Abstracts
**ABSTRACTS**


Dietary cholestyramine (MK 135) increased the rate of mobilization of blood and liver cholesterol in mice. The bile acid turnover rate in normal mice was 5 days, in mice treated with 1% cholestyramine, 1¼ days, or 4 times as fast. Bile acid pool size was 5.62 ± 1.09 mg in normals, 4.58 ± 0.65 in cholestyramine-treated mice. The pool was shown to consist almost exclusively of cholic acid and this spectrum was not altered by cholestyramine. The daily rate of synthesis of bile acids in normal mice was 0.56 mg, 1.84 mg in cholestyramine-treated mice. Digitonin precipitable fecal sterol excretion was 5.54 mg/day in normal mice, 7.58 mg/day in mice treated with 1% MK 135. No conclusion could be reached as to whether the increased rate of mobilization of accumulated cholesterol affected by MK 135 was due to the increased excretion of either the fecal bile acid or sterol fraction exclusively, or was attributable to the excretion of both these fractions.


Recent trends away from rotating internships prompted a review of the 1962-1965 Henry Ford Hospital intern classes. Information provided by members of the group suggested that a rotating internship assists in future specialty training decisions, provides increased quantity and quality of applicants, benefits interns who remained in their pre-intern choice of specialty, stimulates teaching interest of the hospital staff, and improves interdepartmental exchange of ideas.


Conservative management of the increasing number of diabetics with potentially serious foot lesions must be aggressive. Prophylaxis includes daily foot inspections, proper and frequent trimming of nails, avoidance of sources of trauma, and diligent control of diabetes. The callus is probably the most common precipitating lesion leading to loss of limb, and must be minimized by frequent careful trimming. Aggressive therapy for foot necrosis and/or infection entails rest, cleanliness by use of room-temperature soaks, large doses of proper antibiotics, drainage of abscesses, cautious repeated debridement of necrotic tissue after the destructive process is localized, avoidance of local applications other than 0.9% saline, and judicious avoidance of operative procedures on a foot having a marginal blood supply. Arteriography should be used where occlusion of larger proximal arteries may be the major problem, and where reconstructive arterial operations are indicated. Amputation is aggressively conservative when utilizing transmetatarsal division for the few patients with gangrene of several toes and a satisfactory collateral circulation, and below-knee amputation for all others in whom destruction of the major part of the foot has occurred. About two-thirds of patients achieve ambulation after below-knee amputation.


The immunofluorescent tumor imprint technique was used to test more than 1,000 serums for antinuclear factors by the indirect fluorescent antibody technique. Touch imprints of

*From Edsel B. Ford Institute for Medical Research.
61 tumors were employed as nuclear substrate; of these 50 were excellent and 11 were regarded as unsatisfactory for various reasons. The antigens responsible for the various nuclear immunofluorescent patterns are quantitatively greater in tumor nuclei than in normal nuclear substrates. Speckled, nucleolar, and shaggy fluorescences are much more conspicuous in tumor imprints. The last are also more reactive to the antibody (antibodies) responsible for homogeneous fluorescence. The immunofluorescent tumor imprint technique was accordingly found to be superior to those employing normal nuclei as substrate.


Nuclear fluorescence in 488 sera (connective tissue diseases and dermatoses) tested for antinuclear factor by immunofluorescent tumor imprint technique, was found to be homogenous, shaggy, speckled, or nucleolar. Frequency of antinuclear factor was 97.7% in systemic lupus erythematosus, 53.3% in discoid lupus erythematosus, 90.9% in systemic scleroderma, 100% in linear scleroderma, 16.6% in morphea, 60% in Jessner's lymphocytic infiltrate, only 3.2% in controls, and 6% in 115 patients with miscellaneous dermatoses. A negative antinuclear factor test virtually excludes active systemic lupus erythematosus. A relationship exists between the frequency of antinuclear factor and severity of disease in scleroderma and dermatomyositis. Routine antinuclear factor tests in all patients where a connective tissue disease is suspected are advocated.


