

## ABSTRACTS OF CURRENT LITERATURE

**Assessment of Pharmacological Treatment of Myocardial Infarction by Phosphorus-31 NMR with Surface Coils.** R. L. Nunnally, P. A. Bottomley; University of Texas, Dallas, and General Electric. *Science* 211:177-180, 1981

The authors report the use of phosphorus-31 nuclear magnetic resonance to study the cellular metabolism of the surface of a perfused heart after myocardial infarction. In particular, the changes in the signal from inorganic phosphate after drug treatments was observed. Verapamil and chlorpromazine had the expected effects on the NMR spectra. In addition, the untreated heart showed a broad peak in the inorganic phosphorus and sugar phosphate regions, perhaps indicating calcium phosphate precipitation. Several extensions of this technique are foreseen using more coils and more variations on the drug treatment theme.

**Radionuclide Ejection Fraction in Doxorubicin Cardiotoxicity.** G. W. Morgan, B. M. McIlveen, A. Freedman, I. P. C. Murray; Prince Wales Hosp, Randwick, Australia. *Cancer Treatment Rep* 65: 629-638, 1981

First-pass ejection function (EF) studies using a gamma camera interfaced to a computer were performed before administration of each dose of Doxorubicin in 292 patients. All patients had a baseline EF and assessment of risk factors (RFs) before being placed on this medication. Detailed analysis was undertaken in 98 (55 female, 43 male) patients with an age range of 15-75 yr. Of these patients, 25 were >60 yr of age and three were >70 yr. The majority of the patients had non-Hodgkin's lymphoma, metastatic breast carcinoma, lung carcinoma, or osteogenic or soft tissue sarcoma. Ninety-one patients had received > 200 mg/m<sup>2</sup> and seven with RFs received between 100 and 200 mg/m<sup>2</sup>. Thirty-two patients had RFs and 66 had no risk factors (NRFs). The RFs were cardiovascular disease and mediastinal irradiation within 6 mo of starting Doxorubicin treatment. The total Doxorubicin dose was > 550 mg/m<sup>2</sup>. The criteria for discontinuing Doxorubicin were findings of EF < 0.40 in RF patients, EF < 0.35 in NRF patients, or decrease in EF of > 0.14 over three successive readings. In the NRF group, no patient met these criteria nor did any develop cardiac failure. In the RF group, discontinuation of medication was indicated in eight patients. The authors concluded that RF patients warrant careful monitoring and that NRF patients do not require EF determination until a threshold accumulative dose is reached.

**The Inconsistent Pattern of Thallium Defects—A Clue to the False Positive Scintigram.** R. F. Dunn, L. Wolff, S. Wagner, E. H. Botwinick; University of California, San Francisco, CA. *Am J Cardiol* 48: 224-233, 1981

An increased incidence of false-positive results in exercise thallium-201 myocardial scintigrams has been noted in recent studies. Some of these errors of interpretation appear to be due to abnormalities of myocardial perfusion caused by diseases other than coronary artery atherosclerosis, but many false positives are due to failure to exclude patterns of defects inconsistent with coronary disease and caused by soft-tissue attenuation or apical thinning. Scintigrams from 76 patients with chest pain but without

major coronary narrowing by angiography or postmortem examination and from 68 randomly selected patients with proved coronary artery disease were examined. The scintigrams were classified as positive or negative without knowledge of results of the other studies and regardless of whether or not peak exercise was obtained. Of the 76 patients with normal coronary arteries, 60 (79%) had normal exercise Tl-201 myocardial scintigrams and 16 (21%) had abnormal scintigrams. Among the 16 patients with "false-positive" scintigrams, three had scintigraphic evidence of ischemia and two had evidence of infarction, with abnormal left ventriculograms in four of these five patients; the remaining 11 patients had an inconsistent pattern of perfusion defects on the scintigram. Inconsistent patterns were recognized as such in 18 of the 60 studies read as normal. In patients with abnormal coronary arteries, four of the 62 abnormal scintigrams demonstrated an inconsistent pattern. If only studies with a consistent pattern are considered positive, the diagnostic sensitivity of thallium-201 myocardial exercise scintigrams for the detection of coronary artery disease will be decreased minimally with a significant increase in specificity and a higher overall accuracy.

