ABSTRACTS OF CURRENT LITERATURE

Exercise Thallium-201 Scintigraphy in Evaluating Aortocoronary Bypass Surgery. A. S. Iskandrian, W. Haaz, B. L. Segal, S. A. Kane; Hahnemann Med. College, Philadelphia, PA. *Chest* 80:11–16, 1981

Thirty consecutive patients (27 men, 3 women) evaluated for recurrent chest pain after bypass surgery from 1 to 94 mo were studied by both coronary angiography and exercise thallium-201 scintiscans. Two studies were performed within a period of 1–4 wk. The patients were divided into three groups: Group 1 (ten patients) had complete revascularization and normal exercise images; Group 2 (seven patients) had incomplete revascularization and normal exercise images; Group 3 (13 patients) had incomplete revascularization and abnormal exercise images. All ten patients with complete revascularization had normal exercise images. In patients with incomplete revascularization (Groups 2 and 3) 25 had disease of the coronary artery or its graft: eight involving the left circumflex artery or its graft, seven involving the right coronary artery or its graft, and four involving the diagonal branch of the left anterior descending. Exercise-induced defects were seen only in the presence of incomplete revascularization. However, there were patients with incomplete revascularization with normal stress Tl-201 images; but these patients had at least one patent graft, and disease was generally limited to the right coronary artery or the diagonal vessels or their grafts.

Radionuclide Angiography in Evaluation of Left Ventricular Function Following Aortic Valve Replacement. J. T. Santinga, M. M. Kirsh, T. J. Brady, J. Thrall, B. Pitt; Univ. of Michigan Med. Ctr., Ann Arbor, MI. *Ann Thorac Surg* 31:409–414, 1981

Preoperative, immediate postoperative, and late postoperative gated left-ventricular ejection fractions (LVEF) were evaluated in 19 consecutive patients undergoing aortic valve replacement. The patients were divided into two groups: Group 1, eight patients with aortic stenosis, and Group 2, 11 patients with aortic insufficiency. The LVEF of Group 1 patients did not show significant change following operation; the preoperative, immediate postoperative, and late postoperative EF values were 50.2 ± 15%, respectively. The Group 2 patients had preoperative values of 58 ± 15%, which fell to 38 ± 18% immediately postoperatively, with the late value being 51 ± 16%. Regional myocardial wall motion was available for study in 18 patients; preoperative values were normal in 12 patients and abnormal in six. Eight of the 18 patients showed deterioration of regional wall motion immediately after operation. This condition persisted in three during the late evaluation. The fact that there was no significant improvement of LVEF values in the Group 1 patients, deterioration of LVEF in Group 2 patients, and the development of new myocardial dysfunction in eight patients is attributed to the lack of myocardial preservation. These findings may suggest the need for further improvement in myocardial protection during cardiopulmonary bypass for aortic replacement.

Thallium-201 Peripheral Perfusion Scans—Feasibility of Single Dose, Single Day Rest, and Stress Study. M. E. Siegel, C. A. Stewart; USC, Los Angeles, CA. *Am J Roentgenol* 136:1179–1184, 1981

Stress and poststress redistribution studies using 2 mCi Tl-201 i.v. for the evaluation of lower extremity perfusion were compared to true resting and stress scans in ten patients without peripheral vascular disease and in six patients with angiographically documented peripheral vascular disease. Anterior and posterior scans of the lower extremities, using a dual-probe rectilinear scanner or moving table-gamma camera combination were used for qualitative assessment of tracer distribution. Point counts taken over the midthigh, knee, midcalf, and ankle with a scintillation probe provided data for quantitative comparisons of regional perfusion within an extremity and between extremities. Values obtained with rest and stress were similar to those found in previous studies, but the redistribution data showed a unique difference between the "normal" patients and those with vascular disease. In nine of ten normals, there was essentially no return to the resting distribution values during the 6 hr study period, whereas all six "abnormal" patients showed substantial redistribution. This finding suggests that stress and delayed stress perfusion scans may provide useful data in patients with abnormal lower extremity perfusion despite a lack of true resting studies for comparison.