Tetracycline labels deposited in vivo reveal that in human ribs, after age 20, apposition of periosteal bone can be continued. It decreases in amount with advancing age but is still present in the seventh decade.


Radioiodinated rose bengal hepatic photoscans performed on 72 patients with clinical jaundice (total serum bilirubin greater than 1.0 mg per cent) were evaluated for clinical application. Technique included scans 20 minutes after dye injection and, when necessary, at 6 and 24 hours. Area scanned beyond the liver extended into the left upper quadrant to detect radioactivity in the small bowel and/or kidney. Generally only an anterior scan was necessitated. Helpful features of scan analysis were liver size, intrinsic hepatic pattern, demonstration of biliary ducts, gall bladder and small intestine. It was concluded that the test contributes to the differential diagnosis of difficult problems of jaundice. The level and degree of obstruction can in most cases be delineated and hepatic parenchymal status depicted.


The excess of 15N in protein nitrogen of rat tissues was found to be greater than that in nitrogen of the proteins consumed by the animals. Two groups of rats were fed diets in which the protein components were casein and soybean protein respectively. Both the protein components were casein and soybean protein respectively. Both the natural excess of 15N and its distribution are different in these two proteins. In both groups of rats, abundance of 15N in nitrogen of liver and muscle protein exceeded that in dietary protein nitrogen after 2 weeks. When the same diets were continued for 8, 26, or 50 weeks, further accumulation of 15N in tissue proteins was slight and limited to a few amino acids. Protein nitrogen of nuclear, mitochondrial, microsomal, and soluble subcellular liver fractions contained essentially the same excess of 15N. Analyses of nitrogen from eight nonessential amino acids (proline, glutamic acid, alanine, aspartic acid, arginine, glycine, serine, tyrosine) and six essential ones (valine, leucine, lysine, histidine, phenylalanine, threonine) isolated from dietary and tissue proteins showed that 15N accumulated primarily in the nonessential.

*From Edsel B. Ford Institute for Medical Research.
group, and in leucine and valine. $^{15}N$ excess appeared to be greatest in amino acids which are extensively involved in nitrogen transfer. In threonine isolated from liver protein, abundance of $^{15}N$ was below that of dietary threonine, and this deficit increased with duration of feeding in both groups of rats.


The only foolproof diagnostic test for pulmonary embolus is pulmonary angiography. Lung scanning yields false positives; the false negatives of electrocardiographic diagnosis are a matter of tragic record. By pulmonary angiography the presence, extent and location of the pulmonary arterial obstruction can be determined and the pulmonary arterial pressure measured. Correlation of these findings with the clinical status of the patient enables a decision to be made with regard to pulmonary embolectomy.


A postoperative complete A-V block followed replacement of the tricuspid valve by a Starr-Edwards prosthesis. Stokes-Adams seizures were secondary to recurrent episodes of ventricular tachycardia. The prosthesis made the simpler intravenous pacemaker techniques impracticable. A myocardial pacemaker was implanted instead, with two additional electrode wires in the left ventricle to make possible the use of the "coupled pulse generator" to control the rapid ventricular tachycardia. Because the single stimulus pacemaker, at a fixed rate of 74/minute, failed to control the recurrence of the ventricular tachyarrhythmia, it was decided to connect the "coupled-pulse generator". After the rate of the "paired unit" was increased to 100/minute, the ectopic ventricular focus remained inhibited for a longer period of time. Unfortunately, the results were transient and a fatal outcome could not be prevented. At no time during the use of the "paired pulse generator" could the second additional premature ventricular depolarization without mechanical response be obtained, as is required for a true "paired pacemaker stimulation."


A new technique of delivering chemotherapeutic agents by continuous irrigation was used in the treatment of five patients with Pseudomonas keratitis. A small bore tubing, which enters the brow and emerges in the upper cul-de-sac, was designed for this purpose. It had been tested extensively in previous experiments on rabbits. A solution of 0.05% colistin and 0.05% sulfacetamide in normal saline was run at a rate of 6-8 drops/minute for up to 14 days. None of the eyes required enucleation, and four of the five patients regained useful vision.


