
We present the echocardiographic features of degeneration of nine glutaraldehyde-fixed porcine xenograft valves implanted in eight patients. These features occurred 11 to 68 months after implantation and were correlated with surgical and necropsy findings. Acute bacterial endocarditis in three other patients 47 to 52 months before valve degeneration was recognized. The valve was severely thickened in four patients, and in two of the four the thickening was associated with a significant hemodynamic transvalve gradient. M mode echocardiography demonstrated increased thickness and loss of the cusp detail. In five patients severe regurgitation due to a tear in one or more cusps developed in the valve in the mitral position. M mode echocardiography in all five patients revealed on the valve systolic or diastolic fluttering echoes, or both. The two dimensional echocardiogram demonstrated thickened cusps with systolic protusion of the leaflets into the left atrium. Both modes of echocardiography were of value in identifying degeneration of the porcine xenograft valve.


Twenty-one persons exposed to polybrominated biphenyls (PBB) were compared with hospital volunteers on a battery of tests measuring memory, motor strength and coordination, cortical-sensory perception, personality, and higher cognitive functioning. Patients exposed to PBB were selected for this study only if they had persistent medical complaints. The PBB adipose levels did not correlate with performance on any test in the battery. The two groups did differ on the Minnesota Multiphasic Personality Inventory, suggesting an adjustment reaction with depressive symptoms and somatizing defenses. Persons exposed to PBB were also impaired relative to control subjects on tests of prose recall, short-term memory, concentration, and cognitive flexibility. However, these differences vanished when group differences on education and personality were statistically held constant. The selective admission criteria for this study limit the generalizability of these findings.


Five patients with fasting and/or postprandial hypoglycemia were found to have insulin antibodies in the absence of previously documented immunization. Studies on the equilibrium-binding of insulin to the autoantibodies revealed two classes of binding sites with association constants and binding capacities analogous to those of insulin antibodies from insulin-treated diabetic patients. Similarly, no consistent differences in these parameters were found in both groups of patients with insulins of bovine, porcine, and human origin. Proinsulin (C-segment directed) antibodies capable of binding bovine or porcine proinsulin were present in 10 of 10 and 9 of 10 insulin-treated diabetics serving as controls, respec-tively, and, when present, provide incontrovertible evidence of exogenous insulin administration. No such antibodies could be detected in the hypoglycemic patients with autoimmune insulin antibodies.

The kinetics of dissociation of the insulin-antibody complexes were consistent with the existence of two classes of antibody sites. The corresponding dissociation rate constants were large enough to predict that significant amounts of free hormone may be generated by this mechanism and provide a plausible pathogenesis for the hypoglycemia in these patients.

We measured circulating hemoglobin A1 (HbA1) and fasting plasma C-peptide concentrations in 100 diabetic patients. Pancreatic insulin reserve showed a negative correlation with HbA1 concentrations in nonobese, insulin-treated patients but not in obese patients, whether they were treated with insulin, oral agent, or diet alone. Patients with fasting C-peptide concentrations above 0.1 pmol/ml had significantly better metabolic control than did those with lower values.

Anti-insulin antibodies were measured in 37 patients. There was no correlation between metabolic control and the affinity constants or binding capacities of these antibodies.


The neuropsychological performance of alcoholic men in their late 30s (mean age, 37 years), some of whom had been abstinent for 3 weeks and others for 18 months, was compared with that of a group of men who drank occasionally. There were no differences between the alcoholic groups and the comparison group that could not be attributed to normal aging. The number of years of alcoholism or estimated lifetime alcohol use, dietary adequacy, and medical or blackout history did not relate to neuropsychological impairment. The authors suggest that a simple "dose-effect" relationship between alcohol use and cognitive decline cannot be assumed.


Review of our experience with pneumatosis intestinalis has allowed us to identify three major clinical groups of patients. In each, the etiology of pneumatosis intestinalis usually can be identified, and it frequently has an ominous prognosis. Treatment should be directed to the underlying condition when possible and hence must be individualized. Those patients categorized as Group I can simply be kept under observation. Patients in Group II might obtain relief from breathing increased concentrations of oxygen. For patients in Group III vigorous therapeutic measures generally are necessary to ensure survival. The increasing use of mechanically controlled ventilation and positive end-expiratory pressure may be contributing to the incidence of pneumatosis intestinalis. The ileus sometimes observed in these patients may accompany or precede the development of intramural air, a condition identifiable on roentgenographic examination. Awareness of the possible presence of intramural air may help in identifying patients who may not need operation. But even when roentgenographic examination has confirmed the presence of intramural air, abdominal exploration still may be necessary to rule out a diagnosis of perforated viscus. We hope that these concepts and our emphasis upon individualized treatment may improve the prognosis for patients who have pneumatosis intestinalis.