**Transluminal Angioplasty: Control of Efficiency by Nuclear Medical Methods After Non-Operative Dilatation of Critical Coronary Artery Stenosis.** G. Hör, N. Kanemoto, R. Standke, F. D. Maul, H. Klepzig, Jr, G. Kober, M. Kaltenbach; Frankfurt, Germany. *Herz* 5:168-176, 1980

Tl-201 myocardial scintigraphy (MSC) and equilibrium-radionuclide cineventriculography (ERNVG) were used to evaluate the results of transluminal angioplasty (TAP). Twelve patients with vascular stenosis resulting in coronary lumen narrowing of at least 70% were studied with the radionuclide procedures before and after TAP. Nine of the 12 patients had ERNVG, and nine of the 12 patients also had resting and stress MSC before and after TAP. MSC in ventral, LAO 45°, and left lateral position followed i.v. injection of 2 mCi Tl-201. Tl-201 washout and redistribution at 1 and 3 hr were determined. By using ROI techniques, the maximum radiotracer uptake of the left ventricle was compared with the count density of the area distal to the coronary stenosis. ERNVG followed in vivo labeling of erythrocytes. ERNVG was obtained during ergometric stress at 40-100 W in a modified LAO 45° view. Left ventricular ejection fraction (LVEF) was determined during 2-min intervals beginning at 2 and 4 min after stress. Regional wall-motion imaging was evaluated during the same time interval. Repeat studies carried out after TAP had the same stress level as was used in the initial examination.

The authors found Tl-201 uptake to be reduced to  $63 \pm 5\%$  of maximum registered over the left ventricle in functional vascular stenosis. Nine patients with successful dilation of the vascular stenosis had repeat MSC. All had increased Tl-201 uptake following TAP—uptake rose to  $79 \pm 7\%$ . Tl-201 redistribution at 1 and 3 hr also normalized. Six of the successfully treated patients had improved LVEF. TAP was unsuccessful in three patients, two of whom had an unchanged and one a reduced LVEF. Stress ERNVG after successful dilation of stenosis resulted in improved LVEF values. Furthermore, the mean normalized systolic ejection rate and the maximal volume change during systole normalized

in patients with successful dilation of the vascular stenosis. The authors conclude that Tl-201 scintigraphy and radionuclide ventriculography are useful noninvasive procedures to assess TAP. Tl-201 scintigraphy and equilibrium radionuclide ventriculography will normalize after successful dilation of coronary artery stenosis.

**Radionuclide Measurement of Differential Glomerular Filtration Rate.** T. A. Powers, W. J. Stone, R. B. Grove, J. M. Plunkett, S. Kadir, J. A. Patton, R. D. Bowen; Veterans Administration Hospital, Nashville, TN. *Invest Rad* 16:59-64, 1981

This paper reports the comparison of Tc-99m DTPA with iothalamate and creatinine for measuring total glomerular filtration rate (GFR) and differential GFT. A dog model with renal infarcts produced with Ivalon was used. Five millicuries of Tc-99m DMSA were injected one day before the experiment to give uptake information. In the experiment, 15 mCi of Tc-99m DTPA were injected as a bolus and recorded for 15 sec/frame for 3 min. In addition, for 240 min, blood was sampled at intervals, counted, and checked for tagging. On the following day, a continuous infusion experiment combining all the substances was performed using ureteral catheters. Each of the substances was measured. The authors' suggestion is that in man the use of Tc-99m DTPA with sampling during the two-exponential portions of the clearance curve in combination with differential renal clearance data from the images may allow measurement of total and differential GFR.