Impaired Left Ventricular Diastolic Filling in Patients with Coronary Artery Disease—Assessment with Radionuclide Angiography. R. O. Bonow, S. L. Bacharach, M. F. Green, K. M. Kent, D. R. Rosing, L. C. Lipson, M. B. Leon, S. E. Epstein; NIH, Washington, DC. *Circulation* 64:315–333, 1981

To evaluate left ventricle diastolic filling at rest, the authors performed studies in 231 patients, ages 26–69 yr, with coronary artery disease (CAD) by analysis of high-temporal-resolution time-activity curves (10–20 msec/frame) from gated equilibrium Tc-99m cineangiograms. With the exception of 24 patients who were catheterized at other institutions, all patients underwent left-heart catheterization with contrast left ventriculography and coronary arteriography within 2 days of radionuclide scintigraphy. All patients had >50% reduction in luminal diameter of at least one major coronary artery. Forty-five normal volunteers who had no evidence of cardiovascular or pulmonary disease, ages 21–63 yr, were also included in the study. Physical examination, chest radiogram, ECG, and echocardiography were performed within 3 days of radionuclide cineangiography. Peak LV filling rate (PFR), expressed in end-diastolic volumes per second (EDV/sec) was subnormal in CAD patients (1.8 ± 0.6 vs normal mean of 3.3 ± 0.6) and time to PFR (TPFR), measured from end-systole to PFR, was prolonged (171 ± 41 msec vs normal mean of 136 ± 23 msec). Those indices were also normal in the 141 patients with normal rest LV ejection fraction (PFR = 2.1 ± 0.5 EDV/sec; TPFR = 175 ± 36 msec) and 123 patients without Q waves on EKG (PFR = 2.1 ± 0.5 EDV/sec; TPFR = 168 ± 38 msec). Abnormal LV filling at rest (PFR < 2.5 EDV/sec or TPFR > 180 msec) was found in 91% of all patients with CAD, 86% of patients with normal resting LVEF, 85% of patients without Q waves, and 82% of patients with normal resting LV ejection fraction, no resting regional wall motion abnormalities, and no Q wave. Although the abnormal LV diastolic filling may appear in patients with valvular heart disease and hypertrophic cardiomyopathy, the authors concluded that the noninvasive method is abnormal in a high percentage of patients with CAD at rest independent of LV systolic function or previous myocardial infarction.

A Gamma Camera Method for the Evaluation of Deep-Vein Thrombosis in the Leg. Application of ^{99m}Tc-Labelled Heparin. H. E. Utne, S. Pors Nielsen, P. Klemp, H. V. Nielsen; Hilleroed and Hoersholm, Denmark. *Eur J Nucl Med* 6:237–240, 1981

Heparin is bound to antithrombin III and can be expected to accumulate in vascular thrombi. These authors sought to evaluate Tc-99m labeled heparin for diagnosis of deep-leg venous thrombosis (DLVT). Seventeen patients (25 legs) with suspected DLVT were studied with a gamma camera. Tourniquets were placed around the ankles and inflatable cuffs with 70 mm Hg pressure around the thighs. Following i.v. injection of 4 mCi of Tc-99m heparin into each foot, nine sequential images of the lower legs were made during a 10-sec interval. The thighs were then scanned, and with cuffs deflated scanned again. Late images of calfs and thighs were made 1 hr after radiotracer injection. Scintigrams were classified as: (1) normal, (2) no deep-vein filling, (3) irregular filling, (4) collaterals visualized, and (5) late radiotracer uptake. Six patients (10 legs) had repeat scintigraphy with Tc-99m MAA. The examination procedure was the same as in the heparin study. All subjects had x-ray phlebography within 48 hr after scintigraphy. Radiograms were classified as: (1) normal, (2) abnormal, fresh thrombosis; or (3) abnormal, chronic changes. Radiograms and scintigrams were evaluated by two independent observers. Maximum venous outflow (MVO) was calculated and compared with the morphologic results. The authors found that 12 patients had acute thromboses. The results of Tc-99m heparin phlebography were comparable with those of x-ray phlebography and with Tc-99m MAA scintigraphy. Twelve true-positives and one false-positive result were observed in heparin phlebography. Also, MVO was reduced in acute thrombosis. Late radiotracer uptake was seen, however, in only six of the 12 patients. Late heparin images had homogeneous tracer distribution in the deep veins. Many focal areas of increased uptake seen with Tc-99m MAA failed to be observed with Tc-99m heparin. The authors suggest that failure to visualize half of the acute thrombi with late images may have been the result of scan delay. The active build-up and breakdown process of the thrombus may have been completed at the time of the study, or the tracer may have failed to reach the thrombus owing to total vascular obstruction.

