

solid, 150 ml water) ranged from 10–30 min in normal subjects (3). The sample rate used by Moore et al. (“10–30 min intervals, depending on meal size”) is clearly too prolonged for the calculation of this parameter. Their suggestion that the “apparent early delay” in solid emptying may be caused by failure to correct for tissue attenuation is misleading. In our study, anterior imaging without attenuation correction overestimated the lag period (average 48%) while the use of posterior imaging underestimated this parameter by 55% (2).

The lag period for liquids can also be measured during our current technique. Using a frame rate of 1 frame every 30 sec for the first 30 min, we regularly observe a lag period for liquid emptying. This period is of the order of 1–3 min for most subjects, though prolonged lag periods (in excess of 10 min) have been observed in some clinical situations.

The accurate measurement of the lag period is of importance in both clinical (4) and physiologic (3) studies of gastric emptying. This parameter can be measured easily using a technique which corrects for tissue attenuation and has frequent data sampling (at least 1 frame every 4 min).

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**REPLY:** Apparently there is some misunderstanding as to whether or not we believe a “lag period” exists. We never said “negligible” or “probably artifactual.” We did say “We do not conclude that such an early emptying period does or does not exist but rather that an early emptying delay can be artifactually created by not employing appropriate techniques.” We, in fact, do encounter in *individual* studies early emptying delay periods (or “lags”) but the *grouped* data most closely conforms to a linear emptying pattern. Collins et al. are correct in their observation that a sampling interval of 10 min may be too prolonged to detect a lag occurring within <10 min.

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#### Iodine-131 Metaiodobenzylguanidine

**TO THE EDITOR:** We would like to comment on the article by Geatti O, et al. on the usefulness of scintigraphy with metaiodobenzylguanidine (MIBG) in the diagnosis and treatment of neuroblastoma (1).

The above authors observe that tumors with a higher catecholamine secretion show a better uptake of MIBG. They consider that previous treatment may reduce tracer uptake but does not preclude it.

We have studied 11 neuroblastoma patients in activity and 25 in complete remission. In two cases with normal catecholamines excretion the tracer uptake by the tumor was similar to the nine others with high catecholamine levels. A further five cases have been published of patients having normal catecholamines and positive MIBG (one suprarenal hyperplasia, one paraganglioma and three cases of neuroblastoma) (2–6). On the other hand, two cases of pheochromocytoma with high excretion of noradrenaline and its derivatives with negative MIBG have been reported (7). These apparently contradictory results could probably be due to a disturbance in the process of synthesis, storage and release or in the recaptation of catecholamines that in normal adrenergic cells are closely linked and synchronized.

The cases of positive MIBG with normal catecholamine excretion could be explained by the disappearance or reduction of the synthesis, storage or release phases while recaptation persists. In the other hand the cases of negative tracer uptake and high levels of catecholamine would preserve the synthesis storage and release mechanism with some disturbance in the recaptation.

As to the influence of the previous treatment on the iodine-131 (<sup>131</sup>I) MIBG uptake by the tumor, in our experience it is directly correlated with the response to this treatment. When the treatment effectively reduces or eradicates the tumoral volume, the positivity diminishes or even disappears. On the other hand, when the treatment does not produce a lessening of the tumor mass, the radiopharmaceutical uptake does not change. In our opinion this clearly demonstrates the usefulness of [<sup>131</sup>I]MIBG scintigraphy in the evolutive control of neuroblastoma patients.

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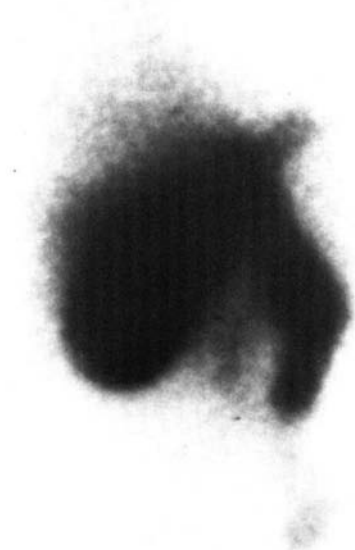
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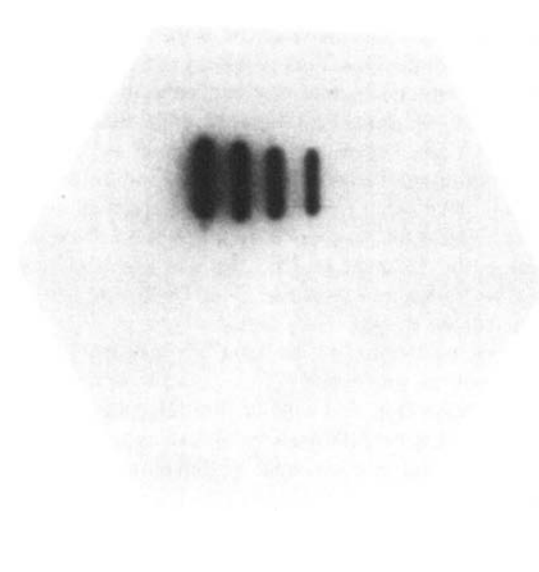
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### Activity per Unit Volume: A Pitfall in Predicting Size

**TO THE EDITOR:** A number of texts and articles indicate that dilatation of the hepatobiliary ducts may be suggested from findings on the HIDA study. This should be tempered by the well-known fact that an increase in radioactivity per unit volume in an object makes the image of an object appear larger (1). When there is stasis in the hepatobiliary tree, not necessarily accompanied by dilatation this condition is fulfilled as shown in Fig. 1. Figure 2 shows the image of four capillary tubes filled with the same volume of fluid but differing in activity per unit volume by factors of two. While the images suggest differing sizes, the objects are, in fact, identical.



**FIGURE 1**  
Image 80 min after injection of 6 mCi [ $^{99\text{m}}\text{Tc}$ ]DISIDA shows very intense activity in a apparently dilated common duct. This 62-yr-old woman had asymptomatic gallstones and normal sized common duct on ultrasound study performed within 18 hr. She had herpes zoster affecting right T-9 dermatome



**FIGURE 2**  
Four identical capillary tubes filled with same volume of radioactivity but differing in specific activity. Capillary tube on left contains 1 mCi activity and each tube to right diminishes by factor of 2. Tubes are lying on flood-field phantom placed on surface of camera collimator. Hexagonal field indicates LFOV camera

### FOOTNOTE

\* Technicare, Solon, OH.

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### In Memoriam—Nathan A. Solomon (1922-1985)

**TO THE EDITOR:** Nathan A. Solomon, a longtime member of the Society of Nuclear Medicine, was Professor of Radiology and Director of the Division of Nuclear Medicine at Downstate Medical Center and Kings County Health Center, New York at the time of his death. Nuclear medicine represented his major interest and received from him an intense and sustained attention. He brought to it a breadth of view and a feeling for its inter-relations with other areas of medicine and of physical science. He was a professional chemist before he began the study of medicine, having received an MS degree in chemistry in 1947 and the PhD degree in 1955 from New