

ABSTRACTS OF CURRENT LITERATURE

^{99m}Tc-Imidodiphosphonate: A Superior Radiopharmaceutical for in vivo positive Myocardial Infarct Imaging. I: Experimental Data. P. J. Ell, R. Langford, P. Pearce, D. Lui, A. T. Elliott, N. Woolf, and E. S. Williams. *Brit Heart J* 40: 226-233, 1978.

Tc-99m imidodiphosphonate (Tc-99m IDP) was investigated for use as a myocardial infarct scanning agent. Experimental myocardial infarcts were produced in ten Wistar rats by thoracotomy and ligation of the left coronary artery near its origin. The animals were imaged at 6, 24, 48, and 72 hr postinfarction and 1 hr after injection of 1 mCi of Tc-99m IDP. Positive images were obtained as early as 6 hr postinfarction and were certainly present at 24 and 48 hr postinfarction. After imaging in vivo, the hearts were removed and examined by histologic methods and by isotope counting. The mean ratio of activity between infarcted and normal ventricular myocardium obtained in this series of animals was 21/6, corresponding with 3+ to 4+ positive images obtained in vivo. The infarcted myocardium ratio for this new radiopharmaceutical was significantly better than those obtained with Tc-99m-labeled phosphates used for myocardial infarct imaging. The authors concluded that Tc-99m IDP is the Tc-99m-labeled phosphate of choice for acute myocardial imaging.

^{99m}Tc-Imidodiphosphonate: A Superior Radiopharmaceutical for in vivo positive myocardial infarct imaging. II: Clinical Data. S. P. Joseph, P. J. Ell, P. Ross, R. Donaldson, A. T. Elliott, N. J. G. Brown, and E. S. Williams. *Brit Heart J* 40: 234-241, 1978.

Utilizing a mobile gamma camera in the coronary care unit, linked on-line to a remote computer system, the authors presented the results of scans obtained using Tc-99m imidodiphosphonate (Tc-99m IDP) in 50 unselected patients with suspected or proven myocardial infarction. Imaging was performed as soon as possible after the acute event and thereafter at daily intervals for 7 days whenever feasible or until the image became negative. Each scan was performed 1 hr after the i.v. injection of 8-10 mCi of Tc-99m IDP with recording of images in the anterior, left anterior oblique, and left lateral projections. Thirty patients undergoing whole body scans for noncardiac conditions underwent myocardial imaging in the same manner, and blood samples were taken from ten of these patients to determine blood clearance data. In detecting full-thickness myocardial infarction, the sensitivity of the method was 95% and in the detection of sub-endocardial infarction, 70%. Blood clearance of Tc-99m IDP was faster than that of Tc-99m pyrophosphate. The authors emphasized the advantages of Tc-99m IDP in myocardial scanning and the importance of obtaining serial studies in patients suspected of having acute myocardial infarction. They suggested that it is possible that some of the apparent false negatives may be due to ischemia without infarction.

Experience with Radioimmunoassay for Parathyroid Hormone in Diagnosis of Primary Hyperparathyroidism. G. F. Carswell, C. S. Anast, I. M. Thompson, and G. Ross, Jr. *J Urol* 119: 175-179, 1978.

The authors present the results of 6 years of experience with the radioassay of immunoreactive parathyroid hormone as an aid in confirming the diagnosis of primary hyperparathyroidism. The determination of serum parathyroid hormone was based on a modification of the method originally described by Conway and Anast. Results of serum phosphorus, serum calcium, and serum parathyroid hormone

determinations in 32 cases of primary hyperparathyroidism are presented. Inconsistency of the deviations from normal in serum calcium and serum phosphorus levels is emphasized. The particular value of the radioimmunoassay for immunoreactive parathyroid hormone in identifying patients with hormocalcemic hyperparathyroidism and its usefulness in monitoring their response to therapy are stressed.

Reliability of Gallium Scan Chest Radiography Compared to Mediastinoscopy for Evaluating Mediastinal Spread in Lung Cancer. N. P. Alazraki, J. W. Ramsdell, A. Taylor, P. J. Friedman, R. M. Peters, and G. M. Tisi. *Am Rev Resp Dis* 117: 415-420, 1978.