Iodine-Clearance-Equivalent (^{123}I) for Delineation of Thyroid Dysfunctions. E. Licht; Basel, Switzerland. *Nucl Compact* 12:86–87, 1981

The need to reduce radiation dosage whenever possible should stimulate the use of I-123. The short half-life of the radiotracer, however, limits its use when iodine kinetics are to be investigated. The author describes a method that permits adequate evaluation of iodine kinetics when I-123 is used. This is achieved by calculating a clearance equivalent. The term "clearance equivalent" is used to indicate that the method does not determine the iodine clearance but that the results correlate with those of the iodine clearance. One hundred thirty-eight patients were examined, and each patient had RT_3 uptake, T_4 RIA, T_3 RIA, FT_4, and FT_3. Laboratory data and a clinical examination indicated that 97 of the patients had normal thyroid function. Erythroid patients had scintigraphy following oral administration (n = 25) or i.v. injection (n = 24) of 200 μCi I-123 or after oral administration of 34 μCi I-123 (n = 48). Furthermore, six euthyroid patients with suspected adenoma, seven with toxic adenoma, and 28 with Basedow struma were studied with 34 μCi I-131. Two and 4 hr after radiotracer administration the thyroid uptake was determined, and the relative radioiodine uptake was calculated. Background activity was determined with a leg probe. The serum radioiodine was determined at 2 hr. Serum tracer concentration was calculated and expressed as percent per liter serum. The clearance equivalent was determined by dividing thyroid uptake into serum tracer concentration. The author found results not influenced by the radiotracer used or by the mode of radioisotope administration. It was possible to separate the different disease states with the clearance equivalent. The statistical analysis of the results were highly significant. The author concluded that the clearance equivalent offers a very simple and useful adjunctive screening test that can be obtained at no extra cost when patients are referred for I-123 thyroid scintigraphy.

In Vivo Radionuclide Studies in Infants and Children with Thyroid Disease. S. Heyman; Children's Hospital, Philadelphia, PA. *Clin Pediatr* 20:440–444, 1981

This short commentary reviews use of all radiopharmaceuticals administered to infants and children for evaluation of thyroid disease. Applicability, relative usefulness, and contraindications for each agent are described. Clinical topics covered include evaluation of neck masses and neonatal screening programs for congenital hypothyroidism.

Radionuclide Transit: A Sensitive Screening Test for Esophageal Dysfunction. C. O. H. Russell, L. D. Hill, E. R. Holmes, D. A. Hull, R. Gannon, C. E. Pope II; Vet. Adm. Hosp., Univ. of Wash. Med. Scl., Seattle, WA. *Gastroenterology* 80:687–692, 1981

