Short Report

Visualization of the Human Cavernosum Penis by Using $^{99m}$Tc-Labeled Autologous Red Blood Cells

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Penial scintiphoto-images were obtained by using $^{99m}$Tc-labeled autologous red blood cells in three functionally impotent patients. The cavernosum penis was clearly pictured disclosing no organic abnormalities in these three patients' penises. This method enables one to present clear macroscopic images of the cavernosum penis without causing pain to the patient, and it may be recommended for clinical use as an alternative to cavernosography. —— impotence; penis; $^{99m}$Tc-red blood cells

Penial cavernosography as a means of observing macroscopically penial cavernous conditions has the unfortunate drawback of causing considerable pain to the patient, because it is usually performed by injecting contrast medium directly into the cavernosum penis. In an effort to conduct a macroscopic study of the cavernosum penis without causing pain to the patient, we infused intravenously $^{99m}$Tc-labeled autologous red blood cells to obtain clear scintiphoto-images of the penial cavernosum.

Our new method, tentatively applied to three functionally impotent patients, did produce clear pictures of their penial structures.

Procedure (Bardy et al. 1975): 2 ml of the patient's blood is taken in a syringe containing heparin. To the blood sample is added 0.5 ml of a reducing reagent containing stannous pyrophosphate, sodium pyrophosphate, sodium chloride and sodium hydroxide. This is incubated at room temperature for five minutes and centrifuged throughly to remove it of the plasma layer. Then, after adding $^{99m}$Tc-pertechnetate solution followed by a five-minute incubation period at room temperature, the mixture is again centrifuged and its upper layer is discarded. Finally, 1 ml of saline solution or 1 ml of the patient's plasma was added and the mixture was stirred throughly. 200-300 µCi of this solution is then injected into the patient's vein.

The patient is placed in a supine position and gamma camera with pin hole collimator is placed immediately above the upper part of the penis. The distribution of radioactivity is scanned using an analogue-to-digital converter (A-D converter) linked a 4096 channel memory unit, and is displayed on an oscilloscope (Nakamura et al. 1973).

In the three impotent patients, our method produced clear penial scintiphoto-images on polaroid film, which showed no apparent abnormalities (Fig. 1). This suggested that their cavernosum penis had undergone no organic changes. Administration of a small amount of $^{99m}$Tc-labeled autologous red blood cells thus proved to be a satisfactory method for producing very clear scintiphoto-images of the penis, indicating that our new method is capable of providing sufficient clinical information about penial cavernosus conditions.

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Fig. 1. The penis scan was performed following injection of $^{99m}$Tc-red blood cells in a patient with impotence.

Our method has the advantage of permitting duplication of the scintiphoto-images of the penis many times with a single administration of $^{99m}$Tc-RBC. More significantly, it can be performed without causing pain to the patient and it is particularly useful in treating patients with allergic reactions to cavernosographic contrast medium.

References
