

ANEURYSMAL DILATATION OF THE SUPERIOR VENA CAVA

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Radioisotopic angiocardigraphy has been suggested by Bonte, et al (1) as a screening procedure in the evaluation of superior mediastinal lesions. We have had an opportunity to study a case of aneurysmal dilatation of the superior vena cava presenting as a superior mediastinal mass. This report emphasizes the importance of radioisotopic angiocardigraphy in the diagnosis of this and similar conditions.

CASE REPORT

The patient, HH, was a 66-year-old white male admitted in November 1970 for evaluation of a dense right perihilar infiltrate noted on chest roent-

genogram. He was admitted 19 years earlier (1951) for a similar finding. At that time exploratory thorotomy showed only fibrosis and a paratracheal mass which the surgeon described as a markedly dilated azygos vein.

Admission chest x-ray showed the perihilar density to be unchanged from previous examinations. The right superior mediastinal mass was noted to enlarge in the recumbent position and decrease in the upright position, characteristic of a venous mass (Fig. 1).

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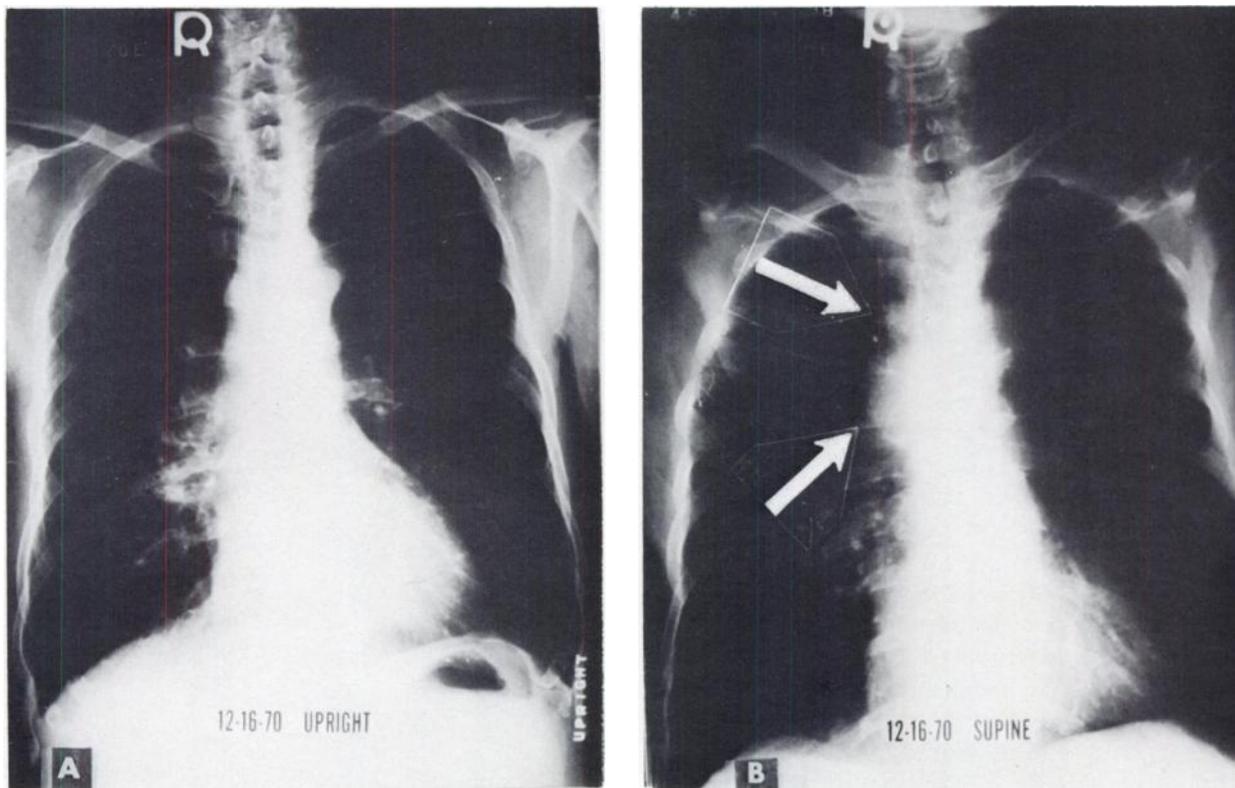


FIG. 1. Chest x-ray in upright (A) and recumbent position (B). Right superior mediastinal shadow is more prominent in recumbent position.

