ABSTRACTS

Editor: Samuel Bellet, M.D.

Abstracters

David I. Abramson, M.D., Chicago
Arthur Bernstein, M.D., Newark
Ruth Cortell, M.D., New York
A. D. Dennison, M.D., Indianapolis
Charles D. Ensberg, M.D., New York
Alfred Frohse, M.D., Philadelphia
Benjamin A. Gouley, M.D., Philadelphia
Raymond Harris, M.D., Albany
J. Roderick Kittrell, M.D., Philadelphia
Aldo A. Luisada, M.D., Chicago
Morton H. Maxwell, M.D., Los Angeles
Victor A. McKusick, M.D., Baltimore
S. S. Mintz, M.D., Philadelphia

Morton J. Oppenheimer, M.D., Philadelphia
Alfred Pick, M.D., Chicago
 Seymour H. Rinzler, M.D., New York
Francis F. Rosenbaum, M.D., Milwaukee
Elliott L. Sagall, M.D., Boston
David Scherf, M.D., New York
John B. Schwedel, M.D., New York
Charles R. Shuman, M.D., Philadelphia
Franklin Simon, M.D., Newark
Louis A. Soloff, M.D., Philadelphia
Ralph M. Tandowsky, M.D., Hollywood
S. O. Waife, M.D., Indianapolis
Martin Wendkos, M.D., Philadelphia

Stanford Wessler, M.D., Boston

AVITAMINOSIS

Manrique, J. I.: Vitamin B\textsubscript{12} Deficiency of the Heart.

Prensa méd. argent. 40: 877 (April), 1953.

Twenty-eight patients with heart failure were treated with daily injections of 30 micrograms of vitamin B\textsubscript{12}. No other medication was administered during the same period and the patients were kept on complete bed rest. Twenty patients showed a satisfactory response within 15 days with marked increase of diuresis and a remarkable decrease of cardiac size. The subjective symptoms also disappeared at the same time.

Analysis of these cases revealed that patients which responded favorably to vitamin B\textsubscript{12} were known to have lived on extremely poor diet for many years; twelve also had hypochromic anemia and intestinal parasites; eight had hypertension but no anemia.

A control group of 10 cases was given no medication and the patients were kept on complete bed rest. No improvement in the severity of the failure was detected in any of these control cases.

The author concludes that vitamin B\textsubscript{12} should be tried in any case of congestive heart failure where vitamin deficiency is suspected. However, further observation and animal experiments are recommended in order to prove the validity of this new clinical picture.

Luisada

BLOOD COAGULATION


The effect of phenylindanedione was studied in 68 patients, most of whom were suffering from coronary thrombosis or deep venous thrombosis. All but six subjects reached an adequate therapeutic prothrombin level in 48 hours, the dosage given being 200 mg. in the first 24 hours, followed by 100 mg. in the next 24 hours. The response passed off fairly rapidly, disappearing almost entirely within 24 hours after the drug was stopped. No toxic effects were noted.

It was found that once the maintenance dose was established, it could be continued for a prolonged period without any fluctuation in the prothrombin times. Therefore, it was only necessary to make such determinations twice or, at the most, three times a week.

Abramson


The search for new anticoagulants with heparin-like activity has recently resulted in the development of an active polyhexuronic acid ester derived from pectic acid to which the name Treburon has been given. The author here reports the control studies in which Treburon and heparin are compared.

Teburon and heparin were administered to 200 hospitalized patients. The sublingual administration of both these agents produced only occasional prolongation of the clotting time of the blood. The inhalation of micronized Treburon powder was ineffective.

On a weight basis, Treburon was one half to one third as effective as heparin when used intravenously. However, single large intramuscular injections of Treburon produced significant hypocoagulability in a more reproducible manner for 24-hour periods than
did large doses of heparin. At levels of 250 mg, heparin was effective for about 16 hours, while Treburon was effective for about 24 hours. No local reactions at the site of injection occurred with Treburon, whereas hematoma and pain resulted from large doses of heparin.

In patients with renal and liver disease, fairly uniform hypocoagulability resulted after a single dose of Treburon. However, a variable response, purpura without marked hypocoagulability and tendency to accumulation was observed after multiple doses of Treburon in patients with reduced renal function.

Treburon had no effect on prothrombin concentrations.

Mintz


Treatment of 27 patients suffering from angina pectoris with intravenous injections of heparin twice weekly did not produce an appreciable improvement in their condition. Fifteen of 27 patients stated that they improved during the period of treatment; 9 of the 15 patients improved during the injection of a placebo whereas only 6 reported improvement during treatment with heparin. Three patients died of acute myocardial infarction during the treatment with heparin. One patient developed myocardial infarction two weeks after the end of the last placebo period. Five patients suffered from intermittent claudication. Only one of these improved during treatment with heparin.

Harris


The administration of intravenous heparin to 18 patients with arteriosclerotic heart disease and effort angina produced no greater effect than a placebo in the control of effort angina. The double blindfold method was used. A comparison of the levels of serum lipoproteins of the S1 12–20 and S2 20–100 classes showed no significant change in concentration after six weeks of heparin or placebo administration, except for the S2 20–100 class in the placebo group which showed a significant fall (36.1 per cent). This fall could not be attributed to variations in the weights of the patients while on placebo injections.

Harris


The purpose of this study was to consider, observe and control the factors which influence the determination of the coagulation time, and to devise, if possible, a practical method for determining the clotting time, one which measures sensitively and accurately those clinically significant degrees of hyper- and hypocoagulability.

The method is a modification of the Lee and White method, and it is believed to be more accurate and more sensitive than the methods in current use. It is not overly complicated or time-consuming and is designed to standardize and, insofar as possible, minimize extraneous factors which influence the coagulation of venous blood.

This method was tried in the study of normal subjects, hospitalized patients awaiting elective surgery and postoperative surgical patients.

It was found that in normal subjects the average coagulation time by the proposed method was 26 minutes with a range of 20 to 35 minutes. A statistically significant decrease in the average coagulation time in hospitalized patients awaiting surgery was observed and a further drop was demonstrated on the first postoperative day.

Due to the multiplicity of factors which affect intravascular clotting, no coagulation test can invariably indicate predisposition to thrombosis or hemorrhage, but it is hoped that the proposed method will increase the probability of predicting such occurrences.

Mintz


Antibiotics probably do not affect blood coagulation in vivo. It is possible to demonstrate in vitro, however, that in suitable concentrations some antibiotics are anticoagulants.

Streptomycin, penicillin, Terramycin and Neomycin when examined in vitro were anticoagulants only when used in greater concentrations than can be attained in vivo.

As an anticoagulant, Terramycin was at least eight times more effective than any of the other antibiotics. The anticoagulant activity of streptomycin and penicillin was reversed by excess amounts of calcium chloride. It was suggested, therefore, that penicillin and streptomycin prevented clotting by binding calcium. Calcium did not reverse the anticoagulant activity of Neomycin or Terramycin.

The pH of blood containing anticoagulant concentrations from antibiotics ranged from 6.9 for Neomycin and 8.8 for Terramycin. There was no delay in clotting of bloods with pH ranging from 6.9 to 8.8 in the absence of antibiotics.