**Splenic-Gonadal Fusion: Identification by Radionuclide Scanning.** G. K. McLean, A. Alavi, M. Ziegler, H. M. Pollack, J. W. Duckett; Univ. of Pennsylvania Hospital, Philadelphia, PA. *J Pediatr Surg* 16: 649-660, 1981

A 14-mo-old male presenting with signs and symptoms of testicular torsion underwent scrotal exploration. No torsion of the testis was present; however, ectopic splenic tissue was found adjacent to the left testis. The ectopic splenic tissue was excised and the testis returned to its normal scrotal location. Abdominal scanning with Tc-99m sulfur colloid was performed to confirm the operative diagnosis of splenic-gonadal fusion. The scan demonstrated a "tail" of functioning splenic tissue approximately 3 cm in length extending inferomedially from the spleen into the left lower quadrant. The authors suggested that Tc-99m SC scanning may prove to be a useful adjunct in the evaluation of patients with the unusual congenital splenic-gonadal fusion.

**Clinical Evaluation of Gallium-67 Citrate Scanning in Noninflammatory and Nonmalignant Pelvic Conditions.** M. A. Pelosi, R. J. D'Amico, J. Apuzzio, D. Fricchione; CMDNJ-New Jersey Medical School, Newark, NJ. *Diag Gynecol Obstet* 3(2):131-135, 1981

In this prospective study performed over 17 mo, 26 obstetrical and gynecologic patients with proven benign tumors and noninflammatory conditions were evaluated with Ga-67. After the patient had received a laxative and enemas, Ga-67 citrate (50  $\mu$ Ci/kg) was administered i.v., and whole-body imaging by rectilinear scanner performed at 48 and 72 hr postinjection in anterior and posterior projections (with additional views when indicated). All patients evaluated had an uncomplicated postoperative course. In the four normal postpartum patients who underwent normal delivery (including two with episiotomy), Ga-67 was injected 24 hr after delivery, and the scans were negative. In three patients who underwent elective repeat cesarean section with tubal ligation, Ga-67 studies on the second postoperative day were normal. Nine patients underwent gynecologic surgery: three had abdominal

hysterectomies, three vaginal hysterectomies, one a salpingo-oophorectomy, one an abdominal tubal ligation, and one had a laparoscopic electrocoagulation of the fallopian tubes. Abdominal operations were performed using the Pfannenstiel incision. Ga-67 was injected on the second postoperative day, and all scans were negative. Ten patients with histologically confirmed benign pelvic tumors received Ga-67 during the preoperative work-up period with results known before surgical exploration. Those patients included three with leiomyomata uteri, two with benign cystic teratomas, two with adenomyosis, one with a large paraovarian cyst, and one with an ovarian serous cystadenoma. All ten patients had negative radionuclide studies. There was no Ga-67 uptake at the site of noninfected surgical incisions in the early postoperative period. The authors feel that their findings indicate a very low incidence of false-positive results when evaluating noninflammatory and benign pelvic pathology with Ga-67.

**Comparative In Vivo Kinetics of Some New <sup>99m</sup>Tc-Labeled Acetanilido Iminodiacetates.** E. Chiotellis, A. Varvarigou, C. Koutoulidis; Athens, Greece. *Eur J Nucl Med* 6:241-244, 1981