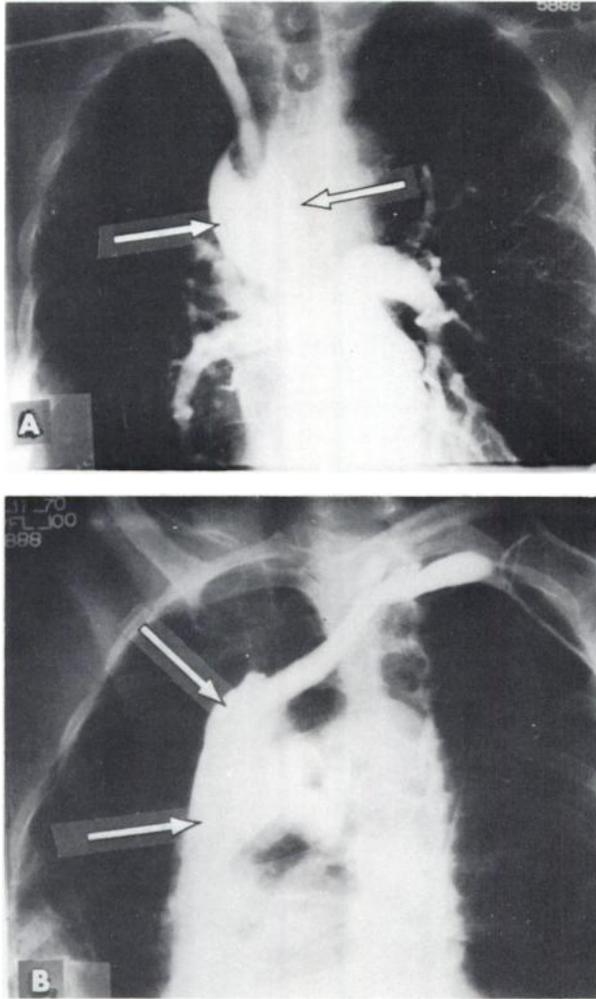


FIG. 2. In superior vena cavagrams anterior (A) and left posterior oblique (B) views demonstrate dilatation of superior vena cava.

A Valsalva maneuver also caused enlargement of the mass. However, the location and shape was not that expected of the azygos vein since it projected somewhat below the right mainstem bronchus and extended towards the superior mediastinum.

A superior vena cavagram and studies of the azygos system showed that the dilatation was related to the superior vena cava (Fig. 2). Interosseous injection of contrast medium in a rib showed extensive collateral venous filling without filling of the azygos vein in its distal portion.

The patient underwent radioisotopic angiographic studies. A commercial scintillation camera with low-energy collimator was used. The patient's anterior chest was positioned so that the proximal portion of the right subclavian vein, superior vena cava, and heart were in field of view. Ten millicuries of ^{99m}Tc-pertechnetate were rapidly injected intravenously as bolus. Rapid, serial, 2-sec scintiphotos

were obtained in sitting and supine positions. Dilatation of the superior vena cava was noted in the sitting position but was more prominent supine (Fig. 3). The abnormality becomes obvious when compared with a normal study (Fig. 4).

DISCUSSION

Although aneurysmal dilatations of the superior vena cava are infrequent, previous examples have been documented (2-5). This finding is usually thought to be of congenital origin. We have no reason to suspect differently in this patient. In the four previously reported cases, three went to surgery (2,4,5); the diagnosis was made at surgery in two of these cases (2,5). In one case (5) an endoscopic mediastinal biopsy was contemplated. The usually benign nature of this condition makes a low-risk diagnostic procedure desirable. These are available in the form of chest x-rays obtained in upright and supine positions and radioisotopic angiography. As previously noted (6), chest films in both supine and upright positions may help to suggest the venous