Mintz


The oral administration of cream does not alter the blood clotting time of humans. When one syringe
ABSTRACTS

is reused for successive venepunctures, the blood clotting time is accelerated, irrespective of whether the subject has ingested cream, eaten breakfast, or is in the fasting state. The authors are able to demonstrate evidence of thrombin activity on the surface of reused glass syringes and condemn as inaccurate the practice of reusing a glass syringe for the determination of the blood clotting time without heat sterilization between each venepuncture. These findings raise doubts as to whether the ingestion of fat in the form of dairy products affects the incidence of thrombosing conditions by immediate direct action on the clotting mechanism of the blood.

HARRIS


Anticoagulants were beneficial in the treatment of the “poor risk” group of patients with myocardial infarctions, but failed to improve the mortality in the “very poor risk” category. The mortality in the “good risk” group was very small with or without anticoagulants. The authors evaluated the use of the anticoagulant drugs during one hundred episodes of acute myocardial infarction, using an earlier group of 211 patients as controls. Patients were sorted into the following prognostic categories according to the following criteria: (1) Very poor risks: (a) the attack was the patient’s first; shock and diabetes or shock and azotemia were present; (b) a previous attack had occurred; shock was present or congestive failure, diabetes and azotemia were present. (2) Poor risks: shock, congestive failure, diabetes or azotemia were present within the first week of admission. (3) Good risks: none of the concomitant manifestations in groups 1 and 2 were present.

The authors emphasize the need for further evaluation of anticoagulant therapy in myocardial infarction within a framework of prognostic categories.

HARRIS


Because of the ability of heparin to clear lipemic sera, in vivo, and to reverse the abnormal lipoprotein pattern demonstrated in atherosclerosis, it was important to determine whether or not these effects were accomplished by altering the rate of phospholipid synthesis. Use was made of the measurement of newly formed phospholipids following the administration of the radioactive P32. It has been demonstrated that the liver is the primary site of phospholipid formation and utilization. The study was designed to observe the effects of heparin upon the rate of formation of phospholipid in control patients and in patients with coronary arteriosclerosis.

Although heparin is capable of producing alterations in the blood lipoprotein spectrum, it did not significantly alter the specific activity-versus-time curves of phospholipid in normal and coronary arteriosclerotic patients as measured by the radioactive phosphorus tracer technique. Measurement of the newly formed phospholipid in a group of control patients gave specific activity values which were similar over a 72 hour period to those obtained in heparin treated patients. It is possible that the effects produced by heparin are of a physicochemical nature, rather than an alteration in lipid metabolism or lipoprotein interconversion. However, it will be necessary to obtain additional data relating to the turnover rate of phospholipid, by studying the specific activity curve within the first 12 hours after the injection of P32.

MINTZ

CONGENITAL ANOMALIES


Two cases of congenital mitral stenosis, one with no other abnormality and the other with a coexistent patent ductus arteriosus, are described. The diagnosis was confirmed at operation and, in one case, also at necropsy. Mitral valvotomy was performed in both cases. Clinical diagnosis may be easy at times but difficult at others. Confirmation may be difficult. The selection of suitable cases is important since valvotomy should help the case with a good left ventricle but could not help the commoner case due to unequal division of the common atrio-ventricular canal.

BERNSTEIN


A very uncommon type of congenital monstrosity from a hospital in the Belgian Congo is reported by the authors. A female child with 2 heads sitting on a common wide thorax and possessing 4 normal extremities, was born alive to a native mother. At birth, both heads were breathing and auscultation revealed the sounds of one beating heart. However, an electrocardiogram taken immediately after birth revealed two different types of ventricular complexes, one with a right and the other with a left axis shift, beating at different rates.

One hour after birth, the left head stopped breathing and the electrocardiogram showed only one type of ventricular complex. Death ensued within a short time. The autopsy findings confirmed the
clinical diagnosis. There were two hearts, completely separated from each other; one had a rudimentary aorta supplying the right arm while the other had a well developed aortic arch and descending aorta, and supplied the rest of the body. There were four lungs, two stomachs, two pancreases, and two jejunums, but only one liver, one spleen, two kidneys, and one uterus. It is regrettable that the anatomo-pathologic study is incomplete.

LUISADA


Three cases of defect of the interatrial septum with massive pulmonary thrombosis are described. These patients were 43, 56 and 78 years of age at the time of death. In the discussion of some of the features of atrial septal defects it is mentioned that although the accentuation of the pulmonic second sound suggests pulmonary hypertension, this accentuation may also result from dilatation of the valve ring, such as that associated with syphilitic aortitis. Further, the apical diastolic murmur often heard in this condition need not result from mitral stenosis, but may be produced by relative tricuspid stenosis, resulting from dilatation of the right ventricle. Pulmonary hypertension in atrial septal defects may result from pulmonary arteriolar sclerosis, pulmonary embolism or pulmonary arterial thrombosis. Factors which tend to predispose to pulmonary thrombosis include atherosclerosis and embolism, and an increased pulmonary blood volume with a decreased rate of blood flow. It is possible that when massive pulmonary artery thrombosis does occur in these patients, the presence of the interatrial septal defect prolongs life. An adequate collateral circulation may exist, because some of the back pressure from the obstructed pulmonary circuit can be directed through the defect and into the systemic circulation by collateral vessels such as the bronchial arteries.

ROSENBAUM


Six cases of isolated pulmonic stenosis were selected from a group of 21 patients with this disorder and observed by these authors to form the basis of this report. It is emphasized that this potentially serious disorder may appear as a mild and benign condition which can be correctly diagnosed solely on clinical evidence in the majority of instances. There were no symptoms of cardiac dysfunction in any case, demonstrating the fact that in this anomaly there is a very wide range of symptoms from the mild to the severe and that often there may be minimal symptoms until late in the natural course of the disease when rapid deterioration may occur. There was a harsh grating or rasping murmur over a wide area in each patient, most intense in the first or second or in both the first and second left interspaces, ranging from grade III to VI in intensity and extending throughout systole. The pulmonic second sound was usually decreased in intensity and pure in quality. There appears to be no correlation between the degree of stenosis and the intensity of the murmur. The electrocardiogram may be within normal limits, but the disclosure of evidence of right ventricular hypertrophy, as is often the case in these patients, is of considerable help in distinguishing this condition from a defect of the ventricular septum or aortic or subaortic stenosis. Large peaked P waves may be recorded in leads II and over the right precordium. It is said that electrocardiographic signs of right ventricular hypertrophy in a noncyanotic patient with a normal exercise tolerance are strongly suggestive of isolated pulmonic stenosis.

CONGESTIVE HEART FAILURE


Observations in four patients receiving a carboxylic cation exchange resin indicate that this resin, Amberlite XM-96, is an effective agent in the treat-

Twelve patients with congestive heart failure were treated with 30 to 60 Gm. per day of a carboxylic cation exchanger, 80 per cent in the hydrogen and 20 per cent in the potassium form, for intervals of up to 15 months in length. These resins provided a relatively safe supplement to the basic therapy for six months, after which hyponatremia, hypopotassemia, and hypocalcemia were frequently observed. The problem of hypocalcemia may prove to be a significant obstacle to longer, safer therapy with these materials. The exchangers did not permit significant liberalization of dietary sodium. An increase in the efficiency and specificity of the presently available exchange resins is necessary if they are to serve their uniquely favorable advantage of harmlessly liberalizing the intake of sodium in patients with edema.

