duced the simple method of utilizing the CI (Inverse C Scale) and D scales on a slide rule to obtain the zero-time count. Other available methods for the zero extrapolation involve the use of the programmable desk-top calculator and a simple computer program for plasma volume determination.

We wish to point out in this communication a simple method of zero extrapolation for routine clinical laboratory usage which is fast, more accurate, and inexpensive. The only prerequisite is that the two serial blood samples be obtained with equally spaced time intervals after injection, i.e., at 10 and 20 min or at 15 and 30 min. Then the net count rate at zero time is equal to the square of the first sample net count rate divided by the second sample net count rate, i.e.:

$$\text{Count rate at zero time } (C_o) = \frac{[\text{count rate at 10 min } (C_1)]^2}{[\text{count rate at 20 min } (C_2)]}$$

The mathematical basis of this rule is fairly simple. Let T_1 be the first sampling time after injection (e.g., 10 min) and T_2 the second sampling time after injection (e.g., 20 min), where $T_2 = 2T_1$.

$$C_1 = C_o e^{-kT_1}, \quad (1)$$

$$C_2 = C_o e^{-kT_2}, \quad (2)$$

where k is the disappearance constant of the labeled protein from blood.

From Equations 1 and 2:

$$\frac{T_1}{T_2} = \frac{\ln (C_1) - \ln (C_o)}{\ln (C_2) - \ln (C_o)} \quad (3)$$

Since $T_2 = 2T_1$, and rearranging Equation 3,

$$\ln (C_o) = 2 \ln (C_1) - \ln (C_2)$$

$$C_o = \frac{[C_1]^2}{C_2} \quad \text{or} \quad C_o = \frac{C_1 \times C_1}{C_2}$$

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SOME DIFFERENCES BETWEEN ^{87m}Sr AND ^{99m}Tc-POLYPHOSPHATE IN THEIR SECRETION IN THE SEROUS FLUIDS

We had the opportunity of scanning two patients (one patient with massive ascites and another with massive pleural effusion) with both ^{87m}Sr-citrate and ^{99m}Tc-polyphosphate. We observed major differences in the secretory behavior of these two bone-seeking radiopharmaceuticals. Strontium-87m was secreted

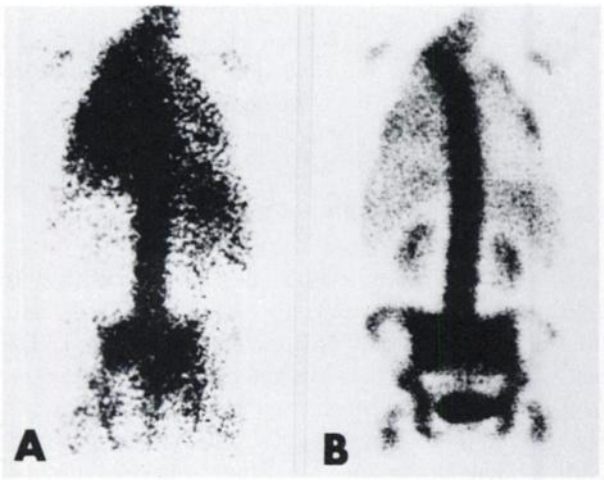

FIG. 1. (A) Strontium-87m anterior whole-body scan (3 hr after injection) of patient with massive ascites. Note diffuse abdominal activity. (B) Technetium-99m-polyphosphate scan (3 hr after injection) of same patient showing clear abdomen.

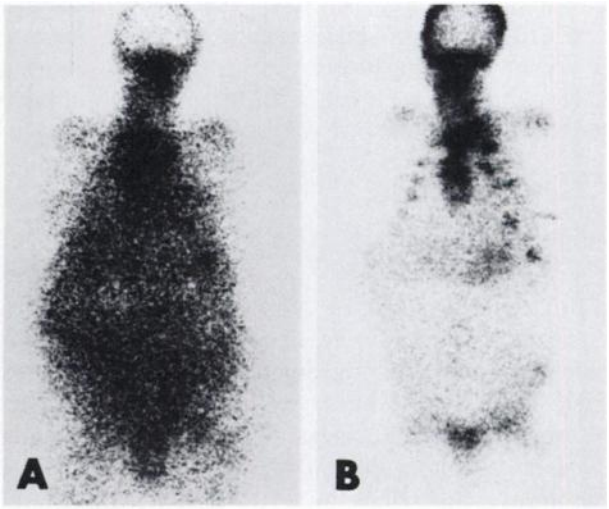

FIG. 2. (A) Strontium-87m posterior whole-body scan (3 hr after injection) of patient with massive pleural effusion. Note excessive activity in left hemithorax. (B) Same patient's ^{99m}Tc-polyphosphate bone scan shows almost no activity in hemithorax.

into both pleural fluid and ascitic fluid, while ^{99m}Tc-polyphosphate was not. The possible explanation is that strontium, being in ionic form, freely diffused into the serous secretion, while polyphosphate, a large molecule, could not pass into the fluid. This has one practical advantage: in patients with massive pleural effusion or ascites, the lesions in the ribs or spine would not be missed by polyphosphate scan. If the phosphate compound had been secreted like strontium in serous fluid, then it would have interfered with the interpretation of lesions in the ribs and spine.

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