The clinical utility of the gallium scan in staging patients with potentially unstable lung cancer is shown by the results obtained in this series of 25 patients, all of whom had primary lung tumors showing uptake of gallium. Comparison of the results of chest roentgenogram, gallium scan, and mediastinal exploration for the detection of tumor involvement of the mediastinum revealed that gallium scanning had a true-positive ratio of 100% and a true-negative ratio of 71% when compared to mediastinoscopy and a slightly greater diagnostic sensitivity than the roentgenogram. Patients with uptake of gallium in the primary lung tumor, but without evidence of mediastinal involvement by both chest roentgenogram and gallium scan, may be spared a staging mediastinoscopy prior to thoracotomy, thereby avoiding the possible complications and financial cost of this additional staging procedure.

[⁷⁵Se] Selenomethionine Scintigraphy in Mediastinal Diseases. A. Masaoka, S. Kyo. *J Thorac Cardiovasc Surg* 75: 419-424, 1978.

Fifty-nine patients admitted for suspected mediastinal disease received chest scans utilizing [⁷⁵Se] selenomethionine, 2-3 μ Ci per kilogram body weight given intravenously. Imaging was performed 1 hr after injection. Cystic tumors—including cystic teratoma, bronchial cyst, and coelomic cyst—benign neurogenous tumors, and vascular diseases yielded negative scans in all cases studied. Parenchymal tumors yielded positive imaging in many cases and high positive rates were also noted in lymphadenitis tuberculosa mediastinalis and sarcoidosis. Several small thymomas associated with myasthenia gravis were not visualized. The authors conclude that the [⁷⁵Se] selenomethionine chest scan was useful in separating aneurysms and cystic tumors of the mediastinum from the group of mediastinal diseases yielding positive scans.

Carboxyl-Terminal Fragments of Human Parathyroid Hormone in Parathyroid Tumors—Unique New Source of Immunogens for Production of Antisera Potentially Useful in Radioimmunoassay of Parathyroid Hormone in Human Serum. F. P. Dibella, J. B. Gilkinson, J. Flueck, and C. D. Arnaud. *J Clin Endocrinol Metab* 46: 604-612, 1978.

Antisera with immunologic specificity directed toward the carboxyl-terminal region of human parathyroid hormone were superior for use in diagnostic radio-immunoassays. These antisera had been in limited supply and generally were readily available only in those laboratories having developed them. The authors report the presence of large quantities of immunogenic carboxyl-terminal human parathyroid hormone fragments in a previously discarded fraction obtained during the urea-trichloroacetic acid (TCA) procedure for extraction

of hormone from hyperfunctioning human parathyroid tissue. This material, injected into guinea pigs and goats, yielded high affinity antisera with predominant specificity for the carboxyl-terminal region of parathyroid hormone. Their findings suggest that the use of this TCA supernate as an immunogen may permit the large scale production of diagnostically useful parathyroid hormone antisera.

Chemical Form of the Radioactive Excretion Products after Intravenous Application of ^{125}I -Orthoiodohippurate to Rats. W. Bogel and K. Stockhausen. *Nucl Med XVII/2: 53-56, 1978.*

The authors sought to examine the kinetics of iodine-labeled orthoiodohippuric acid. Two Wistar rats were intravenously given 100 μCi [^{125}I] orthoiodohippurate. Urine and feces were collected at 24-hr periods while the animals lived in metabolic cages. Total body activity of the rats was determined daily. Feces and urine were either processed immediately or kept at -20°C until processing. The urine was analyzed for metabolites with thin layer chromatography (TLC) and high pressure liquid chromatography (HPLC). Parallel to the direct analysis of the urine, tracer-labeled urine contents were separated in a first step and were then separated further with TLC and HPLC. After appropriate preparation, feces were analyzed with HPLC. The radiopharmaceutical was checked to determine the contamination level prior to use and was found to be in an acceptable range for the study. The authors found the excretions contained three products labeled with I-125: [^{125}I] orthoiodohippuric acid (65%), [^{125}I] orthoiodobenzoic acid (15%), and free I-125 (12%). Furthermore, the authors found 1.5-5% of the total activity in the feces. A possible contamination of feces with urine was considered possible. The authors conclude that, contrary to present thinking, isotope-labeled hippuric acid is partly metabolized after administration for diagnostic purposes.