Harris


The erythrocyte sedimentation rate was determined in 38 patients with acute congestive heart failure by the method of Wintrobe. Patients with rheumatic heart disease and other complications of cardiac disease were excluded because of the effect of these conditions upon the erythrocyte sedimentation rate. The majority of the individuals studied were found to have elevated values not only during acute failure but also after recovery. In 13 patients with chronic heart failure the erythrocyte sedimentation rate was found to be elevated except in those who succumbed to their disease. The cause of the elevation of the erythrocyte sedimentation rate in congestive heart failure is not clear and the possible factors involved are discussed. In the presence of heart failure, an elevated erythrocyte sedimentation rate cannot be considered as a reliable indication of the presence of infarction, infection, or thrombophlebitis.

Shuman


A biologic assay procedure based on the urinary sodium14 excretion of adrenalectomized rats was used to compare salt-retaining activity of urinary extracts in patients with congestive heart failure as compared to that in normal individuals. Sodium-retaining activity was found in the urine of patients with congestive failure and the quantities of this substance roughly paralleled the degree of congestive failure present.

Rinzler


The study was undertaken to determine the effect of mercurials upon daily output of thiamine in the urine in patients under treatment for congestive heart failure.

The results indicate that the levels of thiamine excretion following the administration of mercurial diuretics are significantly increased over the levels observed on the control days. Although the mechanism of mercurial-induced thiamine excretion is obscure at the present, it is not due to the increased diuresis. The most likely mechanism is the depression of renal tubular reabsorption of thiamine.

Mintz


The effects of ion-exchange resins on the metabolic balances of sodium, chloride, potassium, nitrogen, and phosphorus were studied in 11 edematous patients with either renal or cardiac disease. The authors conclude that the administration of resins constitutes a valuable and safe addition to the treatment of resistant edema in patients with cardiac and renal disease, if periodic blood studies are made throughout therapy. Administration of 40 to 90 Gm. daily of a carboxylic acid cation exchanger, two-thirds in the acid cycle and one-third in the potassium cycle, produced marked increases in fecal sodium excretion, significantly negative sodium balances, and effective loss of edema. These effects were observed even in patients in severe congestive failure on low sodium diets who exhibited evidence of actively functioning sodium-conserving mechanisms, such as negligible urinary sodium excretion and eosinopenia. As a result of the removal of cation without anion, persistent hyperchloremic acidosis developed, despite the increased urinary chloride
CORONARY ARTERY DISEASE

Stürup, H.: Coronary Thrombosis and Other Forms of Circulatory Insufficiency Coinciding with Cerebral Apoplexy. Acta med. scandinav. 144: 180 (Fac. 3), 1952.

A series of 110 patients treated in a period of slightly more than one year for cerebral apoplexy were studied with regard to the incidence of acute coronary thrombosis, decompenated heart disease, or acute fall in blood pressure occurring in close time relation to the stroke. In 37 deceased patients there were five cases of coronary thrombosis; in three of these there appeared to be a close temporal relationship with the occurrence of the stroke. The cerebral vascular lesion was embolic in two cases, thrombotic in one and there was no apparent vascular occlusion in the remaining two. The combination of cerebral apoplexy and decompenated heart disease was present in seven patients. Six patients showed evidence of acute circulatory insufficiency with fall in blood pressure in close relation to the stroke. It is emphasized that hypertensive patients are particularly exposed to the risk of cerebral apoplexy in the presence of cardio-circulatory insufficiency. Normally they show an increased cerebrovascular resistance but a normal cerebral blood flow. A fall in blood pressure in these patients must result in a marked decrease in cerebral minute volume flow unless the cerebral vessels can undergo rapid and marked dilatation—a change not always possible in the presence of severe arteriosclerosis.

ROSENBAUM


A clinical and postmortem study of eight patients with rheumatic heart disease or cor pulmonale, in whom hypothyroidism or myxedema was induced surgically, leads the authors to conclude that over the observed period of time the hypothyroid state with its hypercholesteremia is not necessarily and by itself a sufficient etiologic factor for the production of coronary atherosclerosis. These patients were studied for a period of 1 to 13 years following surgical total thyroidectomy. None of the eight cases showed complete occlusion of any of the coronary arteries at postmortem. Five of the eight showed no narrowing of any of the main stems or branches of the coronary arteries. Only three of the eight showed slight narrowing of one of the main stems. In the other arteries atheromatosis and atherosclerosis varied greatly but were similar to that generally observed in similar euthyroid patients.

HARRIS


In discussing the treatment of myocardial infarction the author reviews the pros and cons of the currently recommended procedures employed in this condition. It is stated that morphine will promptly provide relief of pain; it is employed intravenously, 15 mg. diluted in 5 to 10 cc of sterile water. This treatment not only eases pain but relieves dyspnea, and reduces cardiac work and metabolic rate. However, its use is attended with certain difficulties such as depression of the respiratory center and the induction of vomiting, constipation and urinary retention. Mild pain may be controlled with codeine or Demerol. The use of oxygen is recommended in cases where arterial anoxemia is present. There is no justification for its routine use in the absence of pulmonary edema and subnormal arterial blood oxygen saturation. The indiscriminate use of oxygen simply adds to the patient's anxiety and discomfort. The author states that there is no indication for the use of anticoagulants in patients sustaining an uncomplicated first attack of myocardial infarction and indicates that 122 deaths have occurred due to hemorrhage in a survey of the experience of 225 specialists. Heparin and Dicumarol should be reserved for more serious cases of infarction. Among the large number of vasodilators which have been employed during convalescence from acute infarction Peritrate may prove to be a useful agent. Papaverine is of some value in the immediate post-infarction interval, after which small divided doses of nitroglycerine may be used. It is suggested that bed rest be enforced for the first few days of the illness after which the armchair method of treatment may be advisable; ambulation is permitted after the third week if conditions are satisfactory. If cardiogenic shock is present, the patient is kept flat in bed; transfusions of blood or plasma may be used carefully if the risk of pulmonary edema is recognized. Certain pressor agents such as Paredrine, Neo-Synephrine, norepinephrine and mephentermine will raise the blood
Pressure without increasing pulse rate. Digitalization is employed in these severe cases in somewhat smaller than usual doses. It is stated that 40 per cent of all cases require little more than sedation and restriction of activities. It is stated that the administration of drugs or procedures without clear indication should be avoided since overtreatment or disregard for physiological concepts can prove disastrous.

**Shuman**


Fifteen clinic patients with coronary sclerosis having moderate or severe angina of effort of many months' or several years' duration, were treated with a variety of khellin preparations, namely, Okellol tablets, containing 50 mg. of khellol glucoside, Ammivin tablets containing 20 mg. of pure khellin, and Khelltron tablets, containing 20 mg. of crystalline khellin. Treatment was preceded in each case by one to two weeks of indistinguishable placebo tablets. Results were determined at weekly interviews during which were tabulated the daily record of the number of anginal attacks, the daily consumption of nitroglycerin and the exercise tolerance as gauged by the amount of walking required to induce anginal pain. Dosage ranged from one to three tablets three times daily.

Four of the 15 patients reported feeling better while taking a khellin preparation, with less frequent anginal attacks and decreased nitroglycerin requirements; six patients reported feeling worse; the remainder were unimproved. Gastrointestinal disturbances were noted in only four patients, irrespective of the khellin preparation used. These unsatisfactory clinical effects of khellin in angina pectoris are contrasted with the pharmacologic effects of the drug in producing coronary vasodilatation.

