Abstracts Of Recent Publications Of The Professional Staff Of The Henry Ford Hospital And Of The Edsel B. Ford Institute For Medical Research

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ABSTRACTS OF RECENT PUBLICATIONS OF THE PROFESSIONAL STAFF OF THE HENRY FORD HOSPITAL AND OF THE EDSEL B. FORD INSTITUTE FOR MEDICAL RESEARCH


Since the colon and rectum are important components of the gastro-intestinal tract, it is inevitable that alterations in their function will result in nutritional disturbances. The nutritional status of the patient is one of the most important factors in determining the outcome of any medical or surgical program of treatment. The question of how best to correct substandard nutritional states has received considerable attention. There are two routes for the administration of supplementary feeding — intravenous and oral. Since 1951, we have used liquefied natural foods for tube feeding. The tubes used for the most part are small, plastic, inexpensive, non-irritating and may be readily passed into the upper gastro-intestinal tract of almost every patient. The stomach is used where possible. However, the tube may be passed into the upper jejunum if necessary by means of a silk string and mercury-weighted balloon. Plastic tubes are tolerated better than rubber tubes. The restoration of nutritional balance can produce dramatic effects in the patient's will to live and healing ability. As time passes, we are more and more convinced that tube feeding with natural foods will make the patient ready for surgery and, in many cases, prove to be a life-saving measure in the post-operative period.


Although a thyroid nodule for which surgery is performed may prove to be benign, an additional nodule or nodules may be found at operation which prove to be malignant. The surgeon operating for a thyroid nodule should search for additional nodules at the time of surgery and remove such nodules adequately. The finding of occult carcinomas under these circumstances is another manifestation of the known characteristics of thyroid carcinoma. It should not cause an attitude of despair but should provide an added incentive to perform adequate thyroid surgery for questionable lesions. Multicentricity of thyroid carcinoma appears sufficiently frequent to warrant total or near total thyroidectomy for many patients with this disease.


Surgery of the thyroid is changing; removal of nodules is being emphasized. This has resulted in removal of thyroid malignancy in earlier stages. Although the natural history of carcinoma of the thyroid frequently extends over many years, it can kill. Most discrete thyroid nodules require surgery in patients having satisfactory health otherwise. The presence of minimal palpable irregularities of the thyroid or evidence of thyroiditis producing thyroid irregularities, represent conditions for which surgery is usually not necessary. Selection for surgery is possible. The scintogram
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has been of limited value to us in deciding whether or not a thyroid nodule should be removed. Surgery is not necessary for “hot” nodules, but such nodules are few in number. A total lobectomy is the operative procedure indicated for a thyroid nodule. The presence of additional thyroid nodules should be looked for at the time of surgery and adequately removed. If the presence of carcinoma of the thyroid is established, a total lobectomy is the minimal operative procedure to be carried out and frequently a total thyroidectomy should be performed. If a patient with carcinoma of the thyroid has palpable lymph nodes, a standard radical neck dissection should usually be performed. If a patient with carcinoma of the thyroid does not have palpable cervical lymph nodes, at least one-third of the patients do contain metastases to the nodes and at least ten per cent later require removal of these nodes when they manifest themselves clinically. Therefore, we prefer to carry out more radical neck surgery in the early stages of this disease rather than later. The modified neck dissection appears to be a satisfactory procedure for many selected patients with carcinoma of the thyroid. The removal of lymph nodes in the tracheoesophageal groove and other areas when carcinoma is present adjacent to the thyroid gland itself is important. The majority of lesions of thyroid malignancy are predominantly papillary adenocarcinoma. This variety usually remains in the neck area and, therefore, can be cured by adequate local removal of the primary lesion in addition to cervical node metastasis, even though these metastases are extensive. Mutilating procedures are not necessary, however, and the surgeon may be more conservative in performing neck dissections in the absence of palpable nodes. To date, we have not found routine mediastinal dissections worth the added risk involved in surgery for thyroid carcinoma. Patients deserve repeated postoperative followup examinations indefinitely, for many of these patients still can be salvaged by proper additional treatment later, even though recurrences appear.


It has been discovered that yeast cells which were hitherto thought to contain only one lactic dehydrogenase, with an unknown function, since lactate has not been considered a normal metabolite of yeast, actually contain 5 different lactic dehydrogenases, and that lactate is an important normal metabolite of yeast cells. One of the newly discovered lactic dehydrogenases has been purified and shown to be a D-a-hydroxy acid dehydrogenase which is specific for the D-configuration of hydroxy acids but quite unspecific as to chain linkage. The enzyme has been shown to be a flavoprotein containing a metal but no cytochrome. The most fascinating feature of the enzyme is that the metal (probably Zn++) can be removed with the greatest of ease, rendering the enzyme catalytically completely inactive. With addition of exceedingly low quantities of Zn++ or of slightly higher concentrations of other divalent cations the enzyme is reactivated. This constitutes the first instance of the reversible resolution of a so-called metal-flavoprotein and thus, for the first time, one has a chance of finding out what the metal is doing in this important group of enzymes.