With the patient in the supine position under an Anger camera, a 10-cc bolus containing 250 μCi Tc-99m sulfur colloid was swallowed on demand while a minicomputer recorded the passage of the bolus from mouth to stomach. Time-activity curves were generated for regions of interest over the proximal, middle, and distal esophagus as well as the stomach. In addition, manometry and barium esophagograms were done. Three groups of patients were studied. Group 1, a control group, consisted of ten manometrically normal asymptomatic volunteers. Distinct sequential peaks of activity were seen in each of the three areas of the esophagus. The esophageal transit time was less than 15 sec with a mean of 7.7 ± 1.7 (s.d.) sec. A second group of 15 patients had dysphagia and abnormal manometry but no evidence of obstruction radiographically. Five of these, diagnosed as having achalasia, had complete loss of the sequential peaks of activity seen in the control group, an esophageal transit time in excess of 50 sec (the time of the study period), and very little of the bolus reached the stomach even when the patients were standing. One patient with diabetes mellitus and two with scleroderma had a similar pattern except that a significant amount of tracer reached the stomach within 30 sec even in the supine position. Their esophageal transit times were prolonged. Three patients with diffuse esophageal spasm had disorganized bolus transit, including retrograde movement and a prolonged esophageal transit time. Disorganized bolus transit was also seen in four patients with nonspecific motor disorders, three of whom had transit times greater than 50 sec. A significant amount of the bolus entered the stomach in these patients and in the three patients with diffuse esophageal spasm. In a third group of 14 patients with dysphagia but normal manometry radionuclide transit studies were abnormal in nine cases. Although radiographic barium swallow studies should be the first investigation undertaken to study patients with possible esophageal problems, radionuclide transit studies are especially useful for studying patients who are symptomatic but have normal radiology studies.

The Effect of Posture on Errors in Gastric Emptying Measurements. P. Tothill, G. P. McLoughlin, S. Holt, R. C. Heading; The Royal Infirmary, Edinburgh, Scotland. *Phys Med Biol* 25:1071–1077, 1980

Previous studies of gastric emptying have not clarified the role of posture on measurement of gastric emptying rates. Both phantom and clinical studies were utilized to evaluate the effect of posture on data collected with a rectilinear scanner and a scintillation camera. The Tc-99m marker consisted of colloid-impregnated pieces of paper in a meal of cornflakes, sugar, and milk. In the scintillation camera experiments, a second cornflakes meal was given with In-113m DTPA added to the milk to serve as the marker. Scanner measurements of depth demonstrated anterior movement in supine subjects but no significant average change in upright patients. However, there was a large variation in depth change in the individual upright patients, some showing an anterior shift, some showing a posterior shift. These shifts caused errors of more than 50% in the emptying rate observed when only an anterior detector was used. When the geometrical mean was used to calculate the emptying time, there was no significant difference between the supine and upright patients. Gamma-camera measurements of gastric emptying showed some anterior movement in seated patients, and was more pronounced with the solid-phase tracer. Only with the Tc-99m marker was there a difference between the emptying rate calculated by the geometrical mean and that calculated from the anterior data alone. However, the greater energy of photons from In-113m may explain the failure to observe significant differences in depth of the liquid-phase marker. This study demonstrates that posture may have an effect on measurements of gastric emptying. The authors point out that other factors such as the nature of the meal and the tracer may also affect the results.

Laparoscopy and Radioisotope Imaging in the Investigation of Suspected Liver Disease. J. N. Blackwell, A. C. B. Dean, I. B. MacLoed, M.D. Sumerling, N. D. C. Finlayson; Royal Infirmary, Edinburgh, McLotham, Scotland. *Digestive Dis Sci* 26:507–512, 1981

One hundred forty-one patients with suspected liver disease based on biochemical abnormalities, spider telangiectasia, splenomegaly, and/or esophageal varicosis, underwent further investigation to determine the cause. In 129 patients, laparoscopy demonstrated diffuse hepatic disease in 67, focal hepatic disease in 35, and lymphoma in nine. Serious complications were encountered in six patients because of this procedure. Of 91 Tc-99m colloid liver studies, at least one defect was observed in 30 patients, hepatocellular dysfunction in 28, hepatomegaly only in three, defect of the porta hepatis in three, and the study was normal in 27. The appearance of the liver at laparoscopy did not accurately reflect the underlying pathology, indicating the necessity of biopsy in all cases. Laparoscopy and Tc-99m sulfur colloid liver imaging each failed to detect several cases of hepatic malignancies and parenchymal liver disease but neither was missed by both investigations combined. The authors concluded that the combination of laparoscopy and radionuclide liver scan offers a highly accurate approach to the diagnosis of liver disease.