**Cortell**


The author doubts the correctness of the classic concepts concerning the mechanism of anginal pain, which imply the coincidence of both a static factor (diminution of the coronary bed) and a dynamic one (acute increase of myocardial oxygen consumption exceeding the "coronary reserve"). Actually it can be demonstrated that angina is not necessarily dependent on the increase of cardiac output, elevation of the blood pressure, increase of heart rate, and other factors which increase cardiac work. According to the author, anginal pain can be more adequately explained by a consideration of alterations of myocardial metabolism under neural and hormonal influences, especially the effects of sympathotrophic catecholamines (epinephrine and norepinephrine).

Sympathetic stimulation occurring with exercise, emotion, etc., is accompanied by an acute influx of epinephrine and norepinephrine into the myocardium. These exert a specific oxygen-wasting chemical effect upon the heart muscle which is in principle independent of cardiac work and is activated by thyroid hormone. Cardiac disease exaggerates the resulting myocardial hypoxia to a painful maximum (anginal pain). Most of the rational forms of therapy of angina pectoris can be explained on this basis. Sympathectomy, sympatholytic blockade, and x-ray irradiation of the adrenals act by diminishing the influx of anoxia-producing catecholamines into the heart muscle. Thyroid inactivation, sympatholytic drugs, and nitrates act by decreasing the metabolic pain-producing effect of epinephrine and norepinephrine.

**Pick**


Four cases of myocardial infarction in which the electrocardiograms displayed both normal and anomalous atrioventricular excitation are presented. The electrocardiographic signs of myocardial infarction were evident when normal conduction prevailed, but were masked by anomalous excitation. The common causes of error in the diagnosis of myocardial infarction with the Wolff-Parkinson-White syndrome include: (1) paroxysms of tachycardia during anomalous conduction have been erroneously diagnosed as paroxysmal ventricular tachycardia; (2) anomalous conduction masks abnormal S-T displacement and significant T wave abnormalities; (3) Q8 deflections may be large in some leads during anomalous condition and give erroneous impressions of infarction; and (4) during transitions from sinus to atrioventricular nodal rhythm, or the reverse, complexes may occur which display normal P waves, abnormally short P-R intervals, and the QRS signs of infarction.

Conversion to normal conduction can be effected with carotid sinus stimulation, deep inspiration, quinidine, atropine, and amyl nitrite, separately or in combination. Digitalis favors the anomalous mechanism, and should be withheld until conversion to normal conduction is accomplished, or withdrawn when the abnormal mechanism appears to be fixed.

**Rinzler**
ELECTROCARDIOGRAPHY, VECTORCARDIOGRAPHY AND BALLISTOCARDIOGRAPHY

Gross, D.: Morphological Subdivision of the Q-T Interval and Its Relation to the Cardiac Rate. J. Appl. Physiol. 5: 690 (May), 1953.

The author studies a correlation between the length of the Q-T interval and the form of the T wave in resting healthy individuals with special reference to cardiac rate. A total of 210 electrocardiograms was analyzed. A perpendicular line drawn from the peak of the T wave divides the Q-T interval into a proximal part, called constant fraction, and a distal part, called variable fraction. The author states that only this variable fraction is responsible for changes in length of the Q-T interval at different cardiac rates. This correlation can be expressed by a formula and is sued for the prediction of the Q-T interval at a given cardiac rate. Q-T = 0.36 + 0.15 (RR - 0.9) is the formula used by Gross.

LUISADA


It is said that in measuring the heart vector it is essential to choose positions far from the heart and it is not permissible to use precordial leads. The author points out further that it is not correct to transpose anatomic to electrical relations in the body since the position of the heart is eccentric, there is no homogeneous conduction and the body is of limited proportions. It is his opinion, furthermore, that the body is in no way a homogeneous sphere. Experiments using an artificial dipole placed in several positions within the heart of a fresh cadaver are reported. It was observed that the triangle representing the standard leads of Einthoven is not equilateral but will resemble an equilateral one when the dipole is placed close to the sternum and relatively high. The triangle corresponding to a dipole close to the center of the heart resembled that of Burger and van Milaan. Vectorcardiograms recorded from points chosen according to the principles of Burger and van Milaan corresponded poorly with those recorded according to the equilateral tetrahedron. The sagittal component of the vectorcardiogram in particular was inadequately expressed when the equilateral tetrahedron was used.

The vectorcardiographic observations have suggested that various disturbances of conduction have been collected under the heading of left bundle branch block. Left and right ventricular hypertrophy can often be recognized in the vectorcardiogram, but the former may be confused with anteroseptal infarction and its recognition is also difficult if there is no deviation of the electrical axis to the left. The vectorcardiogram has not been found useful in the diagnosis of myocardial infarction although it is of great value in understanding the electrical phenomena in this condition. Injuries which are silent in the extremity leads usually cannot be recognized in the vectorcardiogram. It is stated that we cannot expect the vectorcardiogram, the sum of the components, to display disturbances not shown by the individual components of the vectorcardiogram. Furthermore, it is felt that the registration of the vectorcardiogram alone will never allow us to assess the electric phenomena of the heart. The great advantage of the method is the spatial orientation which is provided and the information which it affords regarding the meaning of the electrocardiogram.

ROSENBAUM


These authors have constructed a table giving a simplified method for the calculation of the angle between two spatial vectors, given the angular positions of the vector projection on two mutually perpendicular planes. The manner of use of this table is explained.

RINZLER


In 167 cases of various ages, with and without cardiovascular disease, acceleration ballistocardiograms were recorded with an apparatus previously described. The curves obtained by this technic closely resemble those obtained with other methods but due to an improved ratio of frequency of the recording system and the recorded phenomena, they present more accuracy in finer details. In their theoretic discussion the authors put particular emphasis on the time relationships of the H-I, I-J, and H-J segments. They feel that the amplitude and period of an oscillation are closely related, and this dependence is analyzed in terms of physical laws.

The study was restricted to the resting ballistocardiogram and no exercise or similar tests were performed. With these limitations in mind the authors concluded that, at present, the best information available from a ballistocardiogram concerns the degree of elasticity, or atheroma, of the aorta. Exception is taken from the view that a ballistocardiogram reflects such values as cardiac output, myocardial efficiency or the condition of the coronary system.

Pick

Vectorcardiograms of 20 persons recorded by five different systems of arrangement of the electrodes were compared and analyzed. Considerable differences were found in the contour of the vector loop, in the direction of its main axis, in the orientation of instantaneous vectors, in the sense of rotation of the loop and in the quadrant occupied by it. These differences were less pronounced when vectorcardiograms obtained by the method of Duchosal and Sulzer were compared with those recorded according to Grishman and Scherlis. The differences were considerable when the results of the latter two methods were correlated with curves recorded with the technic used by Wilson, Johnston and Kosman, and even more pronounced when compared with the methods of Donzelot and Milanovich, or of Burger and Van Milaan. The differences usually are more marked in the horizontal and sagittal planes than in the frontal plane, and in subjects with heart disease than in normals. The reasons for this poor correlation are discussed and some possibilities are suggested to obtain more precise results.

