by our NOVA 1200 computer. This function can be expressed in the form,

$C(t)=K(t-t_a)A_e-(t-t_a)/B$

t=time after injection

$C(t)$=indicator concentration at time t

K=constant scale factor

t_a=appearance time

A, B=arbitrary parameters

From these evaluations parameters A, B, K, and the mean circulating time (MCT) were calculated.

In cases with ulceration of the finger parameter A was less than normal, parameter B was greater than normal, parameter K showed no deviation either way, and the MCT was slower than normal. The high values of B are consistent indicators of abnormal curves.

The radiation dose delivered to the patient and the dosage to the physician in administering the 10 mCi of ^{99m}Tc pertechnetate were estimated.

The radiation dose of the patient at the surface of the neck, anterior chest, abdomen, and bilateral inguinal regions was from 100 mrads to 300 mrads; the physician's right second finger, 100 mrads to 300 mrads.

Diagnosis of the Aortic Aneurysm with Sequential RI-angiography

H, Ochi*, R. Yoshida*, H. Mitsuda*, S. Taniguchi*, T. Fukuda*, T. Furukawa*, A. Yamashita*, M. Tamaki*, M. Nishimoto**, K. Takeuchi** and C. Tanaka**

*Department of Radiology, Osaka City University Medical School

**The First Department of Internal Medicine, Osaka City University, Medical School

With sequential RI-angiography investigation was carried out on 23 cases of thoracic aortic aneurysms. Eleven were fusiform, 8 were saccular and 4 were dissecting aneurysms.

Fifteen to twenty millicuries of ^{99m}Tc-human serum albumin contained in a volume of less than 1 m*l* was injected as a bolus into the anticubital vein and with rapid sequence camera (35 mm film) or multiformat camera the initial bolus images were obtained, which were of better quality than static blood-pool images taken later from various angles.

This non-invasive method is capable of accurate diagnosis in the thoracic aortic aneurysms, differential diagnosis between fusiform and saccular types being without difficulty. As far as our 4 cases of dissecting aneurysm are concerned, no clear-cut findings can be pointed out by this method.

Criteria: 1) If there is widening and blood-pooling in some part of the aorta, one can diagnose aneurysm. 2) However, even if there is no such aortic widening or pooling, one can not exclude an aneurysm filled with thrombus. 3) It is difficult to diagnose dissecting aneurysm only by this method. 4) The mediastinal tumor near the aortic arch is different from aneurysm in sequential angiographic image, so this method is useful for differential diangosis of the mediastinal tumors.

Since most of the patients with possible aneurysm are aged and arteriosclerotic, this simple and non-invasive diagnostic method should be the first choice in evaluation of such patient.

Study on the Splanchnic Circulation Using Microspheres Labeled with Radioisotopes The Effects of Pentobarbital and Bucolome

R. Miura, and K. Kitani

First Laboratory of Clinical Physiology Tokyo Metropolitan Institute of Gerontology

The authors previously reported the increase in portal blood flow by bucolome administration in unanesthetized rats. (Miura & Kitani, Jap. J. Nucl. Med. 12: 598, 1975) In the present study, the effects of pentobarbital anesthesia and bucolome on splanchnic circulation in anesthetized rats were

examined.

Wistar & SD strain rats (male, 300 g) were used. After 18–20 hrs fasting, pentobarbital was given i.p. (4.5 mg/100 g) Radioisotope labeled microspheres (^{51}Cr, ^{141}Ce, ^{85}Sr, 3M) were introduced into the left ventricle as previously described (Suzuki & Kitani, Jap. J. Nucl. Med. 13: 175, 1976). (15 μ & 50 μ spheres in the first injection). Thereafter bucolome solution in saline, (20 mg/100 g) was injected i.p. (in control rats only saline was given). Forty min. later, 50 μ microsphere with another label was introduced.

The fractional distribution of cardiac ouput in sphanchnic organs, kidneys and lungs were calculated from the radioactivity distributed in each organ divided by the total activity of the dose administered.

1. The effect of pentobarbital: The fractional distribution of 15 μ as well as 50 μ microspheres in anesthetized rats was significantly higher in kidneys, and in most of the splanchnic organs, particularly in the small intestine compared with the values previously reported in unanesthetized rats. The most marked difference was noted in the hepatic fraction (hepatic artery) in which 4–5 times higher value was found in anesthetized rats than the unanesthetized rats value.

2. The fractional distributions measured by 15 μ and 50 μ microspheres were very similar except in lungs and liver, which were considered to be due to A-V and A-P shunts. However the differences between the values obtained by two different sized particles were less than 1% of cardiac output in these organs.

3. Bucolome was effective in increasing the small intentinal and decreasing pancreatic fraction as was reported in unanethsthetized rats. The increase in splenic fraction was not significant.

On Mucociliary Clearance Mechanism; Normal Ciliary Transport in the Dog

T. HIRANO, T. ISAWA, T. TESHIMA and K. KONNO
Department of Medicine The Research Institute for Tuberculosis and Center Tohoku University, Sendai

The purpose of the present study is to assess mucociliary clearance action by measuring migration of test agents placed on the mucosal surface of the airway fo the dog.

The normal and right lung-reimplanted dogs were studied under anesthesia with Ketalar and Nembutal. A radioactive test agent was placed on the predetermined site of the mucosal surface through a catheter under fiberoptic bronchoscopic guidance. The dog inhaled aerosolized mist spontaneously to maintain ample humidity inside the airways during the study. Migration of radioactivity was sequentially imaged with a scintillation camera and migrating distance with time was directly measured from the images. Mean migrating velocity was estimated by a linear regression.

A centrifuged ^{99m}Tc-MAA solution was the test agent of choice for this study among various agents such as albumin microsphere of 2 u and 30 u in size, respectively and resin particles of 200–400 mesh. In the normal dog, when the agent was placed at the orifice of the posterior basal segment bronchus, the mean migrating velocity was 12.2 ± 1.6 (mean $\pm$1 S.E.) mm/min. ($n=5$) over the right bronchus, and it was 7.9 ± 2.1 ($n=6$) over the left. It was 11.7 ± 1.0 over the trachea ($n=21$). In the right lungreimplanted dog tested 3 weeks after surgery, it was 10.4 ± 2.7 ($n=4$) and 8.4 ± 1.6 ($n=6$) over the right and left bronchi, respectively. There was no slowing of migration over the site of anastomosis. There was no statistical difference between the normal and reimplanted right bronchi in the speed of ciliary transport or migration. In a dog whose tracheal mucosa was cauterized by silver nitrate at 5 cm proximal to the carina, either migration arrest or extreme slowing was observed at the cauterized site on the 5th and 8th days and migrating velocity was slightly slower than normal on the 10th day. It returned to normal 2 weeks after cauterization.