The mechanics of voluntary voiding were studied in adult females. Quantitative changes in intravesical (IV) and intraurethral (IU) pressures were correlated with the exact times when urine flow started and when it stopped. Pressures were recorded on a four-channel oscillographic recording system according to the technic of electronic direct urethrocystometry. Urine flow was timed by a specially constructed electronic sensor, devised to detect the vibrations of water dropping into a child-size bed pan suspended in the toilet bowl, while excluding vibrations from extraneous noises. The mean time to initiate voiding in physiologically normal patients was 4.3 seconds. Patients with stress urinary incontinence voided in 5.3 seconds and those with cystocele in 4.1 seconds. The mean increase in pressures required to initiate voiding were as follows: All patients: 20.35 cm of water IV and 10.52 IU; normal patients: 19.80 IV and 12.16 IU; stress urinary incontinence patients: 21.28 IV and 10.84 IU; cystocele patients: 15.00 IV and 7.6 IU. Once voiding was well established, pressures tended to fall. High pressure values were associated with urinary obstruction. When voiding was terminated the IV and IU pressure relationships were reversed and intraurethral pressure exceeded the intravesical.

443

Beagle dog rib was labeled in vivo by a tetracycline antibiotic, and the appositional rate of new osteoid measured. By selecting haversian systems of approximately the same size and plotting their appositional rate against their degree of completion, it was found that this rate was independent of the degree of completion, contrary to the earlier conclusions. However, when the absolute size of the systems was plotted against their appositional rate, a direct, linear absolute dependence of the rate upon the system's size was found.


Of 1,010 patients operated on between 1940 and 1956 for nontoxic benign thyroid nodules, 42 (4%) later developed nodules, considered clinically significant, in remaining thyroid tissue. Reoperation was done for 30 patients, of whom a second recurrence developed in 8. A third operation was performed for 3 patients. Malignancy was not found in the recurrences. The incidence of appearance of thyroid nodules in residual thyroid tissue increased with time, and approximated 15% for patients followed 10 years or longer. The true incidence is probably higher, since follow-up periods were incomplete. The surgeon should thus be alert to remove all thyroid tissue that bears nodules, short of endangering the parathyroids and recurrent laryngeal nerves.


The Cronin Silastic prosthesis was employed after simple mastectomy for fibrocystic breast disease, replacing unsatisfactory sponge implants and calcifying dermafat grafts. Although excellent results have been obtained when the prosthesis was used for primary augmentation procedure, certain complications developed when it was used as a replacement following simple subcutaneous mastectomy in a one-stage procedure. These complications included visible and palpable wrinkling of the prosthesis, dislocation of the prosthesis, separation of the prosthesis from its backing, wound dehiscence, hematoma, and skin necrosis. The magnitude of complications can be lessened by certain precautions. The dressing should not produce displacement which in turn may be obscured by edema or hematoma. The hematoma should be evacuated promptly by surgery. Incipient skin necrosis demands that the prosthesis be removed immediately and reimbed only when adequate soft tissue recovery is apparent. The procedure should be carried out in two stages with a time interval between stages to permit revascularization of the skin envelope. In spite of difficulties encountered, the procedure has much to offer the patient facing an existence of repeated breast biopsies.


Our experience in 10 operations, and the reports of other surgical groups, show postinfarction ventricular aneurysm to be amenable to surgical treatment. Considering the gravity of the condition, the operative mortality is reasonably low. The 4 patients in our series who died in the hospital were all operated on late after the myocardial infarction, eight months afterward in two cases, 72 and 48 months in the other two. Probably these aneurysms are fully developed after three months, and the optimum time for operation may be the fourth month after the infarction. Patients with myocardial infarction should have films of the chest one month and three months after the acute episode. If an aneurysm is suspected but not proved by the ordinary film and fluoroscopy, angiocardiography is indicated. Aneurysm may be suspected also when disability with congestive failure persists and when the electrocardiogram reveals continuance of ST segment elevation in the pattern of myocardial infarction. Excision of the aneurysm during extracorporeal circulation is the obviously logical operative treatment.
ABSTRACTS