Scintigraphic and Experimental Studies with ^{67}Ga in 142 Patients with Bronchial Cancer. K. Kemphen, H. Langhammer, G. Hor, and H. W. Pabst. *Nucl Med XVII/2: 47-52, 1978.*

The authors compared the results of Ga-67 citrate scintigraphy with the histologic findings in 142 patients with untreated lung carcinoma. Forty-eight hours after i.v. injection of 2-2.5 mCi Ga-67 citrate, scintigrams were made with a rectilinear scanner fitted with a 5-in. crystal. Each patient had a scintigram in AP projection. Lateral and PA views were also made when the location of the tumor necessitated it. Histologic data existed for all patients. One hundred thirty-two (93%) of all lung carcinoma were visualized. Sixty-three of 66 differentiated, and 69 of 76 undifferentiated, lung carcinoma showed increased Ga-67 incorporation. The scintigraphic image was dependent upon depth and size of the tumor. Ten lung carcinomata were not seen scintigraphically, six of which had a diameter under 2 cm, and the other four were largely necrotic. For 31 patients the Ga-67 tissue concentrations were determined with 132 tissue samples obtained during surgery. The samples were measured 2-3 days after the Ga-67 was given, and the percentage of injected Ga-67 per kilogram tissue was determined. Tumor tissue had an elevated Ga-67 content when compared to normal lung tissue or to that of chronic pneumonia, whereas necrotic tissue showed the lowest Ga-67 incorporation. The authors conclude that Ga-67 citrate scintigraphy is suitable for detecting lung carcinoma and that tumors located in the hilar or mediastinal region may be monitored better scintigraphically than radiographically during therapy. It is also

stressed that the degree of differentiation of the tumor will not influence the Ca-67 citrate incorporation.

Quantitative Radionuclide Angiography in Right Anterior Oblique View—Comparison with Contrast Ventriculography. M. M. Bodenheimer, V. S. Banka, C. M. Foosee, G. A. Hermann, and R. H. Helfant. *Am J Cardiol 42: 718-725, 1978.*

The utility of the right anterior oblique view during first pass radionuclide angiography was studied in 44 patients undergoing evaluation for coronary artery disease by contrast ventriculography and coronary angiography. Radionuclide angiograms were obtained using a computerized multicrystal scintillation camera (Baird Atomic System 77), after administration of 12-18 mCi of sodium pertechnetate. Of the 44 patients, eight had a normal heart, and 14 had coronary artery disease with normal wall motion on contrast ventriculography. All had normal contraction on radionuclide angiography. Of 17 segments localized to the anterior and apical asynergic areas on contrast ventriculography, 16 were accurately localized with radionuclide angiography. Of 17 inferior asynergic areas, 13 were also shown to be inferior on radionuclide angiography. The quantitative assessment of the severity of asynergy using the hemiaxis method showed a good correlation between asynergic severity as defined with radionuclide angiography and contrast ventriculography. Of 11 anterior areas, seven were defined as hypokinetic with contrast ventriculography and demonstrated chordal shortening on radionuclide angiography. Similarly, four akinetic or dyskinetic segments on contrast ventriculography showed a great reduction in chordal shortening on radionuclide angiography. Akinetic apical and inferior segments as defined with contrast ventriculography also showed a marked reduction in wall motion to 10.4% and 7.5%, respectively. The determination of ejection fraction using radionuclide angiography showed a correlation of 0.839 between the left anterior oblique and right anterior fraction assessed from contrast ventriculography. The authors conclude that radionuclide angiography performed in the right anterior oblique view using first pass techniques permits an accurate assessment of the wall motion of areas of left ventricle suboptimally seen in either the left anterior oblique or anterioposterior views.

Effects of Coronary-Artery Bypass on Global and Regional Left Ventricular Function during Exercise. K. M. Kent, J. S. Borer, M. V. Green, S. L. Bacharach, C. L. McIntosh, D. M. Conkle, and S. E. Epstein. *New Engl J Med 298: 1434-1439, 1978.*

Myocardial function at rest and following exercise was assessed in 23 successive patients preoperatively and following coronary artery bypass grafting. Left ventricular ejection fraction and regional contraction were evaluated by radionuclide cineangiography utilizing Tc-99m-labeled human serum albumin in ECG-gated equilibrium studies. Prior to surgery all patients had a decrease in ejection fraction during exercise, and 21 of the 23 patients developed at least one wall motion abnormality during exercise that was not present in the resting state. Studies performed 6 mo postoperatively showed substantial improvement in myocardial function in 17 of the 23 patients with increase in ejection fraction during exercise. Most of these 17 patients also manifested fewer wall motion abnormalities during exercise. Previous studies of myocardial function before and after coronary artery bypass surgery have been performed in the basal state. Scintigraphic imaging during exercise permits assessment of the capacity of the coronary arteries to increase myocardial perfusion in response to increased metabolic demand and documents,

whether or not the coronary revascularization is adequate to sustain myocardial function during exercise.