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Urinary calculi vary remarkably in etiology, symptoms and damage to the kidney. Treatment also must be flexible, particularly in prevention, since the regimen must be adapted to the type of stone. Urinary calculi may be called the rocks of all ages since they may occur in any age group from childhood to senility. They may originate in any part of the urinary tract but most commonly form in the kidney. When first discovered, about 50 per cent will be renal; 16 per cent will be ureteral; 30 per cent are in the bladder; 3 per cent urethral and 1 per cent are prostatic. The ureteral and vesical calculi originally may have formed in the kidney and been passed down into the other structures. Prostatic calculi, however, usually originate in that gland. Calculous disease accounts for about 1 per cent of all hospital admissions, the incidence being much greater in the warmer climates and among the lower income groups. The Negro race, on the other hand, is less frequently afflicted.


Clinical characteristics often indicate the type of organism responsible for urinary tract infection. Acute episodes usually respond to the type of treatment used for any other infection. Chronic infections are much more serious and may need prolonged therapy. In approaching the problem of infections of the urinary tract, certain factors in etiology must be taken into consideration. The tract is ordinarily sterile and, therefore, has had no local protective immunity built up within it. Naturally, when infection does occur, it may be mild or very intense depending largely on virulence of the infecting organism. Any pyogenic bacterium may be the cause of the infection but associated with or contributing to that infection are other numerous accessory causes. These include any condition, whether mechanical or toxic, local or general, that reduces the resistance of one or both kidneys or establishes suitable environment for continuation of growth of the bacterium. Such factors or causes are: associated systemic disease, stone formation, retention or stasis of urine, and trauma.


Of the biostatically, clinically, and physiologically identifiable phases of neoplastic disease, that of disseminated cancer exacts the greatest social cost and is most amenable to change in this regard. Chemotherapy and hormonal therapy are recommended as adjuncts in the management of disseminated cancer, but not of early or terminal cancer. Progression of disseminated cancer should be watched for carefully and constitutes the direct indication for suppressive hormonal and chemotherapeutic intervention.


The effect of Trishydroxymethylaminomethane (THAM) on 4 individuals with
respiratory acidosis is recorded. There was a consistent rise in the arterial blood pH, a reduction in minute ventilation, and a considerable increase in urinary pH, and urinary excretion of bicarbonate. A brief report on the 2 patients in whom this buffer has been used therapeutically is included.


THAM is a weak, organic base which has been used for controlling respiratory acidosis, both in dogs and man. It combines with carbonic acid in the blood to form bicarbonate, producing a rise in arterial pH. No serious toxicity has so far been described, although in large doses hypoglycemia or tetany may occur. THAM can prevent the hyperventilation and acidosis which normally occurs while breathing 5% carbon dioxide. Its mode of action is discussed and it is postulated that in alkalosis, the respiratory center is more responsive to arterial pH than to arterial carbon dioxide tension.


The authors give the histories of four patients with collections of air under the mucosa or serosa of the intestinal tract and its peritoneal attachment. The 4 are representative of 16 patients, observed by the authors, with pneumatosis cystoides intestinalis and a common history of allergic difficulties and asthma. The etiology of the disease has been the subject of many theories, but a complete understanding of the pathogenesis has not yet been attained. The two dominant concepts at present are based on (1) a mechanical theory which assumes that the gas is forced through a fissure in the intestinal mucous membrane and (2) a chemical theory which assumes that gas is produced by fermentation and absorbed by the mucous membrane. Investigation for the existence of a cause-and-effect relationship between allergy or asthma and air in the intestinal wall is suggested as a worthy endeavor.


While the cat's basilar membrane is only two-thirds the length of the human, its auditory-frequency range is at least three times as great. Behaviorally defined absolute-intensity and differential-frequency thresholds have been determined for the cat and are compared with those of humans. The cat's absolute thresholds lie well below those of humans over nearly all of the frequencies the two species respond to in common. The cat's differential thresholds, however, are larger at all frequencies. But because of the cat's larger frequency range, the total number of discriminable steps appear to be about equal. Counts of ganglion cells and hair cells for the cat are reported and compared with counts for humans. The greater density of the cat's ganglion cells may explain its lower absolute thresholds, but
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there appears to be no direct relation between ganglion-cell density and frequency discrimination. The lower density of hair cells for the cat, coupled with its shorter basilar membrane, may account for its poor frequency discrimination.


The importance of the basic or conservative program of treatment for rheumatoid arthritis is stressed. A workable plan for the application of such a program is offered. Adrenocorticals, as a supplemental part of this program, have a place in the treatment of rheumatoid arthritis. Detailed consideration is given to the indications and contraindications to their use as supplements. Hazards associated with prolonged steroid administration to patients with rheumatoid arthritis are illustrated, and measures to minimize such adverse effects are discussed. The management of the patient whose rheumatoid arthritis has been complicated by induced hypercortisonism is outlined.