A solid phase radioimmunoassay was developed for detecting the quantity of double-stranded and single-stranded DNA antibodies in patients with systemic lupus erythematosus (SLE) and other connective tissue diseases. The assay system employs a solid support 96-well, flex-vinyl microfilter plate to which bovine methyl albumin is layered, followed by denatured or native calf thymus DNA. A 1:80 dilution of patients' sera was added to respective wells followed by tritiated high affinity anti-IgA, -IgA, or IgM.

Denatured DNA (single-stranded DNA) bound to methylated bovine serum albumin had less than 5% reannealment to the double-stranded form and provided a better substrate for Ab binding than double-stranded DNA, producing a linear binding curve.

Of 58 patients diagnosed as having systemic lupus erythematosus, only 11 with active SLE had IgG antibody levels of >5.0 ug/ml to single-strand DNA. Renal involvement of some degree was found in all 11 with the high concentrations of IgG antibodies to DNA correlating with severe involvement. Patients with IgM antibodies to DNA alone had more benign types of SLE with little renal involvement.

No abnormal levels of IgA Ab to either single-strand DNA or double-strand DNA were found in SLE patients' sera. Corticosteroid and/or immunosuppressant treatment caused a marked drop in the IgM Ab level to DNA within 10 days, while IgG Ab to DNA remained high for up to 30 days.

Quantitation of IgG and IgM Ab to single-strand DNA provides a useful method for diagnosing severe SLE with possible renal involvement and monitoring the course of the disease during therapy.
Abstracts


Seventeen nephrectomized dogs underwent kidney transplantation from unrelated donors. Routine immunosuppressive therapy was administered. Serial ultrasound studies and biopsies and complete pathological examinations were performed and compared. A number of sonographic changes were observed within the renal parenchyma during rejection, some of which were present before a significant rise in serum creatinine levels occurred. The medulla became enlarged due to edema, followed by growth of the rest of the kidney and thickening of the cortex. The cortical echoes became more sparsely distributed and either increased or decreased in amplitude; distribution was generalized or localized. During rejection, the corticomedullary boundary became indistinct. Later, a decrease in the renal sinus echoes was also noted. In two cases, perirenal fluid collections occurred as the result of renal rupture.


Between January 1963, and September, 1978, a total of 1,789 pacemakers were implanted in patients at Henry Ford Hospital. Infection at the site of implantation developed in 19 instances for an incidence of 1.06%. The most common organism cultured was Staphylococcus epidermidis, and conservative treatment was successful with these patients. In all patients with organisms other than Staphylococcus epidermidis, reimplantation of a new unit in a new, clean site was required.


Modified Heller's esophagomyotomy for achalasia of the esophagus was done in 145 patients at Henry Ford Hospital from 1951 to 1977. Information on current symptoms was obtained for 121 patients from a detailed questionnaire sent to all patients, from personal interviews, or from data obtained from clinical records. Average follow-up time was 85 months. Actuarial analysis of postoperative symptoms showed an incidence of reflux of 24% after one year and 48% after ten years; incidence of relief of dysphagia was 89% of all patients after one year and 81% after ten years. Continual surveillance of patients after esophagomyotomy must be stressed. Dissatisfaction with the results of this procedure prompted us to recommend that an antireflux operation be performed at the time of the initial procedure.


Four cases of pulmonary actinomycosis are presented. Resection was necessary in three cases before the diagnosis was established. A high index of suspicion for this disease is advised for the thoracic surgeon involved in the treatment of lung masses.


The in vitro effects of gold sodium thiomalate (GTM) on various murine splenic lymphocytic functions were tested. The presence of GTM in cultures of splenic cells suppressed anti-hapten responses to both thymus-independent and thymus-dependent antigens. GTM also suppressed the in vitro generation of cytotoxic effector cells as well as the mitogenic response to both T cell and B cell mitogens. This suppression could not be reversed by the addition of irradiated spleen cells. Spleen cells exposed to GTM for 4 hours prior to culture also exhibited similarly suppressed functions, although their functional capacity could be fully restored by the addition of irradiated spleen cells. These results show that GTM inhibits both humoral and cellular immune mechanisms and appears to act primarily at the accessory (macrophage) cell level, with perhaps a secondary effect on T lymphocytes.