Radionuclide Imaging in the Nonsurgical Treatment of Liver and Spleen Trauma. L. G. Lutzker, K. J. Chun; Albert Einstein College of Medicine, Bronx, NY. *J Trauma* 21:382–387, 1981

As part of evaluation in patients with abdominal trauma severe enough to require hospital admission but not sufficiently severe to warrant immediate surgery, liver-spleen imaging with Tc-99m sulfur colloid was performed in 30 patients in the following age ranges: 10 mo–5 yr (3 patients), 6–10 yr (11), 11–15 yr (7), and 16–40 yr (9). Routine projections by gamma camera were acquired in the anterior, posterior, lateral, anterior oblique, and posterior oblique projections, supplemented with caudally angulated or upright views when indicated. Scintigraphically, there was a linear defect in ten patients, a round, intraparenchymal or wedge defect in 12, and an edge defect in eight. In 24 patients that underwent subsequent studies, the initial image was positive in 21 and equivocal in three. Of the 21 patients, partial resolution of the defects was seen on the images 2 wk to 7 mo following trauma in 14 patients, and nearly complete resolution in 2 wk to 10 mo in nine patients. Complete resolution was seen in 1–13 mo in nine patients. No defects enlarged over time. These authors presented a decision tree for the initial evaluation and subsequent studies in patients with liver-spleen trauma. They feel that consideration of clinical signs and serial liver-spleen imaging can eliminate some surgery when there is a question of delayed or missed splenic rupture.

Simplified Estimation of Glomerular Filtration Rate and Effective Renal Plasma Flow. R. Smart, P. Trew, J. Burke, N. Lyons; Kogarah, Australia. *Eur J Nucl Med* 6:249–253, 1981

A two-sample method for improved estimation of GFR and ERPF is presented. The authors examined 43 patients, 40 of whom had simultaneous i.v. injection of 100 μCi of Cr-51 EDTA and 40 μCi of I-125 hippurate, while 3 patients were examined with Cr-51 EDTA only. Five patients had a repeat study. Reference values were obtained from 11 blood samples taken between 5 and 50 min after injection. The plasma activity was determined from duplicate 2-ml samples. The standard blood samples were obtained at 60 and 150 min after radiotracer injection. Clearance (C) was calculated by dividing tracer dose (D) injected into the area (A) under the plasma clearance curve ($C = D/A$). The authors found that the selected time for dual plasma sampling resulted in accurate estimates of GFR and ERPF over the full range of renal function. The procedure appears to provide improved accuracy for GFR and ERPF when renal function is reduced.

Detection of a Traumatic Renal Arterial Venous Fistula by Radionuclide Angiography (RNA). J. C. Sequeira, A. F. Weitzman, V. W. Lee, D. L. Grosso; Univ. Medical Center, Boston, MA. *J Trauma* 21:491–492, 1981

A case of post-traumatic A-V fistula was detected by radionuclide angiography. A 40-yr-old male, with a stab wound in left upper quadrant of abdomen, had undergone exploratory laparotomy that disclosed lacerations of the stomach and proximal portions of small bowel and superior mesenteric artery. The patient continued to have quaiac-positive stools postoperatively. One week later a radionuclide sequential image of the abdomen using 8 mCi of Tc-99m sulfur colloid revealed an area of increased radionuclide concentration in the left midabdomen seen only during arterial phase and not visible on the subsequent static images. The findings were confirmed to be A-V fistula by angiogram and subsequently by renal surgery. The patient had an uneventful elective closure of the fistula. The cause of quaiac-positive stool was unexplained. Eight cases of renal A-V fistula have been well demonstrated by radionuclide angiography in the literature. The authors emphasized that radionuclide angiography is a suitable screening procedure for patients with suspected traumatic vascular injury, and contrast angiography should be used for the confirmation of diagnosis.