Obstruction in the right atrium of a seven-year-old boy was originally thought to be due to a myxomatous type of tumor arising from the inferior vena cava. Subsequent events proved that the origin of the tumor was in the left lobe of the liver and that the tumor had produced complete obstruction of the inferior vena cava. Left hepatic lobectomy was carried out, but death resulted from hemorrhage. The histological classification was embryonal cell rhabdomyosarcoma.


An analysis was made of the relation between cellular behavior and the mechanical forces associated with muscle growth and contraction. From this analysis came two hypotheses: increased compression force parallel to the long axis of a bone should increase its remodeling rate; the direction of surface drift in growing bones should be determined by bone flexure unequal in all diameters and caused by muscles. These hypotheses were tested in the rib, using quantitative histologic analysis, and were confirmed by the findings that in children more remodeling occurs in the cutaneous than in the pleural cortex, that remodeling tends to become equal in both cortices in adults, that internal remodeling is greater in children than in adults. Histologic measurement made in mineralized cross sections of ribs of 40 subjects confirmed the above predictions.


Twenty-six patients with pheochromocytoma were seen in a 14-year period (1951-1964) at the Henry Ford Hospital. The presenting complaint often seemed unrelated to the presence of pheochromocytoma. Only 13 patients (50%) gave a history of hypertension, and six were normotensive at the time of initial examination. In 14 of the 18 patients who complained of paroxysmal attacks, the diagnosis was made preoperatively or antemortem. In contrast, the diagnosis was not established clinically in the 8 patients failing to report paroxysms. This would seem to point to the importance of ruling out pheochromocytoma in those thought to have primary or so-called essential hypertension. Because of the difficulty of excluding pheochromocytoma by means of clinical examination, it is recommended that ideally either a histamine or phentolamine test be done on every patient with newly diagnosed hypertension.


A frequent association of marrow mastocytosis with lymphocytic dyscrasias is found. Increases in marrow mast cells are encountered occasionally with lymphocytoses in other diseases (miliary tuberculosis, locally invasive carcinoma), but only in urticaria pigmentosa is a corresponding degree of mastocytosis observed. Moderate marrow mast cell increases are also seen in areas of normal lymph follicles. The first of 2 patients reported presented with episodic flushing, urticaria pigmentosa, adenopathy and hepatosplenomegaly. Laboratory data included marrow mastocytosis and elevated levels of blood histamine and catecholamines. A clinical diagnosis of systemic mast cell disease was considered well founded but at autopsy generalized malignant lymphoma was seen without evidence of mastocytosis other than in the marrow and skin lesions. The second patient demonstrated urticaria pigmentosa with Waldenstrom's macroglobulinemia, an association not previously reported. The marrow of this patient showed significant mast cell increase, a finding noted by others in Waldenstrom's macroglobulinemia. Since tissue mast cells are derived from lymphocytes, their association may follow pari passu. On occasion, the hyperplasia of mast cells in conjunction with lymphoma may be sufficient to evoke signs of systemic mast cell effects. Finally, it should be noted that the mastocytoma of urticaria pigmentosa may precede clinical manifestations of lymphomatous disease.
ABSTRACTS


The sixfold increased incidence of staphylococcic endocarditis since 1953 was due to penicillin-G-resistant strains. On the basis of this change in the staphylococcus and other clinical and laboratory findings, the patients were classified into three groups; acute bacterial endocarditis, due to coagulase-positive staphylococci which were usually resistant to penicillin; subacute bacterial endocarditis, due to coagulase-negative organisms sensitive to penicillin; and, postcardiotomy endocarditis, usually due to coagulase-negative strains that were resistant to penicillin. Treatment with the new semisynthetic penicillins gave much more favorable results than with the older antibiotics. Administration of large amounts of the antibiotic for at least six weeks was essential.