Pick


The author studied the cause of periodic wave-like motions of the baseline of the electrocardiogram which are commonly observed with deep respiration in persons with anatomically horizontal hearts. Isolated frog hearts were rotated in an apparatus specially designed for the experiments. With a certain position of the heart the presence of a constant electrical current directed from apex to base could be demonstrated. This potential is independent of the action potentials and unrelated to potentials due to injury. It appears however to be related to the general condition of the myocardium since it is reduced or abolished during oxygen deficiency of the preparation. A similar constant electric current between apex and base is assumed by the author to exist in the human heart.

It becomes manifest when, during respiration, the heart rotates in such a way that the axis of the current changes its direction relative to the fixed electrodes. Movements of the baseline, especially in lead III during respiration are ascribed by the author to the periodic manifestation of this permanent potential.

Pick


In 24 active athletes, 19 to 38 years of age, 12-lead electrocardiograms were recorded at rest, before and following a period of vigorous training. The tracings were analyzed with regard to the size of deflections in the various leads, their ratios, and the indexes of Sokolow indicating ventricular hypertrophy. An M-shaped QRS pattern in right precordial leads was found in about 25 per cent of the cases and was not considered to be abnormal. Abnormal R/S ratios suggesting right or left ventricular hypertrophy were present in 33 and 25 per cent of the cases, respectively. This high incidence in a perfectly healthy group suggests that these alterations are physiologic in athletes. For similar reasons the frequent finding of large T waves in the precordial leads, and alterations in the contour of the P waves is not abnormal. The authors conclude that the electrocardiogram of athletes remains normal, and when unquestionably pathologic alterations are found, they must be attributed to causes other than sport.

Pick


The authors present evidence and a technic to show that for most biologic purposes, the dipole hypothesis is a valuable one, and may be used in semiquantitative as well as in qualitative analysis. The method makes use of the cancellation properties of mirror patterns and has a sensitivity of approximately 2 per cent. In 17 normal subjects and 37 cardiac patients, mirror patterns were found along approximately 10% different anatomic axes through the heart, no direction giving significantly better mirror patterns than any other direction. In general, approximately 90 per cent of the electrocardiographic potential appearing at any point on the body, including the precordial areas, may be ascribed to a dipole-like current source at the heart, in that 9 per cent of any pair of mirror patterns, on the average, failed to cancel.

Rinzler


The authors produced a focal block of conduction in the free walls of the right or left ventricle by
injection of a small amount (0.1 to 0.5 cc.) of a 2.5 to 5 per cent solution of cocaine into a coronary artery or into one of its branches. The focal character of the resulting conduction defect was proved by comparison of direct epicardial leads from the area supplied by the injected vessels with similar tracings obtained from other epicardial regions. Only the former showed progressive QRS prolongation and T-wave alterations comparable to those seen in clinical electrocardiography in the presence of ventricular hypertrophy, incomplete, and complete bundle branch block. Simultaneous recordings of epicardial and endocardial leads close to the injected area showed a development of a late and tall R wave in both types of leads, suggesting that during the time of block, not only the speed of conduction was retarded, but also its direction was changed, taking place parallel to both surfaces instead of radially from endocardium to epicardium. The same electrocardiographic patterns were obtained when one of the bundle branches was severed, and no further alteration occurred when this was followed by a cocaine injection into a homologous coronary artery.

The authors distinguish two types of intraventricular blocks; a "conduction block" due to a lesion of the specific conduction system, and a "fiber block" ascribed to some damage in a circumscribed area of the ordinary myocardium. A mixed form may also occur and is probably responsible for many instances of intraventricular block found in clinical electrocardiography. A pure conduction block appears to occur more frequently in the right ventricle and a peripheral fiber block in the left. Since the latter indicates a more serious disturbance, namely damage to contractile elements of the heart muscle, a distinction of the two types of intraventricular block is of practical and prognostic significance. The electrocardiographic criteria of fiber block will be described by the authors in a subsequent communication.

**Pick**


When an infarct of the septum is massive (involvement of at least two-thirds at necropsy) and there is no bundle branch block, the electrocardiographic pattern is characterized by the presence of QRS complexes in the precordial leads oriented toward the interventricular septum (V₃, V₄, or perhaps from V₃ to V₅). When complete or incomplete left bundle branch block is present, the diagnosis of infarction is made by the presence of a Q wave in leads oriented toward the lateral face of the left ventricle, and above all, by the presence of QRS complexes in transitional zones (V₃, V₄). When right bundle branch block is present with septal infarction, Q waves appear in the right precordial leads or in transitional zones.

When infarct of the septum is limited to the inferior one-third and there is no bundle branch block, differentiation from massive infarction is difficult because the electrocardiographic changes consist also in the presence of QS complexes from V₁ to V₄ or in V₃, and V₄. When left bundle branch block is present, the diagnosis of infarction is made by the presence of qRs complexes in V₂ and V₃ and by the Q waves in the leads oriented to the free wall of the left ventricle. When right bundle branch block is present with septal infarction a Q wave is seen in the right precordial leads. The magnitude of the Q wave is in direct proportion to the extent of septal damage.

Infarctions of the superior third of the septum seen at necropsy were always accompanied by bundle branch block but no electrocardiographic data was seen to suggest septal damage.

Fibrosis of the septum has no characteristic electrocardiographic changes.

**Rinzler**

**HYPERTENSION**


Headache is known to occur in about 50 per cent of patients with hypertension. The symptom is sometimes almost unbearable and the common analgesics may give no relief. Because of reports that thiocyanate given orally relieves from 50 to 88 per cent of the patients, it was decided to use intravenous injections of a solution containing 1 Gm. of thiocyanate ion to 17 patients who were refractory to other methods of treatment. Gratifying relief was experienced by three-quarters of the group. This occurred within hours rather than days and the incidence and degree of relief approximated the effect seen with oral treatment. The dose used yields predictable serum concentrations so that chemical determinations after injections are unnecessary. The concentrations produced are much less than those considered toxic and no reactions were observed in this series of 17 patients. The mechanism of relief is obscure and does not depend on decreased arterial pressure. The suggestion is made that intravenous injection of thiocyanate be tested in impending migraine and in the initiation of oral treatment of hypertension with thiocyanate.

**Kitchell**


A practical clinical method for measuring capillary pressure by capillary microscopy, based on the principle of sphygmomanometry, is described.
Capillary pressures of 45 mm. Hg or above are considered high. Of 57 patients with high blood pressure, 23 had high capillary pressure. High capillary pressure in patients with high blood pressure was especially associated with capillaries of pathological morphology and with severe illness, severe retinal changes, severe renal changes, and cerebral complications.

Bernstein


A unilateral atrophic kidney of a 17 year old female hypertensive patient was removed solely for the purpose of lowering a persistently elevated blood pressure. The atrophic kidney was free of infection and caused no local symptoms. Normal blood pressures were obtained consistently during a two year period after nephrectomy.

Hypertension, per se, would seem to be an adequate indication for the surgical removal of an asymptomatic atrophic hypofunctioning kidney if the other kidney is of normal size and function. This is especially true if the patient is young, if the hypertension is of short duration, and if retinopathy is absent or minimal. It would therefore, be advisable to obtain pyelographic studies of all hypertensive concentration tests. By this means the unilateral asymptomatic atrophic kidney, which may be causing hypertension, could be found, with a resultant increase in the surgical cure of nephrogenic hypertension.