The Diagnosis of Liver Metastases by Ultrasonic and Radioisotope Scanning. S. N. Rasmussen, T. Hviid, H. Mouridsen, and H. Petersen. *Dan Med Bull* 25: 60-62, 1978.

Data were presented from the results of ultrasonic liver scans and radioisotope liver scans in 70 patients suspected of having hepatic metastases. Bistable equipment was used for the ultrasonic scans, and rectilinear scanners were used for radioisotope imaging. True diagnoses were established by autopsy, laparotomy, biopsy, or by clinical followup and laboratory examinations over at least a 2-yr period. The predictive diagnostic values of reports of 'metastases present' were found to be 58% (39/75) for the ultrasound examination and 45% (30/61) for the radioisotope procedure (95% confidence limits in brackets). The predictive diagnostic values of reports of 'metastases not present' were 86% (70/95) by ultrasonic scanning and 87% (66/97) for radioisotopic scanning. Results obtained by the two modalities showed no significant discrepancies in patients with metastatic disease. False-positive results were obtained significantly more often by radioisotope scans than by ultrasonic examination; but since both ultrasonic and radioisotope scanning showed a low rate of false-positive findings, this was not considered to indicate any superiority of one method over the other. The authors conclude that a considerable amount of confidence could be placed in the diagnosis 'no metastases' obtained by either type of examination, but little confidence could be placed in the diagnosis 'metastases present.'

Electroencephalographic and Radionuclide Studies in Dialysis Dementia. S. D. Mahurkar, L. Meyers, Jr., J. Cohen, R. V. Kamath, and G. Dunea. *Kidney* 13: 306-315, 1978.

Six maintenance hemodialysis patients with dialysis dementia syndrome (progressive severe mental deterioration, speech disturbance, apraxia, facial grimacing, and myoclonus) were evaluated to analyze findings of electroencephalogram (EEG), Tc-99m brain scan, and I-131 human serum albumin (RISA) cisternogram. All patients were black and their ages ranged from 34 to 62 years. The duration of dialysis ranged from 13 to 51 mo, and the renal failure was the result of essential hypertensive nephrosclerosis. The dementia patients had marked slowing of the EEG rhythm to 5-7 Hz with high voltage biphasic or triphasic spikes; and were clearly separated by frequency distribution analysis from the controls. The dynamic and static images with Tc-99m were normal, but RISA cisternogram in dementia patients demonstrated ventricular reflux, prolonged stasis, late appearance of the parasagittal strip, and persistence of RISA for up to 96 hours, all of which suggest an alteration in cerebrospinal fluid dynamics possibly due to an absorptive defect at a distal site. These abnormalities could be causally related to dialysis dementia, however, since the clinical and EEG improvement following ventriculo-subclavian shunting in a patient with dialysis dementia has been recently reported.

Water Enema: A New Ultrasound Technique in Defining Pelvic Anatomy. C. Rubin, A. B. Kurtz, and B. B. Goldberg. *J Clin Ultrasound* 6: 28-33, 1978.

Improved visualization of several aspects of pelvic anatomy is accomplished by filling of the recto-sigmoid colon with water. Successful delineation of such entities as infiltrating tumor of the bladder wall is provided by fluid

distention of both urinary bladder and rectum, thus outlining both walls of the mass. Carcinoma of the bladder, recurrent prostatic carcinoma, recurrent endometrial carcinoma, and multiloculated ovarian cyst are examples of entities successfully identified by this technique. The authors cite the main advantages of the procedure as separation of fecal "pseudotumors" from true pelvic pathology, definition of the interface between rectum and uterus or rectum and bladder, definition of the relationship between sacrum and rectum, and additional information concerning distensibility of the recto-sigmoid colon. Positioning, scanning, and other technical aspects are described.