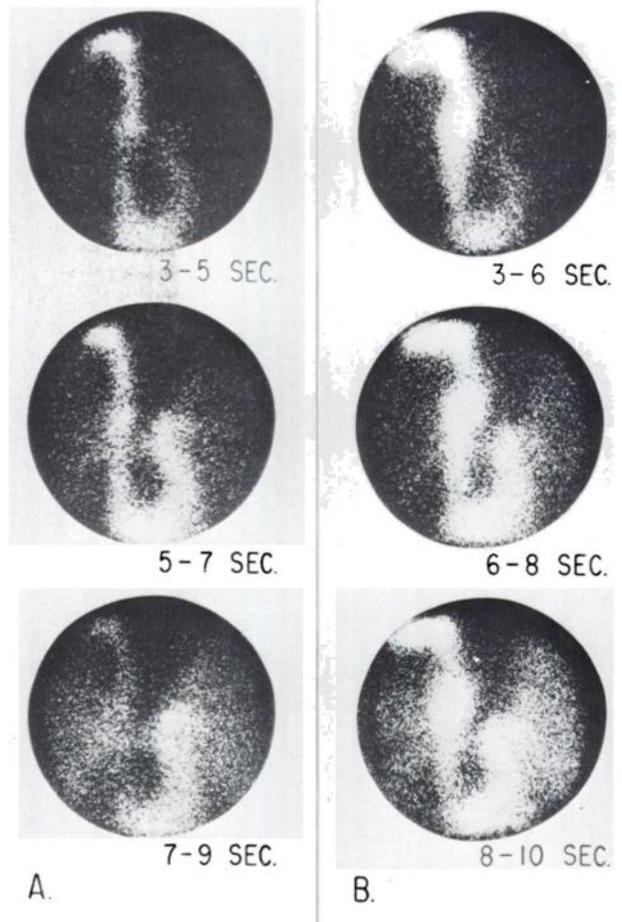


FIG. 3. In radioisotopic angiograms (anterior view) A shows upright and B recumbent position. Dilatation of superior vena cava is more prominent in recumbent position.

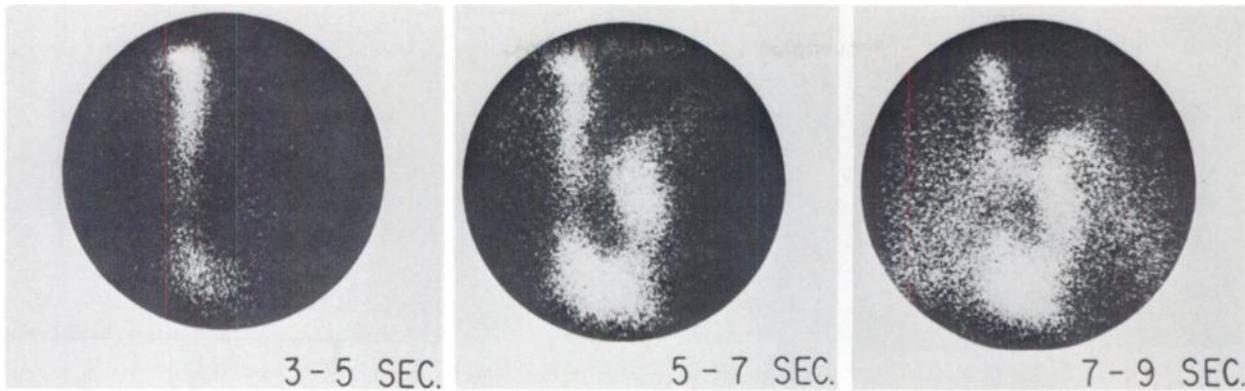


FIG. 4. Normal superior vena cava demonstrated by radioisotopic angiography (anterior view) in recumbent position.

nature of the mass by demonstrating a significant change in size and shape.

The focal dilatation, normal transit time, and absence of post dilatation narrowing or obstruction differentiate aneurysmal dilatation of the superior vena cava from dilatations caused by high venous pressure. In the presence of constrictive pericarditis or right heart failure there will be slowing of the transit of radioisotope through the vein. Any dilatation noted should be generalized rather than focal. Narrowing or obstruction of the superior vena cava as occurs in the superior vena cava syndrome can cause a preobstructive dilatation, but the obstruction or narrowed passage will be demonstrated by this technique.

Radioisotopic angiography is a procedure that requires no patient preparation, presents no further patient discomfort other than that offered by any venipuncture, and is completed in less than 5 min. This study may confirm the vascular nature of mediastinal or paramediastinal lesions. Venography may then be used to further evaluate lesions if necessary.

SUMMARY

A patient with a superior mediastinal mass, which varied with position, is presented. A diagnosis of

aneurysmal dilatation of the superior vena cava was confirmed by both radioisotopic angiography and conventional venography. This is the fifth case of aneurysmal dilatation of the superior vena cava to be reported in the English literature and is the first to be studied by radioisotopic angiography. We support the suggestion (1) that this technique may be used as a screening procedure in the evaluation of mediastinal and paramediastinal masses.

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