We received the original communications of Abel with some skepticism but after visiting the Gordon Hospital our interest was aroused. Subsequently we had the good fortune to have Stanley Aylett visit our institution, where he gave such a convincing report of his experience that we rather reluctantly made the decision to attempt restoration of continuity in patients with ulcerative colitis who were subjected to total colectomy. The results so far have exceeded our expectations. We do not wish to leave the impression that this is a suitable operation for all patients or that there are no difficulties in the post-operative management of these patients, for every one of them presents problems demanding unremitting care and attention. However, one has only to be conscious of the gratitude of these patients and their families to feel repaid for the extra effort required. Our most enthusiastic patient is one of our staff physicians who has returned to full activity following a protracted period of semi-invalidism. Moreover, the willingness with which more and more patients agree to submit to operation when they are informed that an attempt will be made to restore intestinal continuity has been very gratifying. It will take considerable time and the experience of others to determine the exact place restoration has in the surgical treatment of this disease.


Three hundred consecutive patients admitted to the Henry Ford Hospital with a diagnosis of peptic ulcer were evaluated for possible abnormality in parathyroid function. From this group, four cases of hyperparathyroidism were identified (1.3%). In each of these patients a single parathyroid adenoma was found and resected. The difficulty encountered in evaluating calcium and phosphorus metabolism in patients undergoing active treatment for peptic ulcer is described. Particular reference is directed to the artifacts which may influence the usual objective tests of parathyroid function.
function. Nevertheless, it is concluded that these difficulties are not insurmountable, and the screening of peptic ulcer patients for detection of underlying hyperparathyroidism is advised.


The term micropetrosis has been coined here to describe a bone condition in which the canaliculae and to a lesser extent the osteocyte lacunae are filled in vivo with mineralized tissue. This condition was found primarily in extra-Haversian bone and appeared to be a characteristic of aging. Almost no micropetrosis exists at birth, whereas an average of 15 per cent of the volume of nineteen bones from sixteen patients over seventy was micropetrotic. In three cases 40 per cent of the volume was affected.


An affection of bone, termed feathering, is described. Feathered bone is incompletely mineralized and has distinctive morphological features as seen in stained, fresh, undecalcified sections. It is different from osteomalacic and osteoporotic bone and may involve more than half of the skeleton. It has not yet been possible to correlate it with age, sex, or medication.


The mechanism by which the tetracyclines become fixed so firmly to mineralizing bone is unknown. Although they complex with calcium and magnesium ions we feel that probably they are merely “cemented in” by further mineralization since with fresh bone in vitro we are able to stain and destain bone surfaces of all types at will with any of the tetracyclines. The value of the technique described is that it permits study of bone formation as regards quantity, location and rate directly in man. When skeletal physiology is normal, studies of bone formation are indirect evidence of bone destruction since, in health, formative and destructive processes balance. In pathological processes, the information on rate, quantity and locus of formation can be compared with findings from normals to gain an estimate of the nature and degree of disturbance in osteoblastic activity. We are currently engaged in preparing patients for bone biopsies, done as part of a work-up on bone metabolism, by administration of achromycin as previously recommended. The subsequent biopsy allows us to measure bone formation in the patient and relate it to normals for his age and sex. Suitably used, the phenomenon of achromycin fixation in new bone and its demonstration by bright-field illumination or by fluorescene should prove a potent investigative tool in the study of human bone physiology. The method, of course, is equally suitable for work with laboratory animals.
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The apparatus, procedure, and preliminary clinical results of direct urethrocystometry are reported. The method differs from standard cystometry in that both vesical and urethral pressure changes are recorded simultaneously and continuously. Rather than filling the bladder in a retrograde fashion with urine substitutes poorly adjusted to body temperature, pressures are recorded during actual filling of the bladder with urine, the excretion of which has been stimulated by chlorothiazide. Bladder and urethral changes in pressure are recorded during adynamic and dynamic states of body activity. Pressure changes incident to voiding have been observed. The results differ from those obtained with standard cystometry.


Sixty-eight cases of thyroid gland disease treated surgically that presented difficult or insoluble problems in pathologic diagnosis are reviewed, both pathologically and clinically. The opportunity to study these cases as a group has permitted classification of 58 cases with reasonable assurance that the diagnosis is correct. Among the remaining 10, it is believed that a "probable" diagnosis can be made in 7. 6 of the 7 now being considered probably benign. Atypical patterns gave rise to diagnostic difficulties among the adenomas and an excellent degree of differentiation among the carcinomas. In both groups the evaluation of invasion, either of vessels or of capsule, was frequently a problem. The latter was also a problem in differentiating thyroiditis from carcinoma and was frequently complicated by a marked degree of cytologic atypia. Hyperplasia of an extreme degree was difficult to differentiate from carcinoma, particularly when accompanied by cytologic atypia as well as nodules of an atypical pattern. Throughout all groups, papillary structures, both hyperplastic and regressive, raised the question of carcinoma. Finally, the importance of a knowledge of the clinical history and gross pathologic description is once again emphasized, particularly in recognizing extremes of hyperplasia.


