We agree with the authors' conclusions but believe that only one of the two cases represents a false-negative study. It should be emphasized, however, that some of these cases are difficult to interpret. We routinely obtain images in at least one right anterior oblique and one left anterior oblique view, and a lateral or posterior view may also be helpful. Only with multiple views can we be certain that we visualized a gallbladder rather than renal activity or a prominent common duct or duodenum. We found that the somewhat greater renal excretion of HIDA did tend to cause difficulty with interpretation, and for that reason we prefer to use PIPIDA despite its somewhat slower excretion by the liver.

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REFERENCE

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Reply

The points raised by Dr. Brachman and colleagues are well taken; however, reinterpretation based on published images and incomplete knowledge of facts is always difficult. The focus of increased activity in question was only interpreted as representing the gallbladder after consideration of the following. Anatomically the focus lies in the gallbladder fossae and is in the correct relationship to the common duct. It is too medial to be the renal pelvis, and in the posterior view it lies medial to the renal impression in the liver. It is brighter than the left pelvis at all times and does not fade as the pelvis does. In the plain abdominal film the position of the right kidney does not correspond to the focus. The RAO view was obtained by raising the right flank of the patient, and placing a wedge under it. The patient had lumbar scoliosis with a left-sided convexity, and we are not certain how this would affect the postulated posterior rotation of the gallbladder. At 12:30 p.m. the patient received the radiotracer and the gallbladder was removed about 2 hr later. The resected specimen was imaged the next day, and the bile was still radioactive.

We fully appreciate the difficulties in interpretation and routinely use multiple views. In this particular case, however, sufficient time to complete the study to our satisfaction could not be assigned, since the patient was rushed to surgery.

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Platelet Labeling with In-111 Oxine: Benefit of Prostacyclin (PgI_2)—Addition for Preparation and Injection

Wistow et al. (*1*) used prostaglandin E_1 (PgE_1) for injection of platelets labeled with In-111 oxine and found a decreased adherence of labeled cells to the infusion tubing. However, since no influence on platelet survival could be observed, the authors did not recommend its use.

Moncada et al. (*2*) discovered prostacyclin (PgI_2), which acts like PgE_1 on platelets but is 20-30 times more active. Since PgI_2 could enhance labeling efficiency by increasing intracellular c-AMP (*2*) and by preserving cell function during preparation, we studied its effect on human platelets.

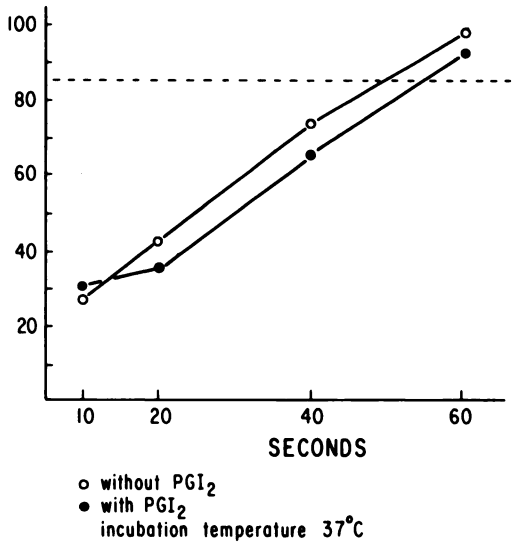

FIG. 1. Labeling efficiency with and without prostacyclin.

During labeling, 25 ng PgI_2 (kindly supplied by C. Gandolfi from Caro Erba. Milano, Italy) were added per milliliter of withdrawn citrated human blood, also to each milliliter of platelet-rich plasma (PRP) or platelet-rich Tyrode-albumin solution after each wash. While labeling efficiency (Fig. 1) after a short period of incubation was not influenced by the PgI_2 addition, the number of small, visible aggregates occurring during preparation was decreased and the number of small aggregates seen under scanning electron microscopy was significantly decreased. In addition, the solution of the pellet during the washing procedure was much easier and quicker. The same data could be obtained using 500 ng PgE_1 per milliliter.

Though prostaglandins (PgE_1 and PgI_2) have no influence on labeling efficiency or platelet survival (*1*), they play a beneficial role, both during preparation and by diminishing platelet adherence to the surface of infusion tubing, most likely through membrane stabilization by elevation of intracellular c-AMP. We, therefore, recommend the use of PgI_2 in the dosage mentioned above. Recent findings of a better recovery support the beneficial role of PgI_2 during platelet preparation.

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2. MONCADA S, GRYGLEWSKI R, BUNTING S, et al: An enzyme isolated from arteries transforms prostaglandin endoperoxides to an unstable substance that inhibits platelet aggregation. *Nature* 263: 663-665, 1976

Reply

H. Sinzinger et al. refer to recent findings of better platelet recovery after prostaglandins have been added to platelet-rich plasma

or platelet-rich Tyrode-albumin solutions during preparation. Documentation, however, is not provided.