The diagnostic significance of visualizing the right ventricle on thallium-201 myocardial perfusion scans (T-scans) at rest was studied in 53 patients. In 33 patients the right ventricle was visualized clearly on the T-scan (group A). Hemodynamic evidence of right ventricular hypertension with systolic pressure <30mm Hg was present in 28 of 33 (85%) of these patients. Right ventricular volume overload with left-to-right shunt <2:1 was present in three patients. Other tests were diagnostic for right ventricular enlargement and/or pulmonary hypertension as follows: chest x-ray (58%), echocardiogram (36%), and electrocar-
diogram (15%). In an unselected group of 20 patients (group B), where resting T-scan did not show visualization of the right ventricle, the right ventricular systolic pressure was <30mm Hg in all. The other noninvasive tests did not reveal presence of right ventricular hypertrophy or enlargement. T-scan appears to be a useful and sensitive test in detecting right ventricular pressure or volume overload compared with other noninvasive tests. This may be useful in detecting patients with right ventricular hypertrophy or enlargement secondary to pulmonary hypertension or other causes.

Kiani D, Quinn EL, Burch KH, Madhavan T, Saravolatz LD, Neblett TR. The increasing importance of polymicrobial bacteremia. JAMA 1979;242:1044-47.

Polymicrobial bacteremia increased from 6% in 1970 to 13% in 1975 in patients with bloodstream infections. This type of serious infection most commonly complicated genitourinary (27%) and gastrointestinal (26%) conditions, frequently followed invasive procedures (68%), was more common in hospitalized patients (73%), and was often associated with malignancies (25%) or immunosuppressive or cancer chemotherapy (34%). Although polymicrobial endocarditis was more commonly encountered in recent years, this infection accounted for only 4.5% of patients with multiple organism bacteremias. Gram-negative aerobic bacteria were isolated from 62% and anaerobic bacteria in 39% of patients with polymicrobial bacteremia compared with 37% and 14%, respectively, in patients with monomicrobial bacteremia. In the 88 patients with polymicrobial bacteremia, the mortality was 44.5%, compared with 18.0% in patients with monomicrobial bacteremia.


A ring chromosome 6 has been identified by GTG-banding in a male with microcephaly, growth retardation, seizures, epicanthus, hypertelorism, micrognathia, and other congenital anomalies. Cytogenetic studies indicate the instability of the ring chromosome. The most common findings in subjects with ring 6 include: profound-to-moderate mental retardation, microcephaly, prenatal growth failure, retarded bone age, epicanthal folds, flat nasal bridge, short neck, ears low-set or malformed, microphthalmia, and micrognathia. Linkage studies, including HLA, are consistent with reported maps of chromosome 6.


This electromyographic study was undertaken to assess the peripheral nervous system in patients with various types of paraplegia. Twelve patients were studied. In eight patients the paraplegia was of the spastic type, while four had flaccid paraplegia. Electromyographic abnormalities consisting of denervation potentials, slowed conduction, and inexcitability of nerve were demonstrated in the lower limbs of all patients. These findings suggest a diffuse neuropathy of unknown cause, although local pressure palsies may have occurred in some patients. Because this involvement was more apparent in the flaccid group of paraplegic patients than in the spastic group, we concluded that the peripheral nervous system plays an important role in determining the type of paraplegia that develops following complete spinal cord lesions.


We reviewed 722 nonstress tests (NSTs) that were performed on 471 patients. The results suggest that the NST is a simple, reliable test as a primary screening procedure in antepartum fetal heart rate (FHR) monitoring. The active and reactive tests were indeed reliable indicators of fetal well-being, while the nonreactive test required an additional discriminatory evaluation. A tentative classification is suggested for those cases with FHR decelerations associated with fetal activity and uterine contractions.

Twelve cryptorchid patients had sonographic evaluation of the inguinal region prior to surgical orchiopexy. When the testis was within the inguinal canal, the gonad was localized preoperatively by sonography in eight of nine patients. One patient had an associated inguinal hernia in which loops of bowel concealed the gonad. There were no false positive cases. The authors were not able to show abdominal or pelvic maldescended testes.


