months later disclosed the patient to be asymptomatic with normal hematologic and immunologic indices.

**Discussion**

Tocainide is an orally active analog of lidocaine utilized in the chronic management of symptomatic ventricular arrhythmias. Adverse effects from tocainide are common; gastrointestinal (nausea, vomiting) and neurologic (dizziness, tremor, paresthesia) side effects predominate and affect approximately 50 percent of patients and require termination of the drug in 15 percent. Neutropenia is a rare complication of tocainide, with an estimated incidence of 0.15 percent. Drug-associated neutropenia is a rare but potentially fatal complication for which three different mechanisms have been identified: (1) immunologically mediated leukocyte destruction in peripheral blood and bone marrow, (2) toxic depression of bone marrow precursors, and (3) development of a lupus-like illness. A previously reported case of fatal tocainide-associated neutropenia with bone marrow hypopcellularity and granulocytic precursor depression was presumed to be secondary to toxic bone marrow depression. Our case is the first report of tocainide-associated neutropenia in association with a lupus-like illness. Drugs previously implicated in the development of neutropenia in a lupus-like illness include hydralazine and procainamide. The neutropenia associated with a lupus-like illness is characterized by peripheral blood neutrophil depletion in association with persistence of granulocytic precursors in bone marrow. Clinically, a drug-induced lupus-like illness may be characterized by any one, or a combination of, the following: arthralgia, constitutional symptoms, dermatitis, hepatosplenomegaly, or pleuropERICarditis. Neurologic and renal complications, frequent manifestations with systemic lupus erythematosus, are infrequently observed with drug-induced lupus-like syndromes. Immunologically, drug-induced lupus is associated with a positive antinuclear antibody, in the absence of anti-DNA antibody, and with normal serum complement. Autoantibodies directed at red blood cells (positive Coombs' test) may be present.

In this case report, the development of neutropenia in association with clinical and immunologic features of lupus shortly after the introduction of oral tocainide suggests that tocainide was responsible for a drug-induced lupus syndrome. Tocainide-associated neutropenia is a rare but potentially serious complication. Surveillance of patients on tocainide for the development of neutropenia has been recommended by the marketing company.

**References**


**Pulmonary Sarcoidosis Associated with Leydig Cell Testicular Neoplasm**

Alberto Biglino, M.D.; Giuseppe Cariti, M.D.; Marina Musset, M.D.; and Paolo Giovannini, M.D.

The first case of association between Leydig cell testicular tumor and sarcoidosis is reported. From a review of the literature, this is the ninth case of association between a testicular tumor and Benign's disease. Lung biopsy should always be performed in patients with testicular cancer. When retroperitoneal lymph node involvement cannot be demonstrated in order to avoid unnecessary antineoplastic chemotherapy.

The association between neoplastic diseases and sarcoidosis is well known. Among many types of tumor, some testicular neoplasms have also been associated with the development of intrathoracic sarcoid lesions. We report here the first case of association between Leydig cell testicular tumor and biopsy-proven pulmonary sarcoidosis.

**Case Report**

A 33-year-old man came for observation in March, 1985 because of a moderate fever with exertional dyspnea and multiple bilateral opacities on chest roentgenogram (Fig 1). He was submitted in May, 1984 to a left orchiectomy at another hospital because of a painless mass, diagnosed as seminoma on frozen sections. However, the final diagnosis on routinely-processed sections was a Leydig cell tumor.

The slides were reviewed at the Department of Pathology, Paul-Brousse Hospital, Paris, where the diagnosis of a Leydig cell tumor was confirmed.

Levels of beta-HCG and alpha-fetoprotein were within normal limits, while serum angiotensin-converting enzyme was at the upper normal level. Chest roentgenogram taken at admission showed bilateral multiple lung infiltrates interpreted as metastases, while retroperitoneal lympangiomagram raised some doubts about lymph node involvement. For this reason, and considering that a small percentage of Leydig-cell tumors are indeed malignant, treatment with adriamycin (VP-16) and cisplatin was started. Other treatments with cisplatin, vindblastine and bleomycin followed in November, 1984 and January, 1985, with no appreciable change on chest roentgenogram. A second retroperitoneal lympangiomagram was normal.

At this point, lung biopsy (performed through a left thoracotomy) showed typical sarcoid tissue involving lung parenchyma free of metastatic tumor cells (Fig 2). We started treatment with prednisone 60 mg/day, gradually tapered to 25 mg and continued therapy for ten months.

Treatment was followed by a sharp improvement in both chest roentgenogram (Fig 3) and spirometric values, where the most striking effect was represented by the disappearance of diffusion troubles but persistence of moderate restriction. The patient is now in good health and chest roentgenogram is unchanged ten months after discontinuing steroid therapy.

*From the Institute of Infectious Diseases, University of Torino, Torino, Italy; and Service des Maladies Sanguines et Tumoraux, Hôpital Paul-Brousse, Paris, France.

Reprint requests: Dr. Biglino, Ospedale Amedeo di Savoia, C. s. Scivizzera 164, Torino, Italy 1-10149
Although Brincker and Wilbek,1 in a study performed on 2,544 patients, reported a significant association between neoplastic diseases and sarcoidosis, Romer2,3—after a careful reevaluation of the same population—demonstrated a total lack of significant linkage between the two events. For this reason it has been hypothesized that the appearance of sarcoid manifestations in neoplastic patients could be interpreted as sarcoid-like granulomatous reactions, possibly due to one or more of the following mechanisms: 1) release of tumor antigens or complex products by suffering cancer cells during chemotherapy or radiation treatment, 2) increased susceptibility to the hypothetic agent of sarcoidosis in neoplastic patients due to an immune system imbalance, or 3) nonspecific enhancement of granulomatous reactions elicited by antineoplastic drugs and/or radiation treatment.

The hypothesis of a sarcoid-like reaction has been strengthened by evidence, in most reported cases, of a simple mediastinal lymph node involvement sparing lung parenchyma.

In our case, on the contrary, lung tissue was deeply involved by sarcoid tissue, as is generally observed in Besnier's disease. Furthermore, a short course of prednisone therapy was followed by a nearly total regression of lung opacities and by a sharp improvement in spirometric parameters; such a result would have been hard to obtain in the case of lung metastases (albeit exceptional in Leydigoma).

In conclusion, our case enables us to rule out a simple sarcoid-like reaction confined to mediastinal lymph nodes, and points to the possibility that a neoplastic disease (particularly a testicular tumor) could be associated with the development of sarcoidosis. For this reason, lung biopsy should be included in the diagnostic workup of patients with testicular cancer and suspected lung metastases when a retroperitoneal lymph node involvement cannot be demonstrated.

ACKNOWLEDGMENTS: We are grateful to Prof. Alessandro Tizzani, Institute of Urology, University of Torino, Italy, for critical contribution.

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