The gross anatomy of the arteries of the atria and of the interventricular septum have been described in previous reports. This report is a description of the coronary arteries of the right and left ventricles exclusive of the septum, that is, the so-called "free" walls of the two ventricles. A knowledge of anatomy of the coronary arteries of the free ventricular walls is important in understanding coronary disease and its relationship to acute myocardial infarction. The blood supply to the free walls of the right and left ventricles has been analyzed in a series of 82 human hearts prepared by the injection and corrosion method. The anterior half of the left ventricle was supplied almost exclusively by the left coronary artery, but all other areas demonstrated considerable variation both in origin and pattern of supply. This was particularly true of the posterior half of the left ventricle.
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Myocardial infarction occurring in patients 35 years old or younger was compared between 27 patients from a veterans' hospital and 16 patients from a private hospital. The following differences were noted: The infarct was due to atherosclerosis without associated pertinent diseases in a larger percentage of the veterans than private patients, and this was especially true in the fatal cases; a larger segment of the total number of infarcts was composed of young adults at the veterans' hospital than at the private hospital; one-fourth of the series that included both sexes were women. Because reported reviews of myocardial infarction in patients aged 36 to 40 years seem similar to older patients and different from patients 35 years and younger, it is suggested that in future studies on myocardial infarction in "young" adults the maximum age be 35 years. Although much of the data regarding myocardial infarction in young soldiers and veterans is applicable to the disease in the general population, some which is not has been discussed.


In this discussion the term "adolescence" will describe that period of growth that begins with an acceleration in rate preceding the attainment of sexual maturity, merges into a decelerative phase and terminates with the cessation of skeletal growth. In the girl, contrasting rates of growth will be separated approximately by the menarche; a point roughly corresponding to this in the male, the appearance of spermatozoa, may be expected two years later. In both sexes there is individual variation in the timing of the process, with a range of at least five years for the occurrence of puberty. It is of first importance for the understanding of the metabolic phenomena of the period that the events be plotted against the time-table of physiologic rather than chronologic age. Different problems will present in a 13-year-old girl, depending on whether she is prepubescent or postpubescent. For this reason the physician is more interested in the secondary sex characteristics as a guide and timetable than in chronologic age. In the order of their appearance these are, in the girl, as follows: (1) increase in the transverse diameter of the pelvis; (2) development of the breasts; (3) change from alkaline vaginal secretion to a strongly acid one; (4) appearance of pubic hair; and (5) axillary hair. The first menstrual period can be expected to occur between the last two. In the boy the puberal phenomena make their appearance over a two-year period in the following order: (1) increase in size of the testes and penis; (2) swelling of breasts; (3) appearance of pubic, axillary and facial hair; (4) change in the voice; and (5) production of spermatozoa. This item is not practicable of demonstration, but is considered to coincide with curliness of pubic hair. An analysis is given of the nature of growth in adolescence, of the rise and fall of the basal metabolism, of the dietary requirements as to calories, protein, vitamins and calcium, of the influence of emotional factors on nutrition, and of the adolescent diabetic.
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It has been found in this and other laboratories that in animal and vegetable tissues, particularly in heart, a large fraction of the vitamin B₂ content is so strongly bound to protein that it is not extracted or determined in the usual methods of analysis. This fraction of vitamin B₂ has now been identified as the prosthetic group of succinic dehydrogenase and the latter is shown in this paper to be FAD covalently bound to the peptide backbone of the apoenzyme. A pure flavin hexapeptide has been isolated starting with mitochondria, prepared from 400 beef hearts and purified first as the holoenzyme then, after proteolytic digestion, as the flavin hexapeptide by various ion-exchange procedures until the pure substance was obtained in microgram quantities. The chemical nature, constitution, and determination of the compound is described.


The cross-finger flap is a valuable procedure for resurfacing of acute or long standing defects of the tips or the flexor surfaces of the fingers. The procedure gives the patient the most satisfactory coverage with a period of disability not usually exceeding that of free skin grafts or simple revisions of traumatic amputations. The procedure places a second finger in jeopardy but we feel that the quality of the result warrants this risk if cases are thoughtfully selected. The utilization of the Kirschner wire fixation allows more accurate flap placement with its attendant advantages of better healing and shorter duration of immobilization. No ill effects have been noted from the use of the Kirschner wire fixation in this group of cases.


The incidence of cutaneous tuberculosis, which has never been high in the United States, has decreased in recent years. The improvement of treatment methods, the elimination of infected milk herds and the elevation of living standards have contributed to the general decline of the disease throughout the world. A case report has been presented in which the patient, a 28-year-old colored woman, had cutaneous lesions resembling tuberculosis verrucosa cutis and primary inoculation tuberculosis. We have classified the lesions under the term "pseudopprimary cutaneous complex", originated by O'Leary. Certain interesting radiological findings were also present about which no final conclusions can be drawn.


Extramedullary hematopoiesis occurs as a compensatory phenomenon in numerous diseases in which the normal function of the bone marrow is disturbed. It is usually

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first seen in the liver and spleen which during fetal life contribute much to blood formation. It also occurs in a diffuse fashion in many other organs. In rare instances it forms tumorous masses in the paravertebral regions of the chest cavity. The findings and the first instance of surgical resection of intrathoracic tumor-like masses of extramedullary hematopoietic tissue in a case of thalassemia minor are reported. The radiological findings observed over a 14 year period led to the preoperative diagnosis of (probable) neurogenic tumor.