The authors compared the in vivo kinetics of five new hepatotropic technetium-labeled acetanilido IDA complexes: (1) Tc-99m-o-butyl-IDA, (2) p-tert butyl-1-IDA, (3) m-butoxy IDA, (4) O-hexyloxy-IDA, and (5) p-hexyloxy IDA with Tc-99m-EHIDA and p-butyl 1 IDA. Radiochemical purity was determined to be above 95%. The lipophilic characteristics of the radiotracers were evaluated in an ethylene dichloride and water system. In vivo distribution of the Tc-99m IDA derivatives was studied in mice. Groups of five animals were each injected with 0.2 ml of each derivative. Animals were killed between 5-60 min following i.v. tracer administration. Tracer tissue distribution expressed as percent of dose in collected tissue was calculated. Rabbits were imaged with a gamma camera following i.v. injection of 2 mCi of each Tc-99m-labeled complex. The authors found that the new complexes were highly hepatotropic but had slower transhepatic kinetics than those of EHIDA. Tc-99m p-butyl IDA and p-hexyloxy IDA showed the slowest rate of excretion from hepatic cells. O-substituted derivatives were excreted more rapidly from the liver than the p derivatives. The 60-min urinary excretion data showed that Tc-99m EHIDA had the highest renal excretion of all complexes tested. Tc-99m-p-hexyloxy IDA had the lowest urinary excretion but also the slowest rate of hepatic excretion. Tc-99m-butoxy and O-hexyloxy IDA were almost totally excreted into the intestines within 30 min and provided images comparable to those obtained with Tc-99m EHIDA. The distribution data from the Tc-labeled complexes in ethylene dichloride and water showed that the polarity of the Tc-complexes was changed by the various substituents. The more polar molecules showed faster hepatic clearance. The authors believe that Tc-99m-p-hexyloxy IDA may be a promising scanning agent worthy of clinical testing because its slow hepatic excretion permits assessment of liver morphology and also permits evaluation of the hepatobiliary system.

**Scintigraphic Investigation of Bilio-Intestinal Anastomoses Using <sup>99m</sup>Tc-(2,6-Diethylacetanilido)-Iminodiacetic Acid (<sup>99m</sup>Tc-HIDA).** J. Schoubye, E. Øster-Jørgensen, S. A. Pedersen, P. B. Christensen; Odense, Denmark. *Acta Chir Scand* 147:57-60, 1981

Faulty function of a bilio-digestive anastomosis must be considered when symptoms persist or when they recur. The authors sought to determine whether the function of the anastomosis can be assessed with Tc-99m HIDA. Patients with a bilio-digestive anastomosis were placed into two groups. Group A (n = 12) had no symptoms and normal serum bilirubin values. Group B (n = 10) had pain, fever attacks or jaundice, or a combination of these symptoms. Four of the patients in Group B had a normal bilirubin

and six had slightly elevated values. The final diagnoses of Group B patients were: cholangitis (n = 1), cholangitis (n = 3), anastomosis stricture with a stone (n = 1), anastomosis stricture with cholangitis (n = 1), stricture of the anastomosis with a stone in the common duct and cholangitis (n = 2), pancreatic cancer without obstruction of the anastomosis (n = 1), and duodenal cancer without obstruction of the anastomosis (n = 1). Thirty normals served as controls. Gamma camera scintigraphy in the supine position followed i.v. injection of 2 mCi of Tc-99m HIDA. Four-minute scintigrams were obtained for 1 hr. When gut activity failed to be seen at 60 min, additional images were obtained. Data were collected in a minicomputer and time-activity curves were generated over the heart, liver, and gallbladder. Data were analyzed with a modification of the Wilcoxon sum-of-rank test. The authors found that all patients had a functioning anastomosis. In normals there was earlier visualization of the bile duct and gut than in patients of Group A or Group B. Bile leakage was correctly diagnosed by scintigraphy. Persistent dilation of the bile duct was recognized in ten patients of Group A, and in seven persons of Group B. It was not possible to demonstrate a statistical difference in bile duct and gut radiotracer appearance between Groups A and B. The authors therefore conclude that Tc-99m HIDA scintigraphy has low sensitivity for identifying complications in patients with bilio-digestive anastomosis.

