The heart to liver ratio (H/L) obtained by Tl-201 per-recanalization administration is a quite sensitive and reliable index for evaluating portal-to-systemic circulation. We employed this method to investigate the changes of portal systemic circulation after sclerosing therapy of esophageal varices and splenic artery embolization therapy. Each patient received an enema one or two hours before the Tl-201 examination. A dose of 1 mCi of Tl-201 chloride was given through the tube inserted 20 cm into the upper rectum H/L and liver scintigram were obtained 60 min after Tl administration. The results are as follows:

1. In cases showing highly decreased H/L after sclerosing therapy, portal-systemic shunting greatly depended on esophageal varices. These cases have a high risk of recurrence of esophageal varices.

2. In cases showing little change or increase in H/L, the presence of other shunting routes can be expected.

3. Reduction of splenic blood flow in initial treatment decreased H/L.

4. This method seems to be useful in evaluating the pathophysiological changes of portal circulation after treatment.

Lipiodol, iodized oil, has the embolic property to selectively retain in the tumor vessels of hepatoma, when infused into the hepatic artery. We initiated the internal radiotherapy by transcatheter arterial infusion of I-131-Lipiodol, based on the results of the diagnostic dose study. A therapeutic dose of I-131-Lipiodol (7.6 - 15.3 mCi/2.0 - 5.0 ml) was infused into the hepatic artery or segmental artery supplying the tumor in six patients with hepatoma respectively. The estimated tumor dose ranged from 39 to 190 Gy with far smaller doses to the adjacent hepatic tissue and lungs. High levels of serum AFP decreased to 6 - 60% of the pretreatment levels in 5 patients within 6 weeks. The tumor reduced to 22 - 64% of the product of its initial diameter and transverse diameters on the initial CT image in all patients respectively within 6 months. A pathological examination of a hepatoma in a patient who died of severe liver cirrhosis revealed that it changed to a necrotic mass with no cancer cells. So far no side effects were observed. We conclude that this internal radiotherapy may be one of the promising methods to treat hepatoma with hypervascularity and tumor stain.