Bernstein


In 16 normal individuals a detailed study of the clinical effects of subcutaneous test doses of hexamethonium was made. In eight of these, plasma concentrations of the agent were determined by Paton’s biologic assay using the nictitating membrane of the cat and the close-arterial injection of the plasma for assay into the continuously stimulated superior cervical ganglion. The three types of ocular changes observed—increased pupil size, diminished light reaction, and loss of accommodation—did not develop in a parallel fashion. Fall in blood pressure, particularly in the standing subject, was always the first effect observed. Considerable individual variability (at least eight-fold) in responsiveness was recorded. However, in a given subject, there was a direct linear (not logarithmic) relationship between plasma concentration of hexamethonium and effect on blood pressure. The data accumulated are consistent with confinement of the agent to extracellular compartment and excretion by glomerular filtration without tubular secretion or reabsorption. Two subjects who were among the most sensitive, displayed bradycardia, rather than tachycardia, with the drug-induced hypotension.


The author treated 39 hypertensives by the subcutaneous route, for periods of 3 to 15 months. Patients over 60 years of age and those with uncomplicated essential hypertension were not treated. The author does not hesitate to treat chronic renal hypertension and in most of such cases saw no rise in blood urea nitrogen. Injections were given each eight hours in most patients. Those with renal insufficiency and retention of the agent required administration less frequently. Tolerance developed mainly in the first four to six weeks of treatment. Fluctuations in responsiveness occurred with domestic stress and cold weather (decreased response to hexamethonium) and with hot weather, unwonted exercise, febrile illness, diarrhea or vomiting (increased response). Incidence of dryness of the mouth, constipation and interference with pupillary function closely followed dosage and blood level. Patients frequently showed severe side reactions of these types in spite of a high degree of tolerance to the hypotensive action of hexamethonium. The author suggests that “tolerance” is due not to loss of ganglion-blocking power but rather to increase in the factors responsible for maintaining abnormal arteriolar tone in hypertension, either nervous or humoral. The author makes much of the development in three patients on prolonged therapy of “bilateral symmetrical opacities in the lungs, in the upper and mid-zones”. Although corroboratory data is not provided, these may have represented the not infrequent radiographic finding in chronic azotemia.

Bernstein

Mintz


This study was done to test the effectiveness of rutin and a Flavonol, Catechin in hypersensitivity arteritis in rabbits, and also in the arteritis of malignant hypertension in dogs.

The results obtained failed to indicate any effectiveness of rutin or catechin upon the arteritis of malignant hypertension in dogs. Rutin and Catechin were also found to be ineffective in the prevention of arteritis of hypersensitivity produced in rabbits.

Using as his criterion for hypertension a diastolic blood pressure of 90 mm. Hg or above, the author determined the incidence of this disorder in 1140 American Indians over a two-year period in the southwestern section of the United States. Among the entire group there were 14 patients (1.2 per cent) with elevated blood pressure. When cases of secondary hypertension were excluded the corrected incidence of the primary disorder was 0.96 per cent. The incidence in women was slightly higher than men: there were no cases noted at an age younger than 35 years. Clinically, the usual stigmata of hypertensive disease were found in these individuals as cardiac decompensation, cerebrovascular accidents, renal insufficiency, retinal disorders, and coronary insufficiency syndromes. There were three deaths, two due to heart failure and 1 due to a cerebrovascular accident. The author discusses certain factors which may be important in the rarity of hypertensive disease among these people.

SHUMAN


Fifty-one cases of clinical malignant hypertension were examined post mortem. Twenty-five cases fell into essential hypertension in the malignant phase group; 8 were due to chronic pyelonephritis and 10 to chronic glomerulonephritis. One was associated with polycystic kidneys, three with toxemia of pregnancy and four with polyarteritis nodosa. No case of essential hypertension was encountered below the age of 35. The younger age group was wholly composed of cases of secondary hypertension.

The blood pressure level was comparable in all groups and was uniformly high, the diastolic pressure being almost invariably over 130 mm. Hg. Vascular necrosis was present in both the secondary hypertensive and essential hypertension groups. Certain cases showed vascular necrosis in the absence of impairment of renal function. Thus renal insufficiency is not a necessary factor in the production of these necrotic lesions.

The severe degree of hypertension appears to be the cause of the common picture of vascular necrosis irrespective of the way in which the hypertension was brought about. The fact that a variety of conditions known to cause heightened blood pressure can produce the clinical picture of malignant hypertension with vascular necrosis is evidence in favor of the theory that the difference between the benign and malignant forms of hypertension is one of the degree of hypertension attained.

BERNSTEIN


A group of 58 patients with hypertensive disease of established severity was treated with oral hexamethonium, the dose of which was carefully titrated for each individual. The dosage was regulated by the upright blood pressure in order to avoid hypotension. All but 11 patients experienced significant reductions in blood pressure with normal readings appearing in about one-half of the group. The combined administration of Apresoline and hexamethonium further improved the blood pressure regulation in 11 of 18 patients who were not controlled on the latter drug alone.

Congestive heart failure and angina pectoris were benefited by the use of hexamethonium in hypertensive heart disease, definite improvement in decompensation being noted in three-fourths of the patients with this condition. Cerebro-vascular disease was likewise benefited. Renal disease of milder degrees was not adversely affected by hexamethonium, but frank renal insufficiency with a rising blood urea nitrogen is a contraindication to its use. Hexamethonium was compared with other depressor agents such as Dibenzyline and was found to be superior in the treatment of hypertension.

SHUMAN


Pressor amines were determined by extraction of urine and biologic assay in cats. Results were expressed in micrograms of noradrenaline which produced the same rise in blood pressure. A progressive rise in excretion of pressor amines with advancing age was demonstrated. When this age progression was taken into account no increased excretion was found in essential hypertension or in hypertensive toxemia of pregnancy. Three cases of phaeochromocytoma showed excretion in amounts above the normal range; however, excretion showed considerable fluctuation which was apparently related to the number and severity of spontaneous paroxysms during the period of collection. In one interesting case of essential hypertension benzodioxane induced a rise in blood pressure and an increase in urinary excretion of pressor amines. Normal amounts were excreted on three subsequent days. The benzodioxane test should not be performed during a collection period for determination of urinary pressor amine excretion.

McKUSICK
ABSTRACTS


Chronic experimental renal hypertension in dogs has been successfully prevented and when present treated with crude and semipurified hog renins. The antihypertensive effects obtained in the treatment and prophylaxis of chronic experimental renal hypertension are well correlated with the antirenin titers. This evidence for antirenin (or an antibody to a protein closely related to renin) as the mechanism of the antihypertensive effects of hog renins constitutes support for the affirmative of the long standing controversy regarding the primary role of renin (or some closely related protein) in the pathogenesis of experimental renal hypertension.

In experimental renal hypertension in the dog, hog renal medulla contains a factor which interferes with the antihypertensive effects of hog renin by a mechanism presently unknown. Renotoxic and renal protective factors have been found to occur in fractions of renal extracts. Toxicity is measured by an increased, and protection, by a decreased incidence of uremia after constriction of the renal arteries. After further preliminary experiments in animals the role of the kidney in the production of essential hypertension will be studied by passive immunization of patients with purified antirenin to human renin.

