Treatment of a Solitary Pulmonary Sarcoidosis Mass by CT-Guided Direct Intralesional Injection of Corticosteroid*

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A case is reported of 38-year-old woman with chest pain attributed to a left lung sarcoidosis mass. The mass failed to diminish and symptoms failed to resolve with systemic corticosteroid therapy. CT-guided direct intralesional transthoracic injection of dexamethasone resulted in resolution of the patient’s symptoms and a dramatic reduction in the size of the mass within 2 months.

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A solitary lung mass is a very rare thoracic presentation of sarcoidosis.1 When pulmonary sarcoidosis requires treatment, systemic corticosteroids are usually effective.2 We report a case of pulmonary sarcoidosis that presented as a left lung mass that was refractory to treatment with oral corticosteroids. Transthoracic injection of corticosteroids under CT guidance was effective in reducing the size of the lung lesion and improving symptoms.

CASE REPORT

A 38-year-old white woman presented with left-sided anterior pleuritic chest pain (duration, 3 months). Pulmonary sarcoidosis had been diagnosed using bronchoscopy with transbronchial biopsy 5 years previously. She had no known history of beryllium exposure, and all bronchoscopy specimens were negative for mycobacteria and fungi. She had received treatment with prednisone for 3 years, and this had been discontinued 2 years prior to presentation. She had no history, signs, or symptoms of extrapulmonary sarcoidosis.

She was examined by her local physician, who requested a chest radiograph and prescribed antibiotics for presumed pneumonia. Neither her pleuritic chest pain nor the lung lesion on chest radiograph improved. She was then prescribed prednisone, 40 mg/d, without significant improvement over 2 months. She was referred to our medical center.

She denied fever, night sweats, weight loss, hemoptysis, or any constitutional symptoms. She remained active and in excellent physical condition, other than left-sided pleuritic chest pain. She had a lifelong nonsmoker, had no history of tuberculosis, and had several negative tuberculosis skin test results. Physical examination revealed a mildly obese, mildly cushingoid, healthy-appearing white woman. Vital signs were normal. There was tenderness to compression over the left anterior chest wall. Spirometry revealed a mild restrictive ventilatory defect that was unchanged from spirometry performed 4 years previously. A chest radiograph (Fig 1) showed a normal mediastinum and a left upper lung mass.

A transthoracic core needle biopsy of the left lung lesion revealed noncaseating granuloma. The specimen was negative for mycobacteria and fungi, and revealed no crystals by polarized light examination. The patient was prescribed prednisone, 60 mg/d for 1 month, without any significant change in the lung mass on chest radiograph; there was no improvement in her chest pain. Chest CT scan (Fig 2, top) revealed a 4 × 7-cm left upper lobe mass extending to the anterior pleural surface.

A CT fluoroscopy-guided transthoracic needle injection of dexamethasone, 32 mg, into the lesion was performed under local anesthesia and IV conscious sedation. Three 23-gauge needles were introduced percutaneously at three different levels of the lesion. Approximately 10 to 11 mg of dexamethasone were injected into each site. No significant pain or discomfort was produced by the injection. The patient was kept overnight in the hospital for observation. Six weeks later, the patient returned and noted significant improvement in her pleuritic chest pain. Repeat chest CT scan (Fig 2, bottom) performed 2 months after injection revealed a dramatic reduction in the size of the left lung lesion.

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FIGURE 1. Chest radiograph at presentation showing a left lung mass.
Pulmonary sarcoidosis often does not require treatment, as the disease often causes no symptoms or is self-limiting. When a decision is made to treat pulmonary sarcoidosis, corticosteroids are the primary agent recommended. Several randomized trials have shown that corticosteroids are superior to placebo in the short term (3 to 7 months) for acute pulmonary sarcoidosis, as measured by improved radiographic findings and spirometry. However, most randomized trials do not demonstrate a long-term benefit (≥5 years after therapy). Indeed a retrospective study suggested that treatment with corticosteroids may promote relapse of sarcoidosis.

Corticosteroid injections have been advocated for localized sarcoidosis lesions that do not require systemic therapy. The classical example of this is the use of corticosteroid injections for sarcoidosis skin lesions. Corticosteroid injections have also been successfully used for sarcoidosis of the palatine tonsils, larynx, and conjunctiva. A computer search of the medical literature failed to identify any other case of pulmonary sarcoidosis treated by direct injection of corticosteroid into the lesion. We suspect that such treatment will rarely be required because it is rare for pulmonary sarcoidosis to present as a solitary lesion; in these patients, treatment is usually not necessary because the pulmonary lesion rarely causes symptoms.

Although another diagnosis is possible in this case, we feel secure that the pulmonary lesion is sarcoidosis. A transthoracic core needle biopsy of the lesion revealed noncaseating granuloma that was negative for mycobacteria and fungi, and revealed no crystals by polarized light examination. It is rare but possible for carcinoma and sarcoidosis to coexist in a solitary pulmonary nodule, but we think this is unlikely given that the patient was a lifelong nonsmoker, was 38 years old, and had no other evidence of malignancy.

This case reiterates that intrallesional injection of corticosteroid may be useful for localized manifestations of sarcoidosis. Modern imaging guidance allows precise percutaneous needle placement within lesions even in remote locations, potentially expanding the use of the technique. Although such therapy is most useful for skin sarcoidosis, it seems to be effective in other circumstances, including rare instances of isolated symptomatic sarcoidosis pulmonary lesions.

**REFERENCES**


**FIGURE 2.** Top: Chest CT scan at presentation showing a 4×7-cm intraparenchymal left lung mass. Mediastinal lipomatisis, probably related to oral corticosteroid use, is also seen. Bottom: Chest CT scan 2 months after injection showing a marked reduction in the size of the lung mass to 2×3 cm.