**Real-Time Color Graphics in Studies of Molecular Interactions.** R. Langridge, T. E. Ferrin, I. D. Kuntz, M. L. Connolly; University of California, San Francisco and Berkeley, CA. *Science* 211:661-666, 1981

Real-time color graphics are used by pharmaceutical chemists to study molecular interactions. Large molecules can be portrayed with particular portions highlighted, and portions may then be rotated to study the potential for reaction. Color and dot intensity are used to create three dimensionality. The search for analogs to various compounds may profitably use such techniques.

**Prudent Practices for Handling Hazardous Chemicals in Laboratories.** B. C. McKusick; I. E. du Pont de Nemours and Co., Wilmington, DE. *Science* 211:777-780, 1981

This article reports the latest suggestions of the National Research Council for safe handling and disposal of hazardous laboratory chemicals. The use of a fume hood, eye protectors, and gloves will help prevent serious problems. The NRC report itself recommends one set of practices with most substances (Procedure B) and another set of practices for those substances with high chronic toxicity (Procedure A). Chemicals should be stored carefully and thoughtfully and their safe disposal will pose a problem for many institutions. Incineration has lately become the most acceptable disposal method. An active, nonjudgmental, safety program and laboratory management committed to safe laboratory practice will improve the working place.

**Measurement of Insulin-Like Growth-Factor-II by a Specific Radioreceptor Assay in Serum of Normal Individuals, Patients with Abnormal Growth Hormone Secretion, and Patients with Tumor-Assisted Hypoglycemia.** W. H. Daughaday, B. Trivedi, M. Kápadia; Barnes and Wohl Hosp, St. Louis, MO. *J Clin Endocrinol Metab* 53:289-294, 1981

The authors describe a radioreceptor assay for insulinlike growth factor II (IGF-II) based on the binding of I-125 IGF-II by rat placental membranes. Rat placental membrane contains a high concentration of receptors with affinity for IGF-II and does not contain detectable sites preferentially finding insulinlike growth

factors (IGF-I). IGF-II is extracted from its serum binding protein with a simple acid-ethanol step. After neutralization with 0.1 M Tris buffer, the extract is introduced into the radioreceptor assay directly. This radioreceptor assay has been applied to serum from normal individuals (29-69 yr, 25; over 70 yr, 25), cord sera (39), hypopituitary (13), and acromegalic (17), and patients with severe hypoglycemia associated with nonislet cells tumors (14) including lymphoma, hepatoma, gastric carcinoma, pleural mesothelioma, small cell carcinoma of lung, etc. The normal adults (29-69 yr) had a mean IGF-II activity of  $0.73 \pm 0.03$ ; higher concentrations were noted in adults more than 70 yr of age ( $1.05 \pm 0.05$ ), in cord serum ( $1.55 \pm 0.24$ ), and in short children with normal GH secretion ( $0.88 \pm 0.42$ ). In hypopituitary dwarfism, serum IGF-II activity was reached ( $0.50 \pm 0.05$ ), but in 17 acromegalic patients IGF-II was within normal limits ( $0.77 \pm 0.06$ ). In ten of 14 serum samples from patients with tumor-related hypoglycemia, the IGF-II exceeded the normal value. In eight of these sera, IGF-I by RIA was low, and in five it was unmeasurable. The results with a new radioreceptor assay for IGF-II provide additional evidence that regulation of this serum peptide differs from that of IGF-I.

**The Growth of Microorganisms in Some Parenteral Radiopharmaceuticals.** R. M. Abra, N. D. S. Bell, P. W. Horton; University of Strathclyde and West of Scotland Health Boards, Glasgow, Scotland. *Int J Pharmaceut* 5:187-193, 1980