MINTZ


A colorimetric method is described for the determination of 1-hydrizinophthalazine or related substances as ninhydrin complexes in urine or plasma. Five compounds or groups with which the drug reacts are: sulfhydryl radicals, carbonyl radicals, glucose, heavy metal ions and ninhydrin.

The procedure reveals a noticeable urine concentration of hydrizinophthalazine within 30 minutes of a single oral dose and a maximum is reached during the second to the fourth hour. Thereafter the drug is slowly excreted for more than 24 hours. To date there has been a surprising uniformity in the percentage of the drug recovered. Depending on whether the drug is given orally or parenterally the recovery of free drug approximates 2 ± 1½ per cent.

MINTZ

PATHOLOGIC PHYSIOLOGY


There are two divergent opinions concerning the cause of failure of the circulation in cases of accidental death. One explanation is that of peripheral vasomotor collapse caused by anoxia and acidosis and leading to vasodilatation with decreasing peripheral resistance and blood pressure. Another theory suggests that anoxia leads to a decrease in myocardial contractility with resultant circulatory collapse due to failure of the heart. In the present study, dogs were made anoxic by breathing pure nitrogen until unconscious, whereupon a decrease in blood pressure developed. At this time, they were resuscitated and blood was obtained from the left ventricle, the ascending aorta, and abdominal aorta for oxygen analysis. As circulatory recovery commenced in these animals, reoxygenated blood was recovered from the left heart and ascending aorta, but had not yet reached the abdominal aorta. On this basis, the authors believe that recovery from circulatory collapse due to anoxia entails reoxygenation of the myocardium rather than reoxygenation of the peripheral vascular bed. The aim of resuscitating measures in near-death due to circulatory failure is reoxygenation of the myocardium.

SHUMAN


The purpose of this paper is to present a method for the determination of plasma volume by means of a plasma diluent (Evans Blue dye) which offers the following advantages over the previous procedures of its type. It does not require the use of expensive specialized equipment or the services of highly trained technicians. It utilizes only a single blood sample. It allows blood volume determinations to be made quickly and accurately even in the presence of considerable hemolysis and/or turbidity of the sample.

When Evans Blue dye (T-1824) is injected in massive doses into the blood stream, there occurs staining of the endothelial cells and other parenchymal tissues. However, in amounts required for blood volume determination, even when repeatedly injected, the dye does not appear to be retained by the endothelial or other tissues. The combination of the dye with albumin is sufficiently rapid to permit binding of the dye in the time necessary for one complete circulation of the blood. The problem is to prevent binding of the dye with the protein of the endothelial or other body tissues.

In 19 normal women the mean plasma volume was 1.589 liters per square meter of body surface area with a standard deviation of ±0.183 liters per square meter. The mean blood volume was 2.475 liters per square meter of body surface, with a standard deviation of ±0.178 liters per square meter. In 30 normal men, the mean plasma volume
was 1.740 liters per square meter of body surface with a standard deviation of ±0.291 liters per square meter. The mean blood volume was 2.910 liters per square meter of body surface area, with a standard deviation of ±0.411 liter per square meter.

The Evans Blue dye method yields higher values for the plasma volume and for the total blood volume than do methods employing labeled erythrocytes. This difference may be due to dye diffusion into those portions of the noncirculating plasma where erythrocytes are unable to enter.

**MINTZ**


Much has been written about the efficacy of intra-arterial transfusion in selected cases. The authors feel that the intra-aortic and intracardiac routes have not received adequate attention. They discuss the technic, advantages, and disadvantages of both these transfusion routes. They report one illustrative case, using the intra-aortic transfusion route and two cases in which the intracardiac route was used. The one case who had a transfusion by the intra-aortic route was resuscitated but unfortunately died on the twenty-fourth postoperative day from abdominal complications not connected with the transfusion. The two individuals receiving intracardiac transfusions were benefited evidently only a few minutes and then died. The authors feel that the time factor in all these cases is most important and the need for prompt cardiac massage as well as transfusion seems obvious.

**KITCHELL**

**SURGERY IN HEART AND VASCULAR DISEASE**


In view of the increasing use of cardio-tomy in cardiac surgery it was felt advisable to determine the fate of large wounds of the heart. Cardiac muscle has only a slight capacity for regeneration, and healing of heart wounds takes place by fibroplasia. Because of the constant alterations of tension due to cardiac contractions, it was thought that the cicatrix might become attenuated and rupture or form an aneurysmal defect.

An area of the entire thickness of the left ventricular wall of the dog's heart was excised in a group of animals. The defect was closed by through-and-through suture, and the animals were observed and sacrificed over a period of 46 months. In a second group of dogs a linear incision was made into the left ventricular wall and these were then closed. These animals were observed for 11 months.

It was noted that the wounds healed with a dense scar that did not appear to affect function. At the end of one month this scar had decreased in thickness to 50 per cent of the normal wall. After several months this decrease in thickness amounted to 30 per cent of the normal thickness of the wall. With the passage of time these scars also increased in breadth. There was little relationship between the amount of elapsed time and the breadth of the scar.

In those dogs with simple incisional wounds the same changes occurred but were usually not as marked and there was considerable variation in degree.

Histologic examination revealed that there was necrosis of the cardiac muscle that was actually encompassed by the suture material, so the scar extended 2 to 5 mm. beyond the sutures.

Within one week the sutures that had penetrated the endocardium were covered by a thin layer of fibrin. Usually, by two weeks they were covered with endothelium. There was no evidence of the formation of thrombi. Embolism was not noted.

No evidence of aneurysmal defect or rupture was observed in these scars. The strongest scars were usually in the shortest incisions.

**FROEBESE**


The case is that of a 26 year old man with clinical evidence of mitral stenosis complicated by increasing dyspnea and hemoptysis. There was some suspicion that calcification of the mitral valve was present.

At surgery the diagnosis of mitral stenosis was confirmed and exploration of the valve revealed it to be heavily calcified. The anterolateral commissure was incised, and the operative procedure was thought to be satisfactory.

Postoperatively the patient had a right hemiplegia and died 30 hours later. Autopsy was performed and the left middle and left posterior cerebral arteries were found to be occluded by emboli. Roentgenographic and histologic studies revealed that these emboli were calcific. In all likelihood they originated from the incised valve.

Although others have suspected calcific emboli as a cause of cerebral vascular accidents complicating valvular surgery, it is thought that this is the first instance where the emboli have actually been found in the cerebral vessels.

**FROEBESE**


Interventricular septal defects may occur low or high in the septum, and both of these may be small or large. The disturbances of cardiac physiology are progressively greater with increase in size of the opening. Small openings low in the muscular septum tend to contract with systole and cause little difficulty. Large openings may result physiologically in a single ventricle and almost all the blood in the left ventricle will be shunted to the right and continually mixed with the blood of the right ventricle. Practically all of these are congenital in origin, and they may occur as single defects or as one of a combination of malformations.

Surgical correction of these defects has been delayed by a number of factors. Some of these are: danger of hemorrhage from the open cardiac chamber; danger of cardiac arrhythmia from the manipulation; interference with the bundle of His in the septum, danger of injury to or distortion of the aortic valve cusps; the lack of sufficient tissue in the area with which to effect a repair; and, lastly, the lack of a perfected extracorporeal heart-lung device which would allow tedious open intracardiac surgery.

