Occult Intestinal Bleeding Imaged by Technetium-99m-HSA-D Radionuclide Angiography: A Case Report

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Radionuclide angiography (RNA) with ^{99m}Tc-diethylenetriamine pentaacetic acid human serum albumin (^{99m}Tc-HSA-D) is a sensitive screening method for diagnosing systemic perfusion abnormalities. Sometimes the results produce unexpected information. This information is helpful when considering the clinical perfusion pathophysiology. Recently, we were able to detect an intestinal bleeding lesion clearly for a patient by using RNA.

Key Words: technetium-99m-HSA-D; radionuclide angiography; intestinal bleeding

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There are many methods available to detect a bleeding lesion (*1–7*). Pharmaceuticals such as ^{99m}Tc-labeled red blood cells (*1*), methyl cellulose (*2*) and ^{99m}Tc-sodium pertechnetate (*7*). Radionuclide angiography (RNA) also has good sensitivity for identifying the location of intestinal bleeding. Meckel's diverticulum is one disease where localization of a bleeding site has been made with RNA (*5,6*).

Recently, we had an interesting case. Confirmation of intestinal bleeding, induced by an ulcer, was made with RNA. The bleeding location was confirmed by x-ray angiography after the radionuclide examination. We were able to detect an intestinal bleeding lesion clearly for this patient.

RNA should be a helpful and easy screening method for diagnosing perfusion abnormalities before confirmation of the original bleeding location and vessel by x-ray angiography.

IMAGING PROTOCOLS

Blood-Pool Scintigraphy

First 740 MBq ^{99m}Tc-HSA-D were injected intravenously. Blood-pool scintigraphy images were obtained as whole-body images using a high-resolution parallel-hole collimator. Two-minute scintigraphic images were obtained at 10, 20, 40 and 60 min postinjection.

X-Ray Computed Tomography

A dynamic x-ray CT study was performed with a 10-mm slice thickness. One hundred milliliters Omunipaque 300 (Iohexol; Daiichi Pharmaceutical, Tokyo, Japan) were perfused 3 ml/sec intravenously. Imaging was started at 40 sec after the start of contrast enhancement drug infusion.

Digital Subtraction Angiography

The superior mesenteric artery (SMA) was selected. Intra-arterial digital subtraction angiography (DSA) imaging was performed following 5 ml Omunipaque 350 (Iohexol; Daiichi Pharmaceutical, Tokyo, Japan) as a contrast enhancement drug.

CASE REPORT

The patient was an 88-yr-old man without known melena who was referred for study with ^{99m}Tc-HSA-D for possible intestinal bleeding lesions. There were no known intestinal lesions before the ^{99m}Tc-HSA-D scintigraphic imaging study. The patient had a negative upper gastrointestinal tract contrast-enhanced x-ray study before RNA.

Blood-pool images were obtained (Fig. 1). We could see abnormal accumulation in the right lower abdominal region on the images at 10 min. With time, this abnormal accumulation was distributed over the right upper abdominal region. The contrast enhancement x-ray CT image detected the ileocolic luminal enhancement at the lumbar level, but the bleeding lesions were not clear. The SMA DSA was done to confirm the diagnosis of bleeding from the ileum, as seen with the radionuclide examination (Fig. 2).

DISCUSSION

We report occult ileum bleeding located on the ileum perfused by SMA. It is sometimes difficult to detect the bleeding location and artery by x-ray angiography alone. Blood-pool radionuclide scintigraphy is a method that helps localize the

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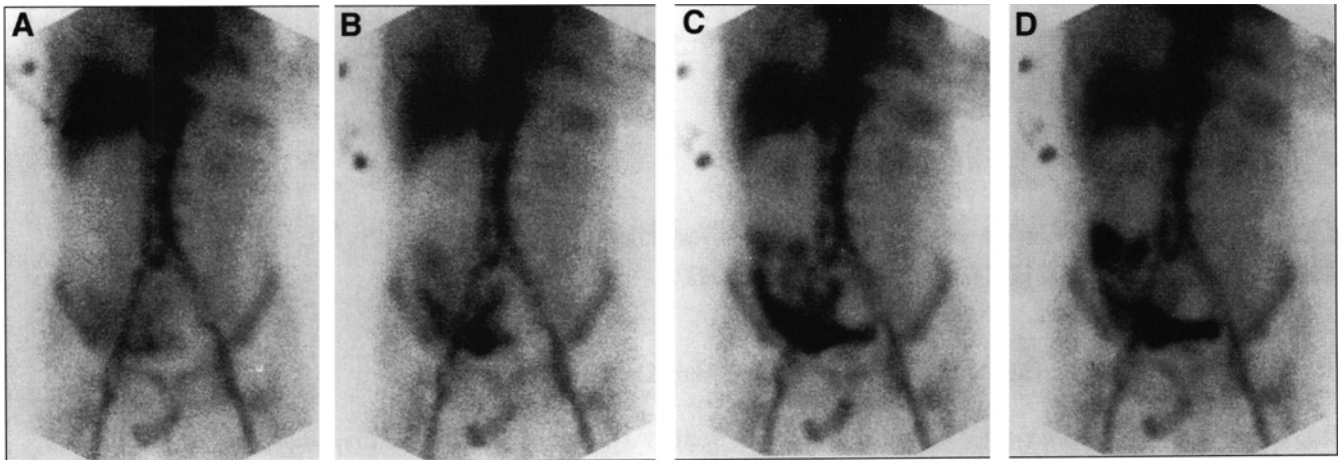

FIGURE 1. Scintigraphic blood-pool images using a high-resolution parallel-hole collimator. Scintigraphic images were obtained at (A) 10, (B) 20, (C) 40 and (D) 60 min after intravenous injection of ^{99m}Tc-HSA-D.

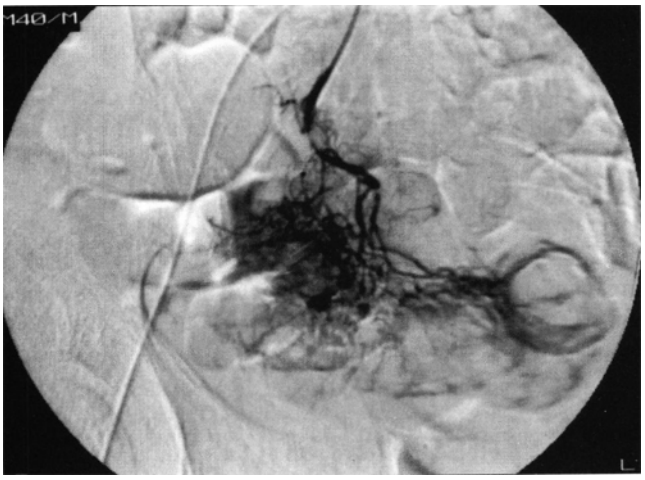

FIGURE 2. A superior mesenteric artery digital subtraction angiography image showing the location of the bleeding ileum lesion.

bleeding location. Radionuclide blood-pool scintigraphy is limited by its resolution. To correctly identify the location, angiography must be performed after detecting intestinal bleeding with the radionuclide study. It is usually more difficult to find intestinal bleeding lesions by angiography only. We strongly recommend RNA before performing x-ray angiography to diagnose a bleeding intestinal lesion.

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