surgical course was observed by ^{131}I-rose bengal hepatogram. This method is of less risk to the patient, is simple and provides information on the liver function and presence of passage disturbance in the biliary tract.

Clinical Study by Computer Processing of Renoscintigrams

M. Miki, T. Machida, M. Ueda and T. Minami

Department of Urology, The Jikei University School of Medicine, Tokyo

While scintillation cameras have been extensively used for examinations of the kidneys, the information obtained has not necessarily been applied effectively to clinical diagnoses. We have attempted to enhance the clinical value of these examinations by using a computer to record and process all the RI images from the scintillation camera.

The apparatus used in our research consisted of a scintillation camera "Model RVE-203" linked to an Aloka data processing system with the computer JAC-120. Using a magnetic drum and tape for its external memory device, the apparatus is a capable of continuously recording at certain time intervals up to 100 channels of RI image changes with time. The collected data are reproduced on oscilloscope for three-dimentional display and to draw profile curves. With regard to any given region of interest, changes of RI can be expressed in curves, which may be called regional renogram.

Radioisotopes used were 200μCi of ^{203}Hg-chlormerodrin or 200μCi of ^{131}I-Hippuran. With ^{203}Hg-chlormerodrin, 10 channels of scintigrams were obtained at 30-second intervals in the 5 minutes immediately following the intravenous injection, and 20 channels at 90-second intervals during the 30 minutes starting 10 minutes after the injection. With ^{131}I-Hippuran, 20 channels were obtained either at 15-second intervals in the 5 minutes or at 30-second intervals in the 10 minutes directly following the injection.

Processing the studying of these data give the following findings:

(1) From the profile curves, split renal and regional functions can be appraised semiquantitatively.
(2) RI changes with time in any given region of the kidneys can be obtained.
(3) The three-dimentional display enables cold areas to be readily located.
(4) Renal lesions can be discriminated by selective use of various RI and adjusting programs.

On Scintiscanning of Osteomyelitis and Bone Fracture

S. Omori

Department of Orthopaelic Surgery, The Jikeikai University, School of Medicine, Tokyo

In our department, we have applied bone scanning 562 times in the diagnosis of 482 cases of bone diseases and other forms of trauma so far and have studied the diagnostic application of bone scanning on various bone diseases.

As radioisotope, we used ^{85}Sr in the beginning in 1965, but from February 1970, we have been using ^{87m}Sr. As a routine, we first conduct profile scanning and then area scanning later, and in the case of the disease of the extremities, we always compared the diseased side with the healthy side.

First, I made a comparative study of scanning findings and clinical findings with 113 cases of hematogenic osteomyelitis. Of these 113 cases, abnormalities were noticed in the scans of 35 cases. With all these cases, abnormalities suggestive of ostemyelitis were found in both local findings and clinical examination findings, and they were diagnosed as cured only from the clinical standpoint.

With these cases that presented abnormalities in scanning findings, I prepared profile scintigrams, measured the degree of radioisotope uptake semi-quantitatively in the form of area comparison of the diseased side against the healthy side, and classified this degree of uptake into three stages. I have discovered there is a close of relationship between the degree of uptake given in the scintigram and the average value of erythrocyte sedimentation rates.

As explained above, scintiscanning is a very effective method of examination not only for the early diagnosis of osteomyelitis but also for the diagnosis of the focal point, determination of the therapeutic effect and decision of the therapeutic policy, when used together with roentgenography, erythrocyte sedimentation rate and clinical findings.

I will next explain on the use of scintisscanning for the diagnosis of bone fracture. I pursued the course of the healing process of the fracture of the leg that received conservative treatment from the time of fracture until bone union by using both profile scanning and area scanning. Although hardly any difference could be noticed radioisotope uptake immediately after the fracture as compared with the normal condition, uptake tended to improve and to localize as scintiscanning was conducted four weeks, eight weeks, 12 weeks etc. after the fracture. It was also learned that the peak tended to subside after 16 weeks after the fracture. However, with those cases with which relatively normal bone union took place, uptake clearly decreased as bone union prorgressed.

On the other hand, with a case that developed non-union of the bone after the fracture of the femur, uptake remained high for over three years, and defect in scanogram could be noted in the place that coincided with the fracture. There were also a case that presented marked uptake over a wide area for a long time after the operation in the place where the fracture occurred and reoperation revealed the presence of osteomyelitis. Consequently, with those cases that present uptake over a wide area in the scintigram for a long period after the operation of the fracture, there is a need to suspect infection. Hence, scintiscanning of the fractured area can be applied as an efficient method of examination in determining the recovery process of bone fracture and in the diagnosis of non-union of the bone in bone fracture.