Sensitivity of Gray Scale Ultrasound in Detecting Urinary Tract Obstruction. P. H. Ellenbogen, F. W. Scheible, L. B. Talner, and G. R. Leopold. *Am J Roentgenol* 130: 731-733, 1978.

In a series of 67 patients examined by both excretory urography and ultrasonography, the authors obtained a sensitivity of 98% with ultrasonography in the detection of hydronephrosis. A classification of Grades 0-3 was established covering the spectrum of mild, moderate, and severe dilatation, with examples of each provided. A 26% false-positive rate was neither unexpected, by virtue of the extreme variability of the normal collecting systems, nor considered a serious drawback to the use of ultrasound as a screening technique. Patients considered on ultrasonography to have significant obstruction were then referred for urography, which would otherwise have been the initial study. The false-negative rate of 2% indicates that gray-scale ultrasound is, in fact, a reliable method for excluding urinary tract obstruction.

Gray Scale Ultrasonography of Adrenal Neoplasms. M. E. Bernardino, H. M. Goldstein, and B. Green. *Am J Roentgenol* 130: 741-744, 1978.

The authors review a series of 21 adrenal neoplasms examined by gray-scale ultrasonography. The masses tended to be rounded or ovoid with smooth contours, and all displayed solid echo characteristics. The cleavage plane between the adrenal and the kidney, definable in nine of the 21 lesions, was helpful in establishing the nature of the mass as adrenal. The absence of this cleavage plane does not, however, exclude an adrenal origin. Lesions of the right adrenal gland were examined largely in a supine position. Overlying bowel gas made prone and oblique views frequently more helpful in evaluating the left side. Compression of the posterior wall and/or anterior displacement of the inferior vena cava were seen in approximately 2/3 of the right-sided adrenal lesions. The authors caution that the spleen and lesions of the pancreatic tail may present problems in the differential diagnosis of a left adrenal mass. No differences between primary and metastatic lesions could be identified. The lower limit of resolution for detection of adrenal neoplasms by standard techniques is taken to be 3 cm; reference is made to those scans utilizing the decubitus oblique method described by Sample.

The Inferior Vena Cava: Mass Effects. B. B. Gosink. *Am J Roentgenol* 130: 533-536, 1978.

Ultrasonographic evaluation of the inferior vena cava is of considerable value in planning the surgical approach to various abdominal tumors and is of prognostic significance in evaluating their extent. Intrinsic involvement of the vessel,

as well as extrinsic compression by neighboring neoplasm, are both amenable to display by this method. Six cases are presented in which disease in or about the vessel was clearly defined by ultrasound. Retroperitoneal node enlargement with posterior compression upon the vessel is seen in nodal involvement by hypernephroma; demonstration of direct tumor extension into the inferior vena cava was also possible in a case of hypernephroma. Distortion and compression of the vessel by nodes involved in the spread of adenocarcinoma from the pancreas is illustrated as well. Deep inspiration

serves to distend the vein and to cause descent of the liver, providing an "ultrasonic window."

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Articles to Appear in Upcoming Issues

Critical Evaluation of Acute Cardiopulmonary Toxicity of Microspheres. Accepted 5/1/78.

D. R. Allen, J. M. Ferens, F. W. Cheney, and W. B. Nelp
Thallium-201 Myocardial Imaging for Evaluation of Right-Ventricular Overloading. Accepted 5/3/78.

Makoto Kondo, Atsushi Kubo, Hajime Yamazaki, Fumitaka Ohsuzu, Shunosuke Handa, Takeshi Tsugu, Hidekazu Masaki, Fumio Kinoshita, and Shozo Hashimoto
Differential Diagnosis of Hypercalcemia by Measurement of Parathyroid Hormone, Calcitonin, and 25-Hydroxy-Vitamin D. Accepted 5/10/78.

Noninvasive Methods of Infarct Sizing during Experimental Myocardial Infarction (Letter to the Editor). Accepted 5/10/78.

Harold E. Weiner

Increasing Incidence of Hypothyroidism within 1 Yr after Radioiodine Therapy for Toxic Diffuse Goiter (Letter to the Editor). Accepted 5/12/78.

Peter B. Schneider

Reply. Accepted 5/12/78.