Commercial kit vials of lyophilized dimercaptosuccinic acid (DMSA), tin colloid, pentetate (DTPA), lidofenin (HIDA), and medronate (MDP), gluceptate, human serum albumin (HSA), pyrophosphate (PPI), and macroaggregated albumin (MAA) were reconstituted each with 5 ml of sterile physiological saline. In sterile vials, separate 1-ml aliquots of each of the above preparations were inoculated with less than 100 viable organisms, one of each of the following bacterial species: *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, or fungal species: *Candida albicans*, *Aspergillus niger*. The vials were then shaken and incubated at 25 °C for 8 hr, with samples withdrawn at 4 and 8 hr for organism count. The least favorable media for growth was DMSA where *E. coli*, *P. aeruginosa*, and *S. aureus* all decreased in numbers over the 8-hr incubation. MAA was the only medium from which all five species were recovered at 8 hr in larger numbers than at inoculation. *A. niger* increased in all media except gluceptate; *E. coli* failed to multiply in any preparations except DTPA and MAA, and *C. albicans* failed to increase in any preparations except HSA and MAA. Separately, when reconstituted MAA was inoculated with ten viable *P. aeruginosa* organisms and then incubated at either 25 °C or 4 °C for 8 hr, bacterial counts increased at 25 °C but decreased at 4 °C. In contrast, *E. coli* content increased in MAA at either 4 °C or 25 °C. Also, in contrast, the *P. aeruginosa* content increased in HSA at 4 °C but decreased at 25 °C. The influence of the absence of Tc-99m radiation upon bacterial growth in this study is discussed. Since all of the radiopharmaceutical ligands tested were capable of sustaining the numbers of at least one microbial species, such radiopharmaceuticals should be assembled under conditions compatible with the lowest possible microbial contamination.

**Clinical Experience with a New Bone Seeking <sup>99m</sup>Tc Radiopharmaceutical.** T. I. Hale, A. Jucker, K. Vagenopoulos, B. Sauter, W. Wacheck, L. Bors; Kantonsspital Schaffhausen, Switzerland. *Nucl Compact* 12:54-55, 1981

The authors compared commercially available Tc-99m-labeled 2,3-dicarboxypropane-1, 1-diphosphate (Tc-DPD) with Tc-99m-labeled methylene diphosphonate (Tc-MDP) for whole-body bone scintigraphy. By random assignment, sixty adult patients referred for bone studies received 10-15 mCi intravenously of ei-

ther Tc-DPD (containing less than 5 mg MDP and less than 0.2 mg tin) or Tc-MDP (containing less than 5 mg MDP and less than 0.5 mg tin), and were imaged by gamma camera 2 hr later. A femur-to-soft tissue ratio (noninvolved bone) determined by computer data acquisition averaged  $2.2 \pm 0.5$  (s.d.) from Tc-DPD and  $1.45 \pm 0.6$  from Tc-MDP. Without knowledge of the particular radiopharmaceutical injected, the investigators assessed bone-image quality using 15 subjective criteria. On this basis, the images from Tc-DPD having a total score of  $27.2 \pm 2.7$  were superior to those from Tc-MDP having a score of  $24.6 \pm 3.0$  ( $p < 0.001$ ). Radiochemical assays on preparations showed Tc-DPD to be more stable than Tc-MDP.

**Bone Scanning in the Detection of Occult Fractures.** J. Batillas, A. Vasilas, W. F. Pizzi, T. Gokcebay; New York Infirm. Hosp., New York, NY. *J Trauma* 21:564-570, 1981

The authors present seven cases of positive bone images using Tc-99m pyrophosphate performed 1 to 3 days following trauma. Abnormal scintigraphs were found in (1) the distal radius; (2) the wrist; (3) the coccyx; (4) compression fracture of the lumbar spine and sacrum; (5) bilateral costochondral fractures and sternum; (6) the acetabulum; and (7) the hip. The initial radiographs of all seven cases were negative or equivocal although clinical manifestation such as pain, swelling, or tenderness were present. Roentgenographic confirmation occurred following a delay of days to weeks. It was concluded that bone scanning provides invaluable and definite diagnosis in the prompt detection of occult fractures.