The Testicular Scan—Use in Diagnosis and Management of Acute Epididymitis. J. S. Vordermark II, A. S. Buck, S. R. Brown, W. K. Tuttle III; Darnal Army Community Hosp, Fort Hood, TX. *JAMA* 245:2512–2514, 1981

Following the oral administration of potassium perchlorate and intravenous injection of from 5 to 10 mCi of Tc-99m, testicular

imaging was done on 79 occasions on 69 patients. Six 5-sec images were obtained to constitute a flow study, and at least two static images of 300,000 counts each were made. Criteria for interpretation of the scans is presented. The scan and clinical diagnosis were concordant in 65 of 69 patients (94% of cases) and were falsely negative in the other four patients. The authors concluded the following: (1) A high false-negative rate was seen in patients with mild epididymitis. (2) In the more severe forms of epididymitis, the scan is highly accurate. (3) Abscesses of 1 cm or more in diameter are demonstrated. (4) The testicular scan is the most sensitive method available for the early detection of testicular abscesses, hypoperfusion, or infarction.

Coded Aperture Imaging of X-Ray Sources With an Off-Axis Rotating Slit. M. A. Kujoory, E. L. Miller, H. H. Barrett, G. R. Gindi, P. N. Tamura; University of Arizona, Tucson, AZ. *Appl Opt* 19: 4186–4195, 1980

Rotating slits have been studied for use in coded-aperture imaging; however, on-axis rotating slits provide no depth information. This paper reports a study of off-axis rotating slits that do provide tomographic depth information. The theoretical properties of this system were investigated. From one set of coded images, each image plane can be formed by shift operations and a computed tomography reconstruction algorithm. The lateral resolution is determined by the intrinsic camera resolution, the slit width, the filter function, and the display. The depth resolution is affected by the lateral resolution, the object-aperture distance, and the slit displacement from the axis. An experimental device was constructed and tested on a phantom. Specific resolution and sensitivity data were not presented. One advantage of a rotating slit system is that only a one-dimensional detector would be needed, thus simplifying the system.

The Geometrical Transfer Function Component for Scintillation Camera Collimators with Straight Parallel Holes. C. E. Metz, F. B. Atkins, R. N. Beck; The University of Chicago and The Franklin McLean Memorial Research Institute, Chicago, IL, and Walter Reed Army Medical Center, Washington, DC. *Phys Med Biol* 25:1059–1070, 1980

Recent improvements in the intrinsic spatial resolution of scintillation cameras require that collimators be carefully designed to maximize the system spatial resolution obtainable in clinical nuclear medicine studies. In this article, the geometrical transfer function for a parallel-hole collimator is derived from first principles and expressed in closed algebraic form. The geometrical transfer function component depends only on the geometry of the collimator design and is independent of the collimator material, detector, or radionuclide used. To cover variations in collimator design, equations are included for several hole shapes: (1) circular, (2) hexagonal, (3) square, and (4) equilateral triangle. The geometrical transfer function component of a collimator is defined as the normalized two-dimensional Fourier transform of the point-source image formed in a plane behind the collimator by photons that are accepted geometrically through the collimator holes. Because a point-source image will be affected by the position of the point relative to the collimator hole array pattern, an effective point-spread function that can be considered as an average of point-source images formed at various positions is used in the derivation. Monte Carlo techniques were used to simulate the geometrical component of the camera collimator response function. The simulated and predicted transfer functions were in excellent agreement at all spatial frequencies. The effective geometrical response of two camera collimators was also measured using I-125. Excellent agreement between theory and experiment was observed for both collimators. The equations derived in this article may prove useful in designing collimators for scintillation cameras.

