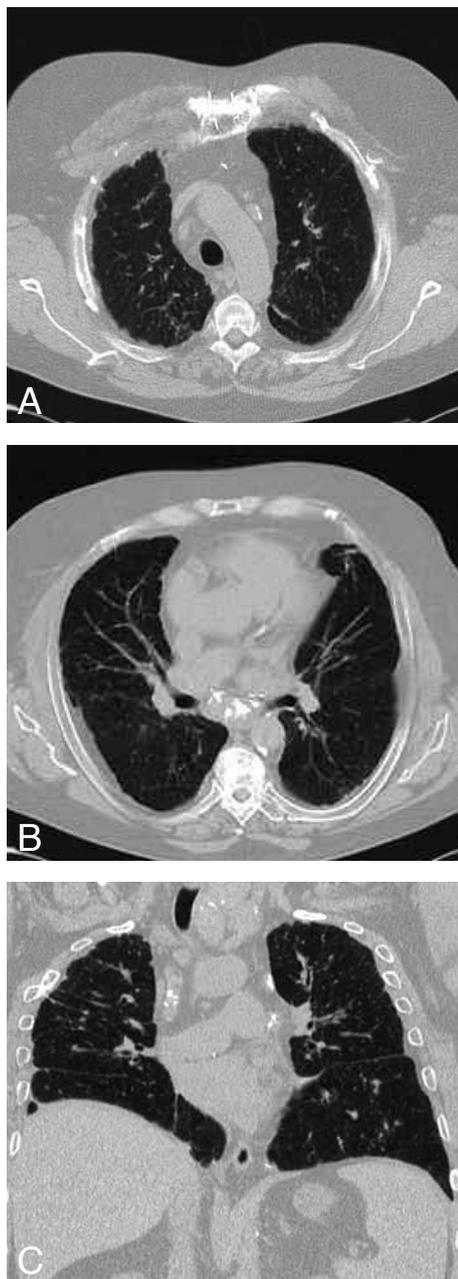


## IMAGES IN CLINICAL RADIOLOGY



### *Recurrent sarcoidosis after lung transplantation*

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A 43-year-old man had undergone bilateral lung transplantation 2 years previously for sarcoidosis stage 4 fibrocystic disease.

The patient feels well, without significant symptoms, sputa, cough or fever. A control spirometry however showed a highly obstructive, mildly restrictive pulmonary function, with a very low diffusion capacity.

Laboratory results revealed a CRP of 6.4 mg/l (nl  $\leq$  5 mg/l), ferritin of 669  $\mu$ g/l (nl 200-400  $\mu$ g/l) and otherwise normal results. Ferritin is also an acute phase reactant, and in this case a significant elevation indicates an inflammatory state.

A high-resolution CT of the lungs was performed, which shows numerous centrilobular micronodules in a perilymphatic distribution pattern (subpleural, peribronchovascular), most pronounced in the upper lungs (axial images A, B and coronal image C).

Additional pulmonary biopsy revealed recurrence of sarcoidosis.

#### *Comment*

Lung transplantation (LTX) is an appropriate therapeutic option for patients with severe, fibrocystic pulmonary sarcoidosis refractory to medical therapy. Survival rates following LTX for sarcoidosis are generally comparable to other indications as lymphangioleiomyomatosis (LAM), Langerhans cell histiocytosis (LCH), talc granulomatosis, diffuse panbronchiolitis and pulmonary alveolar proteinosis. Timing of transplantation for patients with sarcoidosis is challenging because mortality rates are high (27 to 53%) among sarcoid patients awaiting LTX.

Recurrent sarcoidosis in the lung allografts can occur but does not affect survival or risk for complications.

In a review of the literature, Collins and al reported a frequency of recurrence among six centers of 35% (9 of 26 transplants), of which 2 patients presented with miliary nodules and 7 presented with a solitary pulmonary nodule. Recurrence of sarcoidosis has been reported as early as 2 weeks after transplantation and as late as two years after transplantation. That this disease recurs is not surprising since it is characterized by an augmented immune response, with activated lymphocytes and mononuclear phagocytes at sites of disease activity. It has been hypothesized that acute allograft rejection and evolution of sarcoid granulomas may share common immunopathogenetic mechanisms. Although the incidence of acute rejection does not differ between patients with and those without sarcoidosis, histologic grades of rejection are substantially more severe among patients with sarcoidosis.

Sarcoidosis is the most commonly reported disease to recur. The other diseases that frequently recur are LAM, LCH, diffuse granulomatosis, diffuse panbronchiolitis and pulmonary alveolar proteinosis.

Diagnosis is usually made by high-resolution CT of the lungs, followed by (transbronchial) biopsy. The clinically significant post-transplant

recurrences usually respond favorably to increased steroid therapy. In this patient the dose of cyclosporine was increased (to reach plasma levels of 200  $\mu$ g/L), because cyclosporine seems to be effective in both rejection and sarcoidosis. The daily dose of steroids was maintained (4 mg Medrol orally).

#### *Reference*

1. Collins J., Hartman M.J., Warner T.F., Müller N.L., Kazerooni E.A., McAdams H.P., Slone R.M., Parker L.A.: Frequency and CT findings of recurrent disease after lung transplantation. *Radiology*, 2001, 219: 503-509.

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