

TECHNOLOGIST PAPERS RECEIVE PRIZES

Each year the Technologist Section Awards Committee chooses three outstanding papers presented at The Society of Nuclear Medicine (SNM) Annual Meeting that merit special recognition and honoraria. Of the 55 papers presented on the Technologist Program at the 34th SNM Annual Meeting, held last June in Toronto, Canada, the following three were selected:

Dual Isotope Image Subtraction

A new way to subtract the distribution of a nonspecific radio-tracer from that of a specific tracer was presented by Susan A. Spaulding, RT(N), Greg Brown, and Jack E. Juni, MD, of the University of Michigan Medical Center, Ann Arbor, MI. Their paper, "Statistical Subtraction: An Alternative Approach to Dual-Isotope Image Subtraction" (*J Nucl Med Technol* 1987;15:Ab15, No. 1050)*, was awarded first prize.

To reduce or remove nonspecific distribution before an image is interpreted, the authors have developed a processing protocol based on the statistical differences between two images rather than simply the absolute difference in counts. A dual-isotope image pair is examined pixel-by-pixel to determine the probability that the images are different at any given point. The expected ratio between the images, in the absence of noise, is determined by the relative count distribution in a reference region in each image. The resulting image represents the likelihood of a significant difference in content between the two images, said the authors, and provides a better assessment of the differences between specific and nonspecific uptake in neighboring organs than the standard subtraction approach.

Hepatic Tumor Perfusion with Epinephrine

For their paper, "Quantitation of Relative Hepatic Tumor Perfusion and Epinephrine-Induced Alterations" (*J Nucl Med Technol* 1987;15:Ab12, No. 1040), Sara L. Warber, CNMT, Jack E. Juni, MD, Suzette Walker-Andrews, RN, James Andrews, MD, and William Ensminger, MD, PhD, of the University of Michigan Medical Center, Ann Arbor, MI, were awarded second prize.

Some patients with cancer metastases to the liver can benefit therapeutically from increased tumor-to-nontumor perfusion ratios. To test whether epinephrine's selective vasoconstrictive

effects could increase this ratio, serial tomographic hepatic artery perfusion studies were performed with concurrent infusion of escalating doses of epinephrine on 13 patients with liver metastases. From transverse, sagittal, and coronal slices intersecting with the tumor area, regions of interest were selected and tumor-to-nontumor ratios were calculated for each slice and then averaged, explained the authors.

The baseline perfusion ratio was greater than one in all patients. In six, the ratio was significantly improved with epinephrine; the seven other patients showed no improvement. Since the local effects of epinephrine infusion vary greatly among individuals, the authors predict that quantitative epinephrine-hepatic artery perfusion studies can be used to identify patients who may benefit therapeutically from dramatically increased tumor-to-nontumor perfusion ratios.

Quality Assurance for Injection Techniques

The quality assurance aspects of two antecubital vein, quantitative injection techniques were reported by Peter Hogendoorn, RTNM, Carl A. Wesolowski, MD, FRCPC, Richard Vandierendonck, RTR, ACNM, and Albert A. Driedger, MD, PhD, FRCPC, FACP, of Victoria Hospital and the University of Western Ontario, London, Ontario, Canada in their paper, "In Vivo Quality Assurance for Quantitative Bolus Injections" (*J Nucl Med Technol* 1987;15:Ab3, No. 1002). They were awarded third prize.

The authors compared a flush bolus technique, using a tuberculin syringe piggybacked onto a 10-ml saline flush, with a single blood pressure cuff syringe injection technique. Scintillation camera data for each technique were compared for bolus duration in the abdominal aorta and for residual activity at the injection site 5 minutes after injection. Both methods allowed accurate in vitro determination of administered radioactivity; however, because of its superior in vivo characteristics, only the tuberculin syringe flush bolus technique was acceptable for time-based quantitation, according to the authors.

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