Current techniques, which do not require prostaglandins, have achieved excellent recovery, on the order of 70-80%. Moreover, survival of platelets prepared without prostaglandins has been excellent.

Until improved recovery after addition of prostaglandins is documented, and until superior survival is achieved, we feel that a definitive recommendation regarding the use of prostaglandins in platelet preparation cannot be formulated.

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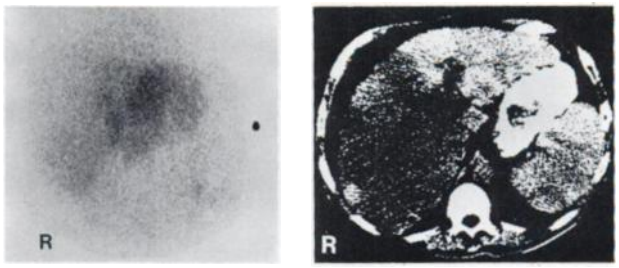

FIG. 1. Anterior scintiscan of liver (left) with Tc-99m HIDA. Concentration of radioactivity is limited to left lobe. CT scan (right) showing decreased density in right lobe.

Nonvisualization of Hepatoma with Tc-99m Hepatobiliary Agent

In a recent paper in the *Journal*, Utz et al. (*1*) reported a case of hepatoma in which the Tc-99m hepatobiliary agent was taken up by the primary tumor. There are other recent reports of similar nature in the literature (*2,3*). It would be unreasonable to believe that this test has a sensitivity of 100%, and we report a case of a proven hepatoma in which Tc-99m HIDA was not taken up by the primary tumor.

A 64-year-old man presented with a history of alcohol abuse, jaundice, right upper quadrant pain, and ankle edema. Two years before he had been diagnosed as having chronic persistent hepatitis proven by liver biopsy. On examination, the patient appeared jaundiced and emaciated, and the enlarged liver was firm and nodular, but nontender. The liver function tests were abnormal and alpha fetoprotein was positive. The fasting blood sugar was repeatedly low and ranged from 37-57 mg/100 ml. The patient also had slight hypercalcemia of 10.7 mg/100 ml and high total serum B_{12} level. Hepatitis-B surface antigen was positive by radioimmunoassay.

A Tc-99m sulfur colloid scan of the liver and spleen showed hepatosplenomegaly and multiple photon-deficient areas throughout the liver. The distribution of the isotope was uniform in the spleen, but the intensity of the activity was greater than that in the liver. A Tc-99m HIDA cholescintiscan showed liver parenchyma distribution of the HIDA activity similar to that seen in the sulfur colloid scan. Uptake of HIDA was not visualized in the region of the tumor (Fig. 1).

Computed tomography showed ascites, marked enlargement of the right lobe of liver, and a large area of decreased density (CT density +20 to +32 Hounsfield units) almost replacing the right lobe of liver. This enhanced with intravenous contrast infusion—CT density up to +52 Hounsfield units (Fig. 1).

Needle biopsy of the liver performed 6 wk before the HIDA scan showed a "moderately differentiated" hepatocellular carcinoma. The patient was considered inoperable and was started on doxorubicin therapy.

In the near future, as experience with HIDA increases, we believe it will become clearer which cases of hepatoma take up HIDA and whether HIDA can be used successfully as a hepatocyte-tumor-seeking agent. Further observations are needed. Possibly the degree of differentiation of the tumor is what determines HIDA uptake by hepatomas. Our case was "moderately differentiated" at the biopsy site but either this was not accurately representative, or the degree of differentiation may have changed in the 6 wk time lapse from biopsy to HIDA study.

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2. UENO K, HASEDA Y: Concentration and clearance of Tc-99m-pyridoxylidene isoleucine by a hepatoma. *Clin Nucl Med* 5: 196-199, 1980
3. CANNON JR JR, LONG RF, BERENS SV, et al: Uptake of Tc-99m-PIPIDA in pulmonary metastases from a hepatoma. *Clin Nucl Med* 5: 22-24, 1980

ERRATUM

The correct Table of Contents entry for John A. Katzenellenbogen, et al. (*J Nucl Med* Vol. 22, No. 1, January 1981) is: 16α-[^{77}Br] BROMOESTRADIOL-17β: A HIGH SPECIFIC-ACTIVITY, GAMMA EMITTING TRACER WITH UPTAKE IN RAT UTERUS AND INDUCED MAMMARY TUMORS. John A. Katzenellenbogen, Stephen G. Senderoff, Karen D. McElvany, H.A. O'Brien, Jr., and Michael J. Welch . . . 42.