Dr. Lam: The panel members have not had the advantage of previous information about the material which will be presented for their consideration this morning. In each case, I shall present a brief history and show the ordinary chest films. At this point, we will see if the panelists can make the diagnosis. Probably in most instances they will ask for further information, such as special roentgenographic studies, the electrocardiogram, and cardiac catheterization findings. Of course, the moderator knows the answer to each of the diagnostic problems, since the true diagnosis has been determined at operation or perhaps autopsy. Four abnormalities were shown and discussed, pulmonary stenosis, anomalous venous drainage, atrial tumor, coronary ativoventricular fistula, triatrial heart, and double aortic arch.


The repair of ventricular septal defects is a relatively safe surgical procedure, provided reasonable candidates for the operation are selected and the technical details of the operation are carefully managed. The poorest results will be obtained in very young infants (under the age of one year) and in patients with high pulmonary arteriolar resistance. The best results will be obtained in children above the age of three years and in those patients with high pulmonary artery flows. Induced cardiac arrest with acetylcholine as the cardioplegic agent is a valuable adjunct during the cardiac by-pass with the pump oxygenator.


A case of recurrent hyperparathyroidism has been described and the pertinent literature reviewed for similar case reports. True recurrence of hyperparathyroidism after earlier, successful surgery has been seen when a new adenoma arose, or when subsequent enlargement occurred in an already existing adenoma, unrecognizable at surgery and initially without significant function. Proved cases of this kind are still rare.


Two cases of familial recurring polyserositis manifesting typical abdominal
episodes are presented. The close similarity of the findings to those of acute surgical conditions of the abdomen is stressed, and the pertinent clinical features of this disease are discussed. Greater awareness of this entity among both surgeons and physicians is necessary if unwarranted surgery is to be avoided.


Pulmonary vein size is related to pressure within the left atrium. An accurate estimate of the left atrial pressure can be obtained from plain postero-anterior films of the chest. Upper lobe veins are a more reliable index to elevated pressure than lower lobe veins. However, the size of the lower lobe veins should be considered, as well as presence of Kerley's B lines, fluid, and distinctness of the veins. No appreciable difference in appearance among lesions producing an elevated pressure has been observed. With increasing pressures there is an increase in size of the upper lobe veins. The veins in the lower lobes are disproportionately enlarged in the presence of congestive failure.


Rat liver choline dehydrogenase has been known for many years to be one of the "cytochrome-reducing dehydrogenases". Although it is functionally and structurally linked to the respiratory chain and acts without the mediation of readily dissociable coenzymes, the cytochrome components linking choline dehydrogenase to oxygen have not been established. The purpose of this investigation was 2-fold. First, quantitative differences in the titration of the succinic and choline oxidase activities of liver mitochondria with various respiratory chain inhibitors, and other dissimilarities between the two enzyme systems, did not seem to be compatible with the operation of a common respiratory chain. It was of interest, therefore, to study the respiratory pigments functioning in the choline oxidase system. Since choline oxidase is the only known enzyme system inhibited by Amytal which does not operate by way of pyridine nucleotide coenzymes it was desirable to localize the site of inhibition by Amytal. The present paper shows that the respiratory pigments operative in choline oxidase are spectroscopically indistinguishable from those functioning in the succinic oxidase chain and the site of Amytal inhibition is identified between flavoprotein and cytochrome b. The implications of these results on the interrelation of choline and succinic oxidases in rat liver are dealt with in the succeeding paper. Choline oxidation in rat liver mitochondria is inhibited by Amytal when O2, external cytochrome c, ferricyanide, or methylene blue serves as electron acceptor. The action of choline dehydrogenase itself, as assayed by phenazine methosulfate, is not Amytal-sensitive. In the steady state during choline oxidation, Amytal interrupts the flow of electrons from flavoprotein to the cytochrome chain. A crossover point was identified between flavoprotein and cytochrome b. Flavoprotein, cytochromes b, c + c₁ and a + a₃

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are reduced by choline in the steady state and in anaerobiosis, and it was concluded that these respiratory pigments are on the pathway of electron transport from choline to \( \text{O}_2 \).


A review has been made of 355 cases of carcinoma of the colon occurring in the five-year period 1953-1957 inclusive. The location of these lesions and percentages has been noted. In 75 cases (21%) diverticulosis and diverticulitis were present, as well. A close study was made of the 35 cases of sigmoid carcinoma with closely associated sigmoid diverticula. The clinical suspicion of carcinoma was the most valuable single diagnostic aid noted. Proctosigmoidoscopic examination was directly valuable in diagnosing carcinoma and confirmed the clinical impression of carcinoma in 57% of our cases. It was of little value in diverticulosis. The sigmoid colon, where some 70% to 80% of diverticula occur, is also the site of 55% to 60% of the cancers of the colon. For this reason, this area should be given careful scrutiny in any colon study. This study of 35 cases of associated sigmoid diverticulosis and diverticulitis and carcinoma has illustrated how difficult a problem these two coexisting conditions can become.