The narrow lower esophageal ring described by Schatzki is a complication of sliding hiatus hernia which causes dysphagia. The ring is a localized inflammatory stricture involving the mucosa but not the muscular wall of the esophagus. It is located uniformly at the esophagogastric junction. Preoperative moving picture and esophageal pressure studies involving 8 patients are described.


In 69 symptomatic patients with hiatus hernia, the endoscopic diagnosis of esophagitis proved to be less common than anticipated. Gastritis was found more than twice as often as esophagitis following forceps biopsy of these organs. The view that “peptic esophagitis” is a major cause of symptoms in patients with hiatus hernia is not supported by this study. Gastritis appears to be an early and persistent pathologic change in many cases.


In 21 metabolically healthy and 5 seriously ill patients, who had received tetracycline, the appositional rate of osteonal and endosteal bone formation in rib cortex was measured. This rate declined with age. Tetracycline (in the doses given) did not detectably slow bone formation. No significant difference was found between the appositional rate in haversian systems and on cortical endosteal bone surfaces. The overall mean rates were 1.08 ± 0.7 (S.D.) μ per day for osteonal, and 1.10 ± 0.8 (S.D.) μ per day cortical endosteal bone formation at an age mean of 38 years. In five severely ill cases the rates were low, 0.49 and 0.38 μ per day respectively.


A cuticular structure morphologically similar to the secondary dental cuticle was observed on the apical surface of some teeth with radicular cysts. Therefore, sections of apical cuticles were subjected to the same stains and histochemical reactions as were used to identify the secondary dental cuticle and hyaline bodies in previous studies. The reactions used and the results obtained were Orcein +, acid fuchsin +, PAS →, Bauer +, Casella +, methenamine silver nitrate +, Ninhydrin-Schiff →, DNFβ +, tyrosine +, DDD after thioglycerol, arginine →, tryptophan +, Sudan Black B +, Smith-Dietrich +, Verhoeff +. Birefringence with polarized light was not noted but a similar autofluorescence was observed with ultraviolet light. Since all three structures reacted comparably a similar composition is suggested. The intimate association of all three structures with odontogenic epithelium suggests a derivation or dependence on such epithelium.

A patient with an intraluminal duodenal diverticulum causing symptoms of obstruction at the age of 76 is reported. Roentgenologic study of the upper gastrointestinal tract demonstrated a duodenal bulb measuring 10 x 15 cm. There was a 1 x 2 cm oval collection of barium surrounded by a thin lucent line in the third portion of the duodenum, characteristic of an intraluminal diverticulum. The patient responded to symptomatic management, and surgical relief of the obstruction was not required. An intraluminal duodenal diverticulum develops when the membrane separating the two channels of the primitive duodenal gut fails to rupture. A duodenal diaphragm may or may not be associated as a separate congenital anomaly. The case is of particular interest in that the first symptoms of this congenital abnormality occurred in the eighth decade of life although the diagnosis of intraluminal duodenal diverticulum has been reported under the age of 20.


The coexistence of lymphosarcoma and leukemia of lymphocytic origin is well established, but that of lymphosarcoma and leukemia of granulocytic origin is rare. A 54-year old Caucasian male had lymphosarcoma of the cervical and mediastinal lymph nodes proved by biopsy and treated by irradiation; two years after diagnosis the patient was found to have chronic granulocytic leukemia. This diagnosis was substantiated by typical peripheral blood and bone marrow findings and characteristic leucocyte alkaline phosphatase stain. The Ph1 chromosome was not found in marrow or peripheral blood. Rebiopsy of a peripheral lymph node reaffirmed the continuing presence of lymphocytic lymphosarcoma. Both diseases still were present concurrently at the time of reporting 20 months later. Although the hypothesis that these two hematological neoplasms are a mutation from preexisting lymphosarcoma to leukemic granulocytic cells is intriguing, the authors believe that these are two separate entities appearing concurrently.