Superior Vena Cava Scanning

Cecile Gaigals

Lynn Hospital, Lynn, Massachusetts

Superior vena cava obstruction may be caused by a variety of mediastinal abnormalities including bronchogenic carcinoma, malignant lymphoma, mediastinal fibrosarcoma, and carcinoma of the mediastinal nodes metastatic from the breast, thyroid, and pancreas. The syndrome of superior vena cava obstruction is characterized by the onset of facial edema, puffiness of the arms, increasing dyspnea, and a prominent venous pattern of the chest. The Radiation Therapy Department of Lynn Hospital has found scanning of the superior vena cava to be a useful procedure in assessing the extent of obstruction of the superior vena cava as well as a followup study after a course of ^{60}Co radiation therapy.

Procedure

The patient is placed in the supine position with the chest centered in the field of view of the Pho/Gamma HP camera. The camera is peaked, a complete pack of Polaroid film inserted into the holder, and the unit set on "manual" to allow for unlimited counting time. A bolus of 10 mCi of ^{99m}Tc-pertechnetate is rapidly injected intravenously into the right arm, and the camera is started immediately. Eight 2-sec exposures are made for each study.

Case Report

A 57-year-old man entered with cough, facial swelling, and dyspnea. On chest x-ray, the radiologists noted a widening of the superior mediastinum and tumor. Bronchoscopy revealed an anaplastic carcinoma. Figure 1 shows complete obstruction of the SVC up to 18 sec after injection. After 3,000 rads to the mediastinum the patient's swelling had gone down, he had minimal cough, and the scan showed normal venous flow (Fig. 2).

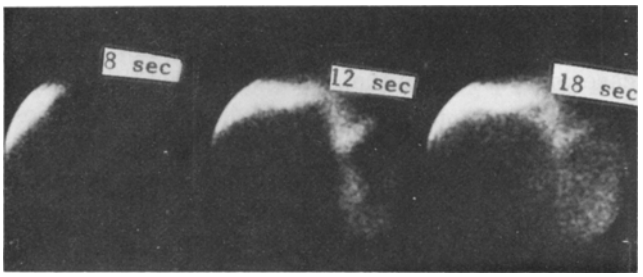

FIG. 1. Film at 8 sec shows hold up in flow in superior vena cava. Subsequent films at 12 and 18 sec show continued obstruction.

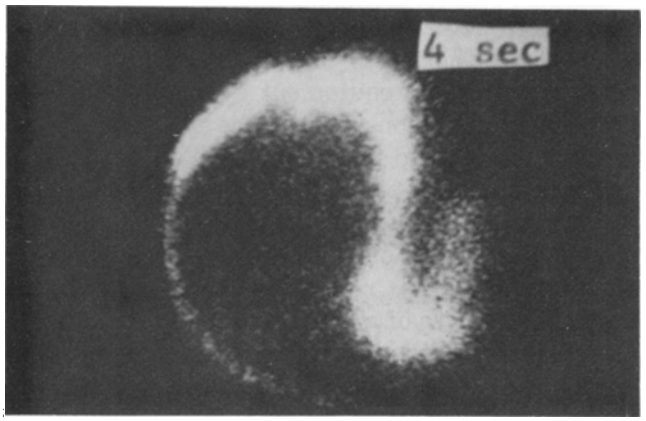

FIG. 2. Following course of radiation therapy, scan shows normal flow at 4 sec.

Conclusion

Approximately 20 superior vena cava scans were performed in the past year in conjunction with the Radiation Therapy Department. The procedure affords minimal discomfort to the patient and has proven reliable in assessing superior vena cava obstructions, remission of such obstructions, and development of collateral circulation by the venous system.

For reprints contact: Cecile Gaigals, Nuclear Medicine Dept., Lynn Hospital, Lynn, Mass. 01901