Experimental efforts have been performed in 32 animals with the guidance of an intracardiac finger. These have consisted of: (1) the formation of a rolled, tapering, pedicled pericardial graft which is inserted into the right ventricle through its wall, then passed through the defect and held there like a cork; this, of course, is limited to use in small defects and its chief disadvantage is that it may partially block the right ventricular outflow tract; (2) for the larger defects a flat, pedicled graft of pericardium has been threaded into the heart parallel to the septum and on the side of the septum where the greatest pressure is; thus this flap fans out and covers the defect and closes it as it is forced into it by the pressure.

Because the animals did not survive the experimentally produced large septal defects or the small defects healed too rapidly, it became necessary to produce the defect and repair it in one operation.

The rolled pericardial grafts that passed through the small septal defects appeared to be successful. Healing occurred and it was difficult to differentiate the graft from the septal tissue at necropsy. The flat flaps of pericardium intended for the larger defects were not successful. They did not adhere to the septum. They atrophied and contracted and could not function as desired. This was also confirmed by histopathologic examination of the grafts.

With these findings in mind, the rolled pericardial plug procedure was performed on three humans with high small septal defects. In one case of tetralogy of Fallot, a portion of an infundibular obstruction was first removed by a Broek procedure; then the slings was put through to plug the septal defect. In three hours it became swollen and blocked the right ventricular outflow tract, so that it was necessary to reopen the chest and remove the graft. The remaining two cases made uneventful recoveries with some evidence of clinical improvement.

Frohse


The etiologic agent of most cases of constrictive pericarditis is not clear. This is particularly true when there is nothing to suggest tuberculosis. The authors encountered a patient who they felt might shed some light on this subject.

This man had developed a chronic hemopericardium following minimal trauma to the precordial area. At operation an early constrictive pericarditis was found. On reviewing the literature they noted that a number of reports had suggested that hemorrhage into the pericardial sac was related to the formation of a constrictive pericarditis.

Therefore an attempt was made to produce chronic constrictive pericarditis in the experimental animal by the intrapericardial injection of blood or blood lipids. Fourteen dogs were utilized. In six animals autogenous blood was injected. In six other animals a lipid extract of dog blood was prepared and injected. In two animals a crystalline suspension of cholesterol and saline was administered. The latter two were sacrificed at 6 and 10 weeks, respectively.

Two dogs each of the blood and the lipid series were sacrificed at one, three, and six months.

All of the group in which blood was injected manifested some changes in the pericardium and epicardium. This usually was a patchy pericardial and epicardial scarring. None of the blood was still present in the sac. Adhesions between the layers of the pericardium were not noteworthy.

In the group in which the lipid fraction had been injected, the above changes were present to a greater degree and adhesions were noted. With a greater lapse of time the changes were more marked. One animal in this group died at seven weeks with extensive findings of constrictive pericarditis.

The two dogs that had cholesterol injections showed the same findings as those in the lipid group except neither developed a constrictive pericarditis.

It would appear that in some cases a hemopericardium may result in a chronic constrictive pericarditis and that the lipid fraction of the blood is the significant component producing the reaction.

Frohse


The authors present a case of a young man stabbed in the chest one month prior to the onset of difficulty in breathing and pain over the heart which was
followed by unconsciousness and admission to the hospital. The symptoms of cardiac tamponade were noted upon admission to the hospital, that is, (1) increased venous pressure, (2) decreased arterial pressure, and (3) a small quiet heart. Because of loculations, complete removal of the blood from the pericardial sac was not possible. Exploring the pericardium surgically, a thin peel of organized blood clot was found completely surrounding the inferior and superior vena cava and definitely obstructing the venous return. Removal of this peel was followed by recovery. It is felt that this treatment should be considered early in such cases as a possibility of preventing a future constricting pericarditis as the clot calcifies. The hazards of (1) paroxysmal tachycardia, (2) ventricular fibrillation, (3) complete arrhythmia, (4) cardiac arrest, and (5) uncontrollable bleeding, involved in pericardectomy are largely eliminated by removing loosely organized blood clot before it becomes too adherent.

KITCHELL

THROMBOEMBOLIC PHENOMENA


Thrombotic occlusion of the terminal aorta is a definite entity that occurs with sufficient frequency to justify its recognition. An experience with 29 such cases is reviewed by the author.

Of interest is the fact that 86 per cent of the patients were under 60 years of age. Also hypercholesterolemia of over 300 mg. per cent was noted in 62 per cent of the cases.

The feature responsible for delay or error in diagnosis is the insidious nature of the onset. Only 10 per cent had an acute onset, and the average case had had symptoms for over three years. Often when the onset was acute, the process was mistakenly called embolic.

The chief symptoms are intermittent claudication—usually bilateral—fatigability and pains in the hips and thigh muscles.

On physical examination peripheral arterial pulsations are found to be absent, and the oscillometric readings approach zero at all levels of the extremities. The oscillometric curves are thought to be pathognomonic. Roentgen examination may reveal calcification in the aorta. Skin temperatures of the toes and feet may be normal if good collateral pathways are present. Rarely are aortograms necessary for diagnosis.

Necropsy reveals that the primary trouble is always in the aorta. It consists of atherosclerosis and arteriosclerosis of the aortic wall with resultant thrombosis in the lumen. The aortic wall damage often extends well above the level of the thrombosis. Because of this feature surgical resection of the terminal aorta as recommended by Leriche is not advocated.

Bilateral lumbar sympathectomy has been of value in improving the circulation to the feet. This is particularly true in those cases in which the arteriosclerotic process is limited to the aorta. Dietary restrictions in order to lower the blood cholesterol have been followed by some improvement and may be worthwhile. Anticoagulant drugs are thought to be of little value in the cases with an insidious onset.

FROEBE

VASCULAR DISEASE


Mönckeberg's arteriosclerosis is a clinically benign form of calcification of the blood vessels. Needless anxiety results from failure to differentiate this condition from intimal arteriosclerosis. The clinical picture in 53 cases of Mönckeberg's arteriosclerosis is presented. Characteristic of the disease is extreme calcification of the arteries of the lower extremities in persons who have no symptoms or signs of impaired circulation. The prognosis in Mönckeberg's arteriosclerosis is good, and no treatment of any kind is necessary. Nocturnal leg cramps occur in one-third of the cases and can be promptly relieved by calcium lactate given orally. It is pointed out that pathologically Mönckeberg's arteriosclerosis is characterized by the deposit of calcium in the media of the arteries with no thickening of the intimal layer and no narrowing of the blood vessel lumen. The surface of the intima remains uninjured and thrombosis does not occur. Roentgenologically typical cases show dense uniform calcification in contrast to the patchy, dispersed, longitudinal axis type of deposition in intimal arteriosclerosis.

KITCHELL


Changes in the position of the lower extremities during vasmotor block are of particular importance (1) if the patient has a low cardiovascular reserve, (2) if the vasoregulatory mechanism of both the upper and lower extremities is simultaneously impaired, and (3) if the position shift is made suddenly. Three cases are reported where sudden drops of blood pressure occurred when the patients' legs were suddenly dropped to the horizontal position from either Trendelenburg or lithotomy positions. Sudden dropping of both legs to the horizontal level when one patient was transferred to the portable stretcher probably contributed to his death. It is suggested that hypotensive or total spinal anesthesia be attempted only after a thorough search for occult cardiovascular abnormality. A discussion of the