The pattern of leukocyte exudation in patients with ulcerative colitis has been studied by the skin window technique. A majority of patients with ulcerative colitis (13 of 19 patients studied) showed a difference from the pattern of exudation seen in normal subjects consisting of an excessive number of basophilic leukocytes. The relation of basophilic leukocytes to tissue mast cells has not been resolved at the present time. McGovern and Archer have demonstrated in ulcerative colitis that mast cells are numerous in both muscle coats of the bowel and accompany vessels which penetrate the inner circular coat from the submucosa. They believe that mast cells are present in the bowel wall of ulcerative colitis in sufficient numbers to give rise to the phenomenon of histamine release. According to their concept, the mast cells in the intestinal wall would liberate histamine, heparin, and a vascular permeability factor accounting for the muscular spasm and hypertrophy, edema, and congestion of the bowel mucosa. Goldgraber believes that these observations introduce a biochemical concept into the pathogenetic theories of ulcerative colitis. Human mast cell secretion is known to include histamine and heparin, and probably contains hyaluronic acid and 5-hydroxytryptamine (serotonin) as well.


Oral administration of triacetyloleandomycin has been shown to produce greater serum and urine concentrations than erythromycin stearate or erythromycin pro-
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Pionate when administered as single or multiple 500 mg. doses. Serum antibacterial activity, however, was found to be 10 to 20 times higher after erythromycin pionate and 2 to 14 times higher after erythromycin stearate than after triacetyloleandomycin. Urine antistaphylococcal activity was greater after erythromycin pionate. Since the serum and urine concentrations produced by an antibiotic measure only its pharmacological behavior, while the serum and urine antibacterial activities reflect the agent's relative antibacterial potency as well as its pharmacodynamics, it is apparent that determination of the latter, i.e., the maximum inhibiting dilution of serum or urine or similar equivalent determination, gives information most useful to clinical therapy.


Electron microscopic studies of platelets from patients with P. A. in relapse and in remission revealed platelet ultrastructural abnormalities. Using Braunsteiner's heparin method five cases of untreated P. A. with moderate thrombocytopenia and poor prothrombin consumption were studied. Platelet differentials in the electron microscope revealed predominance of abnormal dendritic forms showing minimal pseudopodial formation (abortive dendritic forms). Studies on nine cases of P. A. treated with B₁₂ and folic acid revealed poor or borderline prothrombin consumption in seven and normal values in but two. Eight cases showed persistence of abortive dendritic formation and eight presented increased viscous metamorphosis (VM₅) with osmiophilic granulomere retention; in six cases spread forms without osmiophilic material were increased and two cases showed an increase in VM₅ without osmiophilic material. Sequential studies of a case of P. A. of Pregnancy revealed ultrastructural change from the untreated predominant abortive dendritic forms to a treated picture with a predominance of spread forms without osmiophilic material and increased VM₅. These studies indicate that in addition to the persistent defect in red cell size and prothrombin production in P. A. in remission reported by Owren there is also a continuance of platelet abnormality.


Recurring attacks of vertigo and vomiting are terrifying experiences for which relief may be urgently sought. The etiology of Ménière's disease is unknown, and curative therapy does not exist. Various regimens of medical treatment are only partially successful in relieving symptoms. When the attacks are so frequent and severe as to incapacitate the patient, destructive therapy should be considered. For the patient with unilateral Ménière's disease, this is accomplished simply and effectively by either transtympanic labyrinthotomy or intratympanic streptomycin therapy. Since the hearing which remains in the diseased ear is lost, destructive therapy by either technique usually is not recommended unless the threshold loss for speech reception is at least 40 db. and the speech discrimination score is not better than 40%. To be completely successful in relieving the patient of vertiginous episodes, labyrinthotomy and intratympanic streptomycin must accomplish a total unilateral destruction of vestibular
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function. The intratympanic streptomycin treatment is most effectively accomplished by injecting about 0.1 cc. of streptomycin solution (0.5 gm/cc.) every four hours into the middle ear through fine plastic tubing. The injections are given one day beyond the stage at which vestibular symptoms are fully developed (e.g., a total of four or five days). For unilateral labyrinth destruction, the labyrinthotomy operation is usually preferred because it is quicker and more discreetly accomplished. The only advantage of the intratympanic streptomycin technique is that a general anesthetic is not required. For patients with incapacitating bilateral Ménière's disease, it is imperative that all existing auditory function be preserved. Parenteral streptomycin therapy is the best and safest way to selectively destroy vestibular function in both ears and save hearing. The objective of treatment is to create almost total loss of vestibular function in both ears, for it has been found that patients in whom a mild caloric reaction to ice water was preserved experienced less ataxia and equally successful relief from vertiginous attacks. When 2 gm. per day in equally divided doses is given, a desired end-point is usually reached in two to four weeks. Parenteral streptomycin is not recommended for unilateral Ménière's disease, because an equally effective result can be accomplished by unilateral labyrinth ablation with less subsequent vestibular upset.