Robert L. Young, Steven G. Dorfman, and Stanley E. Von Hofe

Radiochemical Purity of Technetium Pyrophosphate (Letter to the Editor). Accepted 5/19/78.

Charles D. Russell and James E. Majerik

False-Positive Thyroid Scan Due to Zenker's Diverticulum. Accepted 5/22/78.

Vijay M. Dhawan, Kenneth R. Kaess, and Richard P. Spencer

Inexpensive EKG Gate for Computer-Processed Cardiac Motion Study. Accepted 5/22/78.

Michael Kan

Indium-111 Labeling of Leukocytes: A Detrimental Effect on Neutrophil and Lymphocyte Function and an Improved Method of Cell Labeling. Accepted 5/22/78.

A. W. Segal, P. Deteix, R. Garcia, P. Tooth, G. D. Zanelli, and A. C. Allison

Kinetics of Binding of Carrier-Free Ga-67 to Human Transferrin. Accepted 5/23/78.

Steven M. Larson, David R. Allen, Janet S. Rasey, and Zdenka Grunbaum

Ventriculitis: Diagnosis with Technetium-99m DTPA. Accepted 5/24/78.

Michael J. Daly and Dennis D. Patton

Unusual Scintigraphic Appearances of a Mobile Accessory Lobe of the Liver. Accepted 5/24/78.

John B. Bingham and Michael N. Maisey

Lung Uptake of Indium-111 Chloride (Letter to the Editor). Accepted 5/24/78.

Makoto Kondo, Hidekazu Masaki, Shigeru Kosunda, Yutaka Ando, Yaeko Takagi, Atsushi Kubo, and Shozo Hashimoto

The Influence of Carrier Strontium Level and Eluant Volume on the Performance of Sr-82 and Rb-82 Biomedical Generators. Accepted 5/31/78.

Patrick M. Grant, Richard E. Whipple, Harold A. O'Brien, and Santi Kulprathipanja

The Percentage Uptake of Treatment Activity of I-131 by the Thyroid (Letter to the Editor). Accepted 5/31/78.

Bruno Schober

Calculation of Radioactive Decay with a Pocket Calculator (Letter to the Editor). Accepted 5/31/78.

James S. Robertson

Diffuse Peritoneal Uptake of Ga-67 in Pancreatic Disease: A Possible Prognostic Indicator (Letter to the Editor). Accepted 6/5/78.

Paul J. Myerson, Daniel A. Myerson, and Richard P. Spencer

Pulmonary Perfusion Imaging: Acute Toxicity and Safety Factors as a Function of Particle Size. Accepted 6/9/78.

Michael A. Davis and Rebekah A. Taube

The Source of Fecal Gallium: Clinical Implications. Accepted 6/9/78.

Andrew Taylor, Neil Chafetz, Jot Hollenbeck, and Wallace Hooser

Imaging I-125 with a Scintillation Camera. Accepted 6/12/78.

Ralph Adams, Gerald A. Kirk, Eloy Schulz, and Barbara Snell

International Committee for Radionuclide Metrology (Letter to the Editor). Accepted 7/14/78.

Wilfrid B. Mann

The Predictive Value of Myocardial Perfusion Scintigraphy after Stress in Patients without Previous Myocardial Infarction (Letter to the Editor). Accepted 6/12/78.

Joseph V. Cusmano

Reply. Accepted 6/12/78.

David A. Turner

Use of Whole-Body Retention of Tc-99m Diphosphonate in the Diagnosis of Metabolic Bone Disease (Letter to the Editor). Accepted 6/12/78.

James S. Arnold, Nanda Khedkar, and W. Earl Barnes

Reply. Accepted 6/12/78.

I. Fogelman and R. G. Bessent

Development of an Enzyme-Radioimmunoassay for the Measurement of Dopamine in Human Plasma and Urine. Accepted 6/12/78.

Bahjat A. Faraj, William R. Walker, Vernon M. Camp, Farouk M. Ali, and Woodfin B. Cobbs

Synthesis of Criteria for Operability in Normal-Pressure Hydrocephalus Due to Bilateral Convexity Block (Letter to the Editor). Accepted 6/15/78.

Russell C. Briggs, L. Reed Altemus, and William H. Leschey

Computerized Transaxial Tomography and Serial Scintigraphy in Intracranial Tumors (Letters to the Editor). Accepted 6/16/78.

Michael J. Daly