**Intraoperative Radioactive Localization of an Osteoid-Osteoma—Case Report.** B. Ghelman, F. M. Thompson, W. D. Arnold; The Hospital for Special Surgery, New York, NY. *J Bone Joint Surg* 63:826-827, 1981

A 27-yr-old man complained of pain of 8-mo duration in the proximal end of his left arm, assumed to be secondary to injury from playing baseball. Tomographic radiographs showed an area of cortical thickening adjacent to a faint, round area of radiolucency in the medial aspect of the proximal part of the humerus. A bone scan by Tc-99m-medronate (Tc-MDP) revealed high uptake at the site. Four hours before surgery, 5 mCi Tc-MDP were given i.v. When the anteromedial aspect of the left humerus was exposed surgically, the cortex appeared thickened and rough. A cylindrical  $18 \times 1.6$ -cm sodium iodide crystal scintillation probe (interfaced to a portable scaler ratemeter) was then placed in immediate contact with the cortex of bone. The probe was slowly advanced from the proximal end of the humerus distally along the humeral shaft. Radioactivity in uninvolved bone was 30 counts per minute (CPM). Radioactivity rose to 200 CPM at the site of the osteoid osteoma. After removing the first small fragments of bone from the area where the cortex appeared thickened and rough, an intraoperative radiograph failed to indicate if the nidus had been excised. After a third group of bone fragments was removed, radioactivity at the site decreased to that in uninvolved bone. High counts and the nidus of the osteoid osteoma (latter by histologic examination) were found in the third group of fragments. The patient recovered uneventfully with complete relief from preoperative pain. The probe and ratemeter are preferable to a gamma camera for intraoperative use owing to their commercial availability, compact size, portability, and ease of sterilization. The author's technique is also suitable for bone biopsies in patients with positive bone scans but negative or equivocal radiographs.

**Ultrasonic Effects on Mammalian Multicellular Tumor Spheroids.** A. D. Conger, M. C. Ziskin, H. Wittels; Temple University, Philadelphia, PA. *J Clin Ultrasound* 9:167-174, 1981

Two cell types of multicellular tumor spheroids (MTS)—one of fibroblastic cells and the second of alveolar cell tumor—were exposed to sonofication. The MTS diameters were 250 to 320  $\mu\text{m}$  (6000-12,100 cells per MTS). Three ultrasound devices were used: a diagnostic unit, a therapeutic unit, and a laboratory instrument. Intensities ranging from 13 mW/cm<sup>2</sup> to 50 mW/cm<sup>2</sup> were produced, and the effects measured were change in size of MTS, damage to growth, damage to survival, and number of cells detached. No effects were noted on the MTS in the diagnostic level ranges. Some increase in cellular detachment was noted at higher intensity but no growth disturbance or survival changes identified. The authors suggest that previous work indicating significant cellular detachment from Petri dish walls at diagnostic levels may be based on the weakness of such bonds. In the MTS normal intracellular bonds are established more closely simulating actual tissue properties. The inference is that the number of cells detached by any ultrasound exposure at therapeutic levels is trivial and with diagnostic ultrasound statistically insignificant.

**Renal Agenesis: Spectrum of In Utero Findings.** P. A. Dubbins, A. B. Kurtz, R. J. Wapner, B. B. Goldberg; Thomas Jefferson University, Philadelphia, PA. *J Clin Ultrasound* 9:189-193, 1981

In three cases of renal agenesis the authors found oligohydramnios and failure to image the fetal urinary bladder to be the two consistent sonographic characteristics of the condition. In two cases paraspinal structures resembling kidneys were identified in retrospect, possibly representing ovoid adrenal glands. Oligohydramnios and unusual fetal lie may contribute to the difficulty of imaging the renal beds in Potter's syndrome. The conclusion is that absence of fetal bladder is a more reliable sign than imaging of fetal kidneys in the diagnosis of Potter's syndrome. Representative sonograms and autopsy specimens are provided.