The acquisition of fresh human temporal bones continues to be an important adjunct to the training and research activities of departments of otolaryngology. If we are to improve our knowledge of inner ear pathology, it is necessary to acquire temporal bones from patients who suffered from hearing and/or vestibular disorders. Specimens are needed to show the pathological changes underlying different types of vertigo and deafness, whether these changes exist in the middle ear, sense organs, nerve trunks, or brain stem. Another important reason for acquiring temporal bones is the need for fresh specimens for teaching otologic surgery. Otologic surgery is performed almost entirely with the operating microscope. Considerable practice is required to manipulate the delicate instruments in this magnified visual field. Such skills can be acquired only by anatomical dissection and surgical exercises on the fresh human temporal bone. A method is described by which the temporal bones can be removed from the base of the skull at autopsy. The method consists of using the bone plug cutters in the oscillating motor driven saw. The specimens which are to be used for surgical dissection are stored in the frozen state whereas those which are to be examined histologically are immediately fixed in formalin solution and submitted to the Otological Research Laboratory for further preparation. A number of laboratories are listed where temporal bones can be sent for histological preparation for those otologists, or other persons, acquiring specimens suitable for sectioning. Instructions are given for the method of fixation and shipping.


A case of pyeloureteritis cystica with spontaneous rupture has been presented. Removal of a ureteral stone resulted in cure of the secondary cystic changes.
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Previously reported studies of 5 cases of Whipple's disease have demonstrated systemic distribution of cells containing characteristic cytoplasmic inclusions, which, because of their configuration, we have called sickleform particles. For convenience we have referred to these cells as SPC cells (sickleform particle-containing cells). The brain was available for study in 2 cases. In both there were numerous distinctive lesions which form the basis of this report. Although granular or other vegetations of the ependyma could be seen in many normal and pathologic states, we have seen the SPC cells only in Whipple's disease. Furthermore, these cases did not show the co-existent involvement of the choroid plexus or the leptomeninges that is present in many of the inflammatory diseases which produce a granular ependymitis. The pathologic changes in the brains of two cases of Whipple's Disease have been described. The lesions are considered specific and, thus, constitute additional evidence of the systemic nature of the disease.


This is a general review of the chemical nature and mechanism of action of the important group of dehydrogenases which are linked to the respiratory chain in animal tissues. This group of enzymes is responsible for over 99% of the biologically utilizable energy that is liberated by oxidative enzymes. Until recently, little was known about this group of enzymes outside of the identity of the chemical reactions they catalyze, their insolubility, resistance to isolation, and the effect of certain inhibitors on them. During the past 5 years, each of these enzymes has been obtained in soluble, purified form from animal tissues, most of them in this laboratory. This has permitted an intensive investigation of their prosthetic groups and mechanism of action. The following generalizations may be made about this group of enzymes from animal tissues as well as from higher plants: 1. They are invariably located exclusively in the mitochondria. 2. Their prosthetic groups, where known, are vitamin B2 derivatives and flavoprotein catalysis may be considered the primary mechanism of action of these enzymes. 3. They have an extremely high selectivity for electron carriers; in most cases, N-alkylphenazines are the best artificial electron acceptors. 4. They are not usually auto-oxidizable; thus no energy is wasted by this mechanism and all of it can be funneled into ATP synthesis via the cytochrome chain.


Mechanical injuries were produced about the oval window structures in the ears of fourteen cats. Almost all fractures of the stapes in which the fragments were in close approximation were healed by an active osteogenic reaction resulting in firm

*From Edsel B. Ford Institute For Medical Research.
bony union. Subluxation of the footplate of the stapes and approximation to the oval window margins usually resulted in firm fibrous reunion with no evidence of new bone formation. Small fistulas occurring in the footplate of the stapes or at the vestibulostapedial articulation were healed by muco-endosteal membranes. Fenestration injuries of the footplate often resulted in tearing of the wall of the saccule and degenerative changes in the macula. In several ears there was also tearing of Reissner's membrane and mild diffuse degenerative changes in the organ of Corti in the upper basal turn. These cochlear injuries were interpreted to represent acoustic trauma due to excessive manipulations of the stapes.


X-ray-apparent osteoporosis of the spine has been found in 29% of ambulatory women age 45 and over. Only 4.6% had vertebral wedging or fracture. These incidences, though well below figures previously found by others in less representative surveys, emphasize the fact that osteoporosis is a major disorder in our aging population. Similar studies of much larger patient and general population groups may yield information of pathogenetic significance, particularly when data of clinical and biochemical nature are compared between osteoporotic and nonosteoporotic contemporaries. Accumulating evidence that anabolic hormone therapy may arrest symptomatic osteoporosis makes clinically significant the observation of early vertebral atrophy in otherwise normal, asymptomatic women.