Spirograms were obtained before and after emergency therapy in 85 episodes of acute bronchial asthma in 82 patients. The clinical status of all patients after emergency treatment was reevaluated 48 hours later. Patients could be divided into three groups: 1) admissions; 2) patients who were discharged but later developed respiratory problems; and 3) patients who were discharged and did well. The mean pre- and posttreatment one second forced expiratory volume (FEV₁) was significantly different among all three groups. FEV₁ <0.6 liter before treatment, or an FEV₁ <1.6 liter after emergency treatment, was associated with an unfavorable course. In Group I, 88% of the patients had either an initial FEV₁ <0.6 liter, or a posttreatment FEV₁ <0.6 liter. Among all patients whose initial FEV₁ was <0.6 liter, 80% were either admitted or had subsequent respiratory problems; 75% of all patients whose posttreatment FEV₁ was <1.6 liter were either admitted or developed subsequent respiratory problems. Moreover, 90% of patients who had both a pretreatment FEV₁ <0.6 liter and a posttreatment FEV₁ <1.6 liter were admitted or had subsequent significant airway obstruction. We conclude that spirometry can identify asthmatic patients who require admission or who will have significant airway obstruction within 48 hours after they are discharged from the emergency department.


Thirty-four patients with chronic slipped capital femoral epiphysis (SCFE) involving 45 hips were followed over a period of no less than 10 years and as high as 39 years. Excluding those who had had intraoperative complications, 30 hips evaluated between 10 and 20 years follow-up were found to have good or excellent results. Fifteen hips followed longer than 20 years, however, showed fair to poor grading in 10 to 15 hips. This progressive change seemed to be related most closely to the bilateralism of the disease. These observations suggest that while follow-up of a 20-year duration may show good clinical results, over a longer time the prognosis of SCFE is guarded.


The purpose of this study was to investigate factors that may participate in the production of innocent ejection murmurs. Although it is known that ejection murmurs are produced by turbulent flow, the cause of turbulence in subjects with innocent murmurs has not been determined. The viscosity and the density of blood are factors that participate in the production of turbulence. Therefore, their role in the production of innocent ejection murmurs was investigated in 40 healthy young women, aged 18 to 22 years. Fourteen subjects had an innocent murmur; 26 had no murmur. All had a normal hematocrit (37 ml/100 ml or greater); none were anemic. However, the subjects with an innocent murmur had a significantly lower hematocrit (P<0.01), and consequently the viscosity of blood in these subjects was lower (0.038 ± 0.001 versus 0.042 ± 0.001 poise) (P<0.001). The density of blood and the estimated stroke volume were similar in both groups. These observations suggest that young women with an innocent murmur may have a lower viscosity of blood than those without a murmur. The increased turbulence caused by the decreased viscosity may contribute to causing inaudible ejection murmurs to exceed the threshold of audibility.

Pneumonia caused by Legionnaires' disease bacterium was recognized in eight patients during a seven-month period. The patients were immunosuppressed by their underlying illness, by corticosteroid therapy, and by other exogenous immunosuppressive agents. Five of the patients had received immunosuppressive therapy for less than 16 days. Clinical presentation was similar to that of other bacterial pneumonias in compromised patients. Legionnaires' disease progressed to necrotizing pneumonia with abscess formation and respiratory failure in two patients. Diagnosis was made by 1) culture of lung tissue and bronchial washings; 2) direct fluorescent antibody staining of lung tissue, sputum, and bronchial washings; and 3) serologic evidence of infection. Therapy with oral erythromycin was ineffective. Intravenous erythromycin was given to six patients, with a good response. However, two patients showed further clinical improvement after rifampin was added. Because this illness may be more severe in compromised hosts, open lung biopsy and special microbiologic tests should be done when Legionnaires' disease is suspected. Otherwise, therapy with parenteral erythromycin should be given if Legionnaires' disease is suspected.


Heart sounds are frequently reduced in patients following myocardial infarction, even in the absence of rales or a gallop rhythm. Newly determined physiologic factors that affect heart sounds suggest that a reduction of $A_2$ can be ascribed to impaired isovolumic relaxation of the left ventricle, and the reduction of $P_2$ to impaired isovolumic relaxation of the right ventricle. A reduced first sound implies impaired contractile performance. Auscultatory evaluation of the heart sound intensity is thus a meaningful guide to the function of the heart following a myocardial infarction.


