with preservation of normal QRS duration.

This case is unusual and interesting, in that the body surface ECG has provided evidence of delay in portions of the IV conduction system, rather than the more customary presence or absence of bundle branch block. It is also interesting that the electrocardiographic representation of pulmonary embolus was the normalization of a previously existing IV conduction defect.

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Superior Vena Cava Obstruction Due to Sarcoidosis*
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Obstruction of the superior vena cava due to sarcoidosis is described and to the best of our knowledge has not previously been reported. Although the patient did not have the clinical manifestations of superior vena caval syndrome the obstruction is demonstrated by a superior vena cavaogram. The obstructing mediastinal mass regressed with therapy.

Superior vena caval obstruction due to an aortic aneurysm was first reported by William Hunter in 1757, and subsequently many varying etiologies for this entity have been described. Our purpose is to describe a case of superior vena caval obstruction due to sarcoidosis which has not been previously reported as a causative agent.

CASE REPORT
A 24-year-old Negro woman was admitted to the Los Angeles County-University of Southern California Medical Center with pleuritic-type chest pain and a nonproductive hacking cough of approximately two weeks' duration. The patient stated that she had a mild fever and also had a seven pound weight loss. Except for a few small palpable cervical and supraclavicular nodes the physical examination findings were essentially normal. There was no clinical evidence of superior vena caval obstruction. Intermediate and second strength purified protein derivative (PPD), histoplasmosis and coccidioidomycosis skin tests were nonreactive. The mumps antigen skin test was positive. No Kveim test was performed. The albumin/globulin ratio was 3.3 gm percent/4.1 gm percent. The protein electrophoresis studies showed some elevation of the β and γ globulins. Results of the remainder of the laboratory studies were normal. Repeated cultures for acid-fast bacilli and fungal diseases showed no growth. A right scalene node biopsy revealed noncaseating granulomatous tissue.

The chest roentgenogram with barium outlining the esophagus showed a large paratracheal mass in the middle mediastinum primarily on the right (Fig 1). A superior vena cavaogram revealed complete obstruction of the right innominate vein and almost complete obstruction of the superior vena cava and the left innominate vein. Collateral filling of the left jugular, transverse cervical, thyrocervical and vertebral veins was noted (Fig 2). No filling of the superficial veins of the trunk was present. An aortic arch study was normal. An esophagram did not reveal any varices.

The patient was discharged on a course of steroids, isoniazid (INH), and pyrodoxine therapy. The latter two drugs were added to the regimen until final studies for acid-fast bacilli were completed. A follow-up chest roentgenogram

![Figure 1. Large right paratracheal mass demonstrated in chest x-ray with barium outlining the esophagus.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/20934/ on 06/25/2017)
Obstruction of the superior vena cava usually presents clinically with dilatation of the cervical and superficial trunk veins. If collateral circulation is inadequate, ruddy cyanosis, edema of the face, arms and upper thorax occurs. There is also marked patient discomfort in the recumbent position. Headaches, dizziness and syncope may result from cerebral anoxia. Venous pressures in the upper extremities are usually elevated. Chest roentgenograms may reveal fullness of the soft tissues of the neck and supraclavicular regions and widening of the superior mediastinum. Pleural effusion may develop, and inferior rib notching has also been described.2,3

An esophagram may reveal esophageal varices, and radiographic confirmation of the obstruction may be obtained by opacification of the superior vena cava. Depending on the degree of obstruction, collateral pathways can develop in four systems, the azygos, internal mammary, lateral thoracic and vertebral veins, and specific veins of each pathway have been well documented.4

Multiple etiologies for superior vena cava obstruction have been described.2,3,5,6 These include bronchogenic carcinoma which is by far the most common cause of the obstruction. Other causes include: granulomatous disease, particularly histoplasmosis; sclerosing mediastinitis; mediastinal tumors, primary or secondary; thrombophlebitis of the great veins in the mediastinum; thromboses; pericardial disease; leukemia; mitral stenosis; aneurysms of the great vessels; trauma; and mediastinal emphysema.

Sarcoidosis is an additional etiology for superior vena caval obstruction not having been previously reported. Obstruction of the superior vena cava was unsuspected in the present case. The studies were performed to provide visualization of all of the mediastinal vascular structures and their relation to the mass.

**REFERENCES**