Prediction of Intrauterine Growth Retardation by Sonographic Estimation of Total Intrauterine Volume. D. H. Chinn, R. A. Filly, R. W. Callen; University of California, San Francisco, CA. *J Clin Ultrasound* 9:175–179, 1981

The predictive value of total intrauterine volume (TIUV) in determining intrauterine growth retardation (IUGR) was evaluated in a group of 252 patients. Infants that were below the tenth percentile in weight for gestational age were considered intrauterine growth retarded. By these standards, TIUV measurement proved sensitive in 70%, specific in 72%, and demonstrated an overall accuracy in predicting IUGR of only 41%. Using the biparietal diameter (BPD) alone as a gauge of gestational age proved the least accurate; best predictive results were obtained when predictions of low volume agreed, using either last menstrual period or BPD as a gauge of gestational age. The authors suggest that the assumption that gravid uteri are all prolate ellipses may contribute to the inaccuracy of the method and to the multiplication of any inherent measurement error. The overall conclusion is that sonographic estimation of TIUV is limited as a predictor of IUGR.

Molar Pregnancy: Early Diagnosis by Ultrasound. B. K. Wittmann, L. Fulton, P. L. Cooperberg, E. A. Lyons, C. Miller, D. Shaw; Univ of British Columbia, Vancouver, British Columbia, Canada. *J Clin Ultrasound* 9:153–156, 1981

Four cases are presented in which ultrasound examination of patients with first trimester bleeding revealed an abnormal gestational sac. Subsequent examinations revealed sonographic findings indicative of trophoblastic disease, and the authors conclude that these findings support existing evidence that the blighted ovum or anembryonic gestational sac may represent an early stage in the development of hydatidiform mole. The authors suggest a baseline ultrasound examination in women with first trimester bleeding. If a normal pregnancy is not confirmed, the examination should be repeated in two weeks to differentiate a viable from an abnormal pregnancy. Representative sonograms are provided.

Choledochal Cyst with Bile Duct Dilatation: Sonography and ^{99m}Tc IDA Cholescintigraphy. B. K. Han, D. S. Babcock, M. H. Gelfand; University of Cincinnati, Cincinnati, OH. *Am J Roentgenol* 136: 1075–1079, 1981

The noninvasive diagnosis of choledochal cyst in three cases is presented. A combination of sonography and radionuclide imaging with Tc-99m IDA was sufficient to make the preoperative diagnosis without need for invasive studies, such as percutaneous cholangiography and endoscopic retrograde cholangiopancreatography. The finding of a right upper quadrant cystic structure separable from the gallbladder with dilated common hepatic or common bile duct entering into the cyst and with smaller cystic masses representing dilated central intrahepatic ducts is characteristic on sonography. On cholescintigraphy an initial photon-deficient area in the region of the porta hepatis subsequently fills on delayed images and represents filling of the choledochal cyst. Sonograms, scintigrams, and cholangiograms are provided.

Dynamic Sonography in the Evalution of Jaundice. A. Haubek, J. H. Pedersen, R. Burcharth, J. Gammelgaard, S. Hancke, L. Willumsen; University of Copenhagen, Copenhagen, Denmark. *Am J Roentgenol* 136:1071–1074, 1981

In a study of 84 jaundiced patients, real-time sonography demonstrated a predictive value of 97% in the diagnosis of obstruction and 84% in nonobstruction. The level of obstruction was identified in 95% of cases and the cause determined in 68%. A maximum acceptable diameter of the common bile duct was chosen to be 8 mm in view of the overlap of nonobstructive and obstructive processes in the 6–8 mm range. The authors suggest that dynamic scanning improved perception of anatomic relationships, diminished artifacts of motion, and reduced the time required for the examination. They feel that sonographic evaluation is appropriate when clinical differentiation between obstructive and nonobstructive processes is difficult.

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