

# Radionuclide Angiography as an Adjunct in Diagnosis of Ruptured Aortic Aneurysm: Case Report

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**Radionuclide angiography is a rapid, safe, and reliable method of imaging aneurysms of the abdominal aorta in patients who are too ill to undergo contrast angiography or when time is a critical factor.**

J Nucl Med 17: 1065-1066, 1976

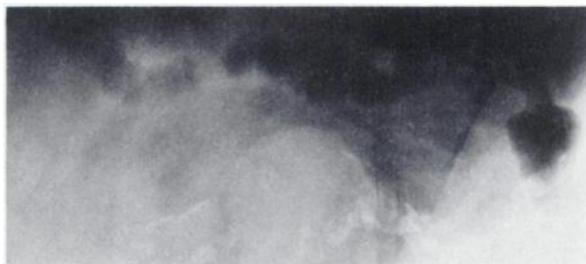
The use of large volumes of contrast for angiography may be contraindicated in a patient suffering hypotensive shock, but the patient's condition may require rapid diagnosis. Radionuclide angiography may be valuable in that type of situation (1).

## CASE REPORT

A 65-year-old man had persistent severe back pain for several hours, lost consciousness, and was admitted to the hospital. Physical examination revealed a pulsatile 30 × 30-cm mass in the left abdomen that extended from below the iliac crest to above the left costal margin and just across the midline. An abdominal roentgenogram revealed colonic deviation to the left, and an intravenous pyelogram (Fig. 1) and lateral recumbent view (Fig. 2) showed a large abdominal aortic aneurysm with deviation of the left kidney.



**FIG. 1.** Intravenous pyelogram showing abdominal aortic aneurysm and deviation of left kidney.



**FIG. 2.** Lateral recumbent view showing aortic aneurysm.

Because the patient was rapidly deteriorating, radionuclide aortography was immediately performed. Ten millicuries of sodium pertechnetate ( $^{99m}\text{Tc}$ ) was administered intravenously and sequential images were obtained at 2-sec intervals. The study revealed displacement of the left kidney to the left, and an area of increased activity in the region of the abdominal aorta was interpreted as a ruptured aortic aneurysm (Fig. 3). Surgery revealed a ruptured abdominal aortic aneurysm with a massive retroperitoneal hematoma. The aneurysm was resected and an aortobifemoral bypass graft inserted. At the conclusion of the procedure the patient had a systolic blood pressure of 50 mm Hg. His cardiovascular status deteriorated and he died approximately 1 hr after surgery.

Received May 4, 1976; revision accepted July 2, 1976.

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**FIG. 3.** Radionuclide aortogram, anterior view, showing area of increased radioactivity and deviation of left kidney.

#### DISCUSSION

The prognosis of ruptured aortic aneurysms has improved with advances in cardiovascular surgery (2), and for this reason early diagnosis is essential. Often, however, when the patient is admitted to the hospital, his condition does not permit one to spend the time required to perform conventional contrast angiography (2). In addition, the introduction of a large volume of hyperosmolar contrast material in a patient with a compromised intravascular volume and impaired renal function may be dangerous (3), and the vasodilatory effect of contrast material may also contribute to vascular collapse. Since most patients with arteriosclerotic aneurysms have other

vessels involved, catheterization of diseased vessels may be difficult.

By ultrasonography an abdominal aortic aneurysm is visualized as a sonolucent area, and thrombi in the aneurysm are seen as scattered echoes within the aneurysm. Rupture of an abdominal aneurysm may be suggested by the appearance of a sonolucent mass in the para-aortic region. Enlarged or matted lymphoid tissue or other sonolucent retroperitoneal masses in the para-aortic region, however, can result in loss of definition of the aortic wall and resemble a ruptured aneurysm (4). Ultrasonography provides no information concerning the blood flow within the aneurysm. The presence of large amounts of intestinal gas or residual barium from previous gastrointestinal examinations may render ultrasonographic images unsatisfactory for diagnostic purposes.

The small volume of radiopharmaceutical required for radionuclide angiography does not contribute to further vascular collapse. The time required for radionuclide angiography is brief (4), and information on the location and integrity of the aneurysm can be obtained. Since the radionuclide may be bound to human serum albumin, clots in an aneurysm may become labeled with the radionuclide, permitting re-scanning hours after injection to evaluate rupture or embolization (5).

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