nodular pattern is unusual in sarcoidosis and is often mistaken for malignant disease. The association of this type of pulmonary involvement and membranous glomerulonephritis as the presenting form of sarcoidosis has not previously been described.

Introduction

Sarcoidosis is a disease that involves multiple systems and presents a variety of clinical syndromes (Mayock *et al.*, 1963).

The chest X-ray of patients with sarcoidosis can be normal, show hilar lymphadenopathy or diffuse parenchymal involvement (Felson, 1959). Multiple pulmonary nodules are infrequently seen (Felson, 1959; Sharma *et al.*, 1973; McCord & Hyman, 1952).

Renal involvement in sarcoidosis is also uncommon and usually attributed to calcium nephropathy, sarcoid interstitial nephritis (direct granulomatous involvement) or associated glomerulonephritis, usually of the membranous type (Muther *et al.*, 1981).

We report here an unusual case of a patient with sarcoidosis who presented initially with multiple pulmonary nodules and membranous glomerulonephritis. To our knowledge there are no previous reports of this association as the presenting form of sarcoidosis.

Case report

A 56 year old man, who in his twenties worked as a miner, was considered disabled because of asthma and joint stiffness that improved with steroids.

In 1984 he was admitted to the hospital with thrombophlebitis of his left leg. Proteinuria (2 g/24 h) was present and serum transaminases were all

elevated. Multiple pulmonary nodules were seen on the chest X-ray (Figure 1). Arterial blood gases were normal and a ventilation-perfusion lung scan ruled out pulmonary embolus. A liver and spleen scan disclosed a uniformly enlarged liver and increased concentration of the radionuclide. The patient was treated with heparin and was discharged with a presumptive diagnosis of metastatic lung neoplasm.

One month later he was readmitted to the hospital because of fever. The chest X-ray showed a right basal pneumonia and the same nodular pattern. Laboratory tests showed a urinary protein excretion of 4 g/24 h. Serum albumin was 25 g/dl and serum creatinine was 80 mmol/dl. Circulating immune complexes (polyethylene-glycol-ELISA) and angiotensin converting enzyme were both normal.

Renal biopsy showed membranous glomerulonephritis. Granular and focal deposits of IgG, IgA and C3 in the basement membrane were demonstrated by immunofluorescence. An open pulmonary biopsy showed granulomas with epithelioid giant cells and no caseation. Special stains showed no acid-fast bacilli. A liver biopsy was normal.

A diagnosis of sarcoidosis was established and the patient was placed on prednisone 60 mg/day. The pulmonary nodules cleared after 3 months' treatment but the nephrotic syndrome was unchanged.

Discussion

The intrathoracic presentation of sarcoidosis has been

Figure 1 Chest X-ray showing multiple pulmonary nodules.

divided into four stages: (I) Bilateral hilar and right paratracheal lymph node enlargement; (II) persistence of enlarged lymph nodes with concomitant pulmonary infiltration; (III) parenchymal involvement with no identifiable mediastinal adenopathy, and (IV) fibrotic lungs with bullae (Sharma *et al.*, 1973; Kirks *et al.*, 1973). The parenchymal infiltrations seen in stages II and III appear in a variety of patterns. The pulmonary densities are almost bilateral and may be reticulo-nodular or confluent, or may present as multiple large densities simulating metastatic carcinoma (Littner *et al.*, 1977).

Multiple pulmonary nodules are fairly uncommon in sarcoidosis (Sharma *et al.*, 1973). The first case was reported in 1952 by McCord & Hyman. Since then a few reports of this X-ray pattern have been published usually in women and blacks (Felson, 1959; Sharma *et al.*, 1973; McCord & Hyman, 1952; Kirks *et al.*, 1973; Littner *et al.*, 1977; Dhakhwa *et al.*, 1976). Its frequency in the different series varies from 0 to 4% (Mayock *et al.*, 1963; Sharma *et al.*, 1973). This pattern of lung involvement can be mistaken for malignant disease, leading to unnecessary explorations searching for neoplasm as occurred in our patient. Against the diagnosis of malignant disease are the usually good general condition of the patients despite the extensive lung involvement and the slow progression of the pulmonary lesions (Felson, 1959).

In the first cases reported, tissue biopsy for histological diagnosis was obtained from superficial lymph nodes and from the lungs, by means of open lung biopsy (Felson, 1959; McCord *et al.*, 1952). In the more recent cases reported, transbronchial lung biopsy has been the diagnostic method of choice (Dhakhwa *et al.*, 1976). In our patient neither transbronchial nor percutaneous lung biopsy were successful and an open lung biopsy was carried out.

The renal lesion in this patient was a membranous glomerulonephritis. This is the most common type of glomerular involvement in sarcoidosis (McCoy & Tisher, 1972; Mariani *et al.*, 1978; Muther *et al.*, 1981; Kent Taylor *et al.*, 1979), and it has been attributed to immunity alterations in this disease. The reason for the preference for membranous lesion in sarcoidosis is unknown (Taylor *et al.*, 1982).

The corticosteroid resistance of sarcoidosis glomerulonephritis shown by our patient has been reported by several authors (Muther *et al.*, 1981; McCoy *et al.*, 1972; Taylor *et al.*, 1982).

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