**Gallbladder Wall Thickening: Patients without Intrinsic Gallbladder Disease.** P. W. Ralls, M. F. Quinn, H. U. Juttner, J. M. Halls, W. D. Boswell; USC Med. Ctr., Los Angeles, CA. *Am J Roentgenol* 137:65-68, 1981

Gallbladder wall thickness was determined in normal fasting volunteers to be within 1 to 2 mm and never more than 3 mm. In 22 patients with thickened gallbladder walls (4-10 mm) but without intrinsic gallbladder disease, 19 were found to be hypoalbuminemic. In a prospective study of 40 patients with hypoalbuminemia the median thickness was 4 mm, confirming previous reports of gallbladder wall thickening in association with hypoalbuminemia. The authors further determined that in patients with hypoalbuminemia, those with ascites had significantly thicker gallbladder walls than those without ascites, and they found an association between increased portal venous diameter and gallbladder wall thickening as well. Representative sonograms are provided.

**Correlation of Biparietal Diameters and Fetal Body Diameters: 12-26 Weeks Gestation.** D. A. Sarti, B. F. Crandall, J. Winter, R. D. Robertson, N. M. Kaback, L. E. Karp; UCLA School of Medicine, Los Angeles, CA. *Am J Roentgenol* 137:87-91, 1981

After studying 134 sonograms of patients from 12 to 26 weeks gestation, the authors developed curves relating the biparietal diameter to anteroposterior (AP) body diameter, transverse body diameter, an average of AP and transverse diameters, and a lon-

itudinal body diameter. Linear relationships were determined for all. The longitudinal measurement proved the least reliable. In cases of differential growth of the fetal head and abdomen, as in anencephaly and microcephaly, five cases were presented in which the correlations were more than two standard deviations from the mean. The disproportionately small head or abdomen was successfully identified, and the authors have thus far encountered no proven errors using the graphs developed in this study. Representative cases and graphs are provided.

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## RADIOPHARMACEUTICAL SCIENCE COUNCIL WORKSHOP ON

### The Choice of the Appropriate Animal Model in Radiotracer Design

**January 28, 1982**

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The Radiopharmaceutical Science Council will hold a one-day workshop held in conjunction with the midwinter meeting of the Society of Nuclear Medicine. The program for the workshop will include the following invited papers as well as contributed papers.

Edward A. Carr, M.D. "Animal Models for Study of Radiopharmaceuticals that are Substrates for (Catecholamine) Uptake<sub>1</sub> and Uptake<sub>2</sub>"

Brian M. Gallagher, Ph.D. "Monoclonal Antibodies: The Design of the Appropriate Carrier and Evaluation System"

Adrian Nunn, Ph.D. "Species Differences and the Need for Multiple Animal Models for Hepatobiliary Agents"

Michael J. Welch, Ph.D. "Labeled Cells"

Leonard I. Wiebe, Ph.D. "Oncological Models for Screening Potential Diagnostic Radiopharmaceuticals"

Participants are encouraged to make hotel reservations at the meeting site by contacting the Registrar, SNM, 475 Park Ave. So., New York, NY 10016. A registration fee of \$35.00 will be collected at the entrance to the meeting room.

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The Society of Nuclear Medicine invites manuscripts for consideration for the Fifth Annual Berson—Yalow Award. Work will be judged on originality and contribution to the fields of basic or clinical radioassay. The manuscript will be presented at the 29th Annual Meeting of the Society of Nuclear Medicine in Miami Beach, FL, June 15–18, 1982, and a suitably engraved plaque will be awarded to the authors by the Education and Research Foundation of the Society of Nuclear Medicine.

The manuscript should be approximately ten pages in length (typed, double-spaced). A letter requesting consideration for the award, including the author's full mailing address and telephone number, should accompany the manuscript. Original manuscript and eight copies must be received by January 18, 1982 at the Society of Nuclear Medicine office, 475 Park Ave. So., New York, NY 10016, Attn: Mr. Dennis L. Park.

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