The authors believe that pulmonary arteriography should not be used to exclude pulmonary embolism when the clinical manifestations can reasonably exclude the diagnosis. Certain clinical manifestations, such as 1) sudden, unexplained, severe dyspnea; 2) concomitant deep vein thrombosis; 3) increased respiratory rate; 4) normal chest radiograph in a severely dyspneic patient; 5) suppurative EKG changes; 6) arterial hypoxemia; and 7) perfusion defects in the lung scan, all point to the diagnosis of pulmonary embolism and are felt by the authors to be reliable evidence upon which to select patients by confirmatory pulmonary arteriography, thus reducing the prevalence of negative arteriograms with their attendant morbidity.


In addition to several anomalous structures, other general forms of definitely rod-shaped microorganisms have been found by scanning and transmission electron microscopy in the lung tissue taken at autopsy from a patient who succumbed to confirmed Legionnaires' disease with extensive necrotizing lobar pneumonia. The microorganisms, which were micrographed in the act of fission, varied greatly in size and shape. These forms have been found to some extent throughout the tissue. No nickel was demonstrated, either in the lung tissue or in the microorganisms.


The purpose of this study is to explore the effect of the branch-to-trunk area ratio upon the tendency of flow to become turbulent in symmetrically branched tubes. Velocity was measured with a laser Doppler anemometer in glass tubes which branched at 70° from a 25 mm diameter trunk. The branch-to-trunk area ratio of branches studied was .4, .6, .8, 1.0, 1.2, and 1.4. For branch-to-trunk area ratios of .4 and .8, the critical Reynolds number in the trunk at which the transition to turbulence in the branch occurred was relatively constant at approximately 2100. As the branch-to-trunk area ratio increased beyond .8, the critical Reynolds number decreased until, at a ratio of 1.4, the critical Reynolds number was 1200. Since the Reynolds number of transition in the trunk was found to be 2100, it is apparent that a branch-to-trunk area ratio of 1.4 caused a prominent reduction of the critical Reynolds number in the system. A branch-to-trunk area ratio of less than .8 had no effect. The velocity profiles at a branch-to-trunk area ratio of .4 showed acceleration of velocity in the branch, while at an area ratio of 1.4, the velocity was shown to decelerate. This explains the tendency for flow to be unstable in branches with area ratios greater than one. These observations suggest that the branch-to-trunk area ratio usually observed in patients at the aortic bifurcation is such that laminar flow is promoted.
Abstracts


The medical records of 21 patients with smoke inhalation admitted to a medical ICU (MICU) were reviewed. Of 21 patients, 6(29%) died. Of 21 patients, 13(62%) had facial burns, and 11 of the 13 (85%) later developed pneumonia. Only 1 of 8 patients (12%) without facial burns developed pneumonia (p < 0.005). Of the 12 patients with pneumonia, 7 required ventilatory assistance, and 6 of the 7 died in the MICU. The authors conclude that the presence of facial burns is associated with the later development of pneumonia in a high percentage of cases. Pneumonia contributes significantly to the high mortality rate. The need for ventilatory assistance in smoke inhalation patients is associated with a poor prognosis.


A patient with acromegaly, pituitary enlargement, and elevated plasma GH levels also had a bronchial carcinoid tumor. Signs and symptoms of active acromegaly along with elevated GH levels persisted for 11 years after hypophysectomy and pituitary stalk section. Resection of the bronchial carcinoid reduced plasma GH to barely detectable levels. Extracts of the frozen carcinoid tumor were devoid of significant GH, but when added to isolated pituitary cells of estrogen-primed male rats in 4-day primary culture they exhibited specific GH-releasing activity in vitro. These findings strongly suggest that the patient's acromegaly resulted from continual stimulation of pituitary somatotrophs by a GH-releasing factor secreted by the bronchial carcinoid.


Narcolepsy is characterized by excessive daytime sleepiness and cataplexy, which may be accompanied by hypnagogic or hypnopomnic hallucinations and sleep paralysis. Automatic behavior is a relatively newly recognized symptom of the narcolepsy syndrome. This case report describes a particularly troublesome sort of automatic behavior—shoplifting—in a narcoleptic patient. It illustrates how a sleep-laboratory evaluation was used to confirm the diagnosis of narcolepsy, and it considers aspects of treating the problem.
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