nism. In our method, the technetium is added in a small volume and crosses the cell membrane as pertechnetate. Subsequent addition of the stannous ion results in a small fraction of the reducing agent also crossing the cell membrane leading to a reduction of the technetium which then binds intracellularly. Our extracellular technetium is removed in the saline washes as a technetium citrate complex. Although the exact mechanism of the reduction of technetium has not been clarified as yet, reduction of technetium with the red blood cells can be shown by the absence of a pertechnetate peak in gel chromatography studies of hemolyzed labeled red blood cells.

In Weinstein’s and Nouel’s procedures, the excess stannous ion is probably not removed completely so that subsequent addition of pertechnetate will result in reduction of both intracellular and extracellular pertechnetate, resulting in a “mock” red-cell label. The technetium reduced outside the cells could be carried through the saline washes with the erythrocytes; e.g. as colloidal particle or as technetium bound to the cell membrane. It is difficult to predict the species or chemical form present without further data.

These theoretical considerations are supported by the biological data obtained with the two procedures. We have shown that cells altered by our excess stannous ion method are taken up by the human spleen (3). In addition to the excellent in vivo labeling stability in dogs and rabbits reported in our original article, we have since obtained in vivo stability data in human recipients. These data are presented in Table 1 and indicate that up to 2 hr the technetium activity is predominantly in the red-cell fraction of the blood, and that there is not a rapid loss of radioactivity from the cells into the plasma, as found with Weinstein’s procedure.

It is very difficult to compare Dr. Weinstein’s experimental work with our own because he presents no quantitative data. However, a few general comments on variation of the procedures can be made. We expect that oxygen and nitrogen would also affect our yields in the same manner as Weinstein’s. We did not report low yields with heparin as Weinstein states, but rather, following Mollison’s work for the analogous chromate labeling, we used only ACD, and stated so clearly. Like Weinstein we obtained higher labeling yields after purge of the cells with carbon monoxide as seen in Table 2 of our article, but did not make the procedure a part of our routine because, as stated in our article, it caused agglutination of the cells if carried out too long.

We feel that further work on the mechanism is in order to indicate more clearly whether the stannous ion is directly reducing the technetium or reducing an intermediate which, in turn, reduces the technetium. Further comparisons of the mechanisms of labeling by $^{51}$Cr and $^{99m}$Tc are also in progress.

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FURTHER OBSERVATION ON $^{131}$I-ROSE BENGAL CLEARANCE IN GILBERT’S DISEASE

I would like to add a brief note to the article by Iio et al on the diagnosis of constitutional hyperbilirubinemia with $^{131}$I-BSP (1). Their patient with Gilbert’s disease had normal radiiodinated BSP and rose bengal kinetics when the test was performed 2 hr after breakfast. However, Felsher et al (2) recently demonstrated a reciprocal relationship between caloric intake and the level of indirect hyperbilirubinemia in Gilbert’s disease. They demonstrated a rapid rise in bilirubin level in response to fasting (less than 400 calories/day) with peak levels occurring at 48 hr. Therefore optimum conditions for detecting abnormal radiiodinated dye kinetics in Gilbert’s disease would be during the maximum stress of a 48-hr fast rather than shortly after breakfast.
I recently had the opportunity to study a patient with documented Gilbert's disease before, during, and after 48 hr of calorie restriction (less than 400 calories/day) using the 131I-rose bengal clearance test described by Nordyke and Blahd (3). Although the patient's indirect bilirubin more than doubled (2.2 mg% - 4.8 mg%) after 48 hr of fasting, the 131I-rose bengal clearance (expressed as 20 min/5 min head count %) only rose from 41% to 45%, remaining well within the normal range. Two days after resuming a normal diet, the patient's bilirubin returned to the pre-fasting level and the 131I-rose bengal clearance returned to 41%.

Thus it appears that even after the additional stress of caloric restriction, the 131I-rose bengal clearance test remains normal in Gilbert's disease in spite of significant rise in indirect bilirubinemia. This further supports Fio's findings that patients with Gilbert's disease have no defect in hepatocyte uptake of 131I tagged dyes such as BSP and rose bengal.

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VARIATIONS OF NORMAL KIDNEY POSITIONS ON RENAL SCANS

Most of the textbooks of nuclear medicine describe only the normal or abnormal appearance of a renal scan but do not comment on relative position of the kidneys. This subject was the cause for a recent discussion and review of cases in our Section of Nuclear Medicine. We found that of 37 scans evaluated, the right kidney was higher than the left kidney in 47% of the cases. In an additional 22%, the right kidney was at the same level as the left.

Twenty one of the 37 patients had both a renal scan (prone) and an IVP (supine). In 62% the right kidney shifted superiorly when the patient was studied in the prone rather than the supine position.

Riggs et al (1) have demonstrated that the relationship of the right kidney to the left kidney changes when the patient is moved from the supine to prone position. This is consistent with the right kidney moving cephalad and medially while the left kidney moves caudad.

Larose and Izenstark (2) also have studied kidney position in the supine and prone positions. Because of the increasing number of renal biopsies and consequent need for localizing the kidneys, they investigated kidney location with both prone and supine IVP films. In the supine position, the right kidney was higher than the left in 20% of the cases; in the prone position, the right kidney was higher in 34%.

When the question arose in our laboratory, several major nuclear medicine textbooks were consulted (3–8) and only one (8) mentioned that the right kidney is frequently higher than the left on scans. Interestingly enough, this one text carries the earliest copyright date, so we are concerned that this observation has been lost in the wealth of information which has developed during the intervening years. Our letter writing objective is to bring these facts to the attention of our colleagues and to stress the need for including this information in nuclear medicine texts.

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