During abdominal aortic aneurysmectomy technical necessities require the sacrifice of the inferior mesenteric artery and the temporary clamping of both internal iliac arteries, operative maneuvers that are equivalent to the sudden temporary occlusion of the distal inflow arc of the sigmoid and superior hemorrhoidal arterial communications. If these communications are normally developed, the proximal inflow arc will supply enough blood to permit the bowel to tolerate the temporary interruption of the distal arc. In about 10% of the cases, however, even the temporary stoppage of the distal inflow will lead to ischemia severe enough to cause necrosis of the mucosa or of the deeper layers of the wall of the rectosigmoid colon. Interruption of this primary collateral arterial circuit of sudden onset and prolonged or permanent duration will invariably result in severe bowel ischemia. When the obliteration of the inferior mesenteric artery or of the two internal iliac arteries, or of both, takes place gradually, secondary collateral arterial pathways become functional, and ischemia of the left colon usually does not occur. The latter chain of events characterizes the blood supply of the colon in advanced aortoiliac occlusive disease. After abdominal aortic aneurysmectomy care must be taken to reconstruct the continuity of blood flow in at least one internal iliac artery, even if preoperatively the inferior mesenteric artery alone or one internal iliac artery and the inferior mesenteric artery were functionless. In course of abdominal aortic aneurysmectomy the state of vascularization of the
left colon and especially of the rectosigmoid area must be carefully observed. In the early postoperative course of such operations, distention, diarrhea, or melena may be the manifestation of ischemic changes of the colorectal segment, the proper management of which may demand a diverting colostomy. Compromise of the blood supply of the left colon by the complications of atherosclerotic lesions of the aorta may lead to clinical manifestations that appear colonic in origin. An example of acute ulcerative colitis secondary to impairment of the colonic blood supply by an expanding aneurysm is quoted. Two instances of fatal colonic ischemia complicating aortic operations are described, one caused by the ligation of an anomalous communicating arterial branch of critical importance, and the other caused by multiple atherosclerotic arterial emboli.


In the animal laboratory under conditions in a measure approximating the milieu of the operating room, an investigation was made of some of the hemodynamic problems posed by angioplastic procedures. A canine preparation was used in which one iliac artery served for the experimental flow study while the other iliac artery served as control. The various arterial prosthetic replacements were implanted in the experimental side and the volume flow of blood was determined by simultaneous measurements at the distal ends of both iliac arteries. Under these conditions experimental factors affecting the blood flow were bilaterally identical except for the planned variable introduced by the arterial substitute. With 200 paired flow determinations in about 60 canine preparations the following factors were studied: (1) type of anastomosis (end-to-end compared to various end-to-side anastomoses); (2) bypass grafting as compared to direct replacement; (3) variations in the diameter of the implant; and (4) luminal surface characteristics of the implant. The observations that were made can be summarized as follows. (1) A properly constructed end-to-end anastomosis is virtually as efficient in transmitting blood as an intact artery. (2) An end-to-side anastomosis is less efficient hemodynamically than an end-to-end anastomosis but its efficiency to a large extent depends upon the size of the angle between the component channels, and, by making the angle sufficiently small, the performance of this type of anastomosis can be made to come very close to that of an end-to-end anastomosis. By removing a small window from the host arterial wall, thus making the anastomosis bell-mouthed, the efficiency of an end-to-end anastomosis can be further increased. (3) A graft placed as a bypass is less efficient hemodynamically than direct replacement of the same size, but the difference can be rendered negligible by using the appropriate surgical technique for the end-to-side anastomoses. (4) An increase in the diameter of the vascular graft by as much as factor of 2 brings about an increase in blood volume flow which, however, is not proportional to the dimensional increase. An increase in diameter over a factor of 2 may result in a decrease in blood volume flow. The optional ratio between the host and prosthesis appears to be about 1:1.4 to 1:1.6. (5) A prosthesis with rough or corrugated luminal surface is less efficient than a prosthesis whose wall is smooth. A nonmathematical interpretation of the experimental findings in terms of fluid mechanics is given and their practical applicability is discussed.
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Two cases of leiomyosarcoma arising in major veins, 1 in a superficial (internal jugular) and 1 in a deep vessel (inferior vena cava), are reported. Although both were considered malignant histologically, the vena caval tumor was an incidental autopsy finding. Only the tumor of the internal jugular vein metastasized. The latter represents the first tumor reported to be primary in this vein. Despite the proximity of these tumors to the blood stream, only 5 to 16 tumors considered malignant histologically metastasized.


An investigation is being carried out on a group of patients who initially presented thrombocytosis in polycythemia vera. In all cases coagulation time, plasma clotting time, prothrombin time and fibrinogen content of plasma and of platelets were in normal range. There was no retraction defect using the method of Hartmann and Conley, as well as no evidence of fibrinolysis. When the platelet count was above normal the prothrombin consumption test always gave normal results. However, when the platelet count diminished or decreased to the normal level the consumption test became abnormal. Consistent with this the thromboplastic activity of platelets was found to be abnormal in all stages of this disease using the platelet thromboplastin generation test and platelet factor 3 assay. This platelet factor 3 activity deficiency was quantitative because no correction took place after disintegrating the platelets with sonic oscillator or distilled water. The red cell fall-out phenomenon which is the inability of the blood clot to hold red cells, was abnormal in all cases. This abnormality continued after treatment although the hemoglobin level and the platelet count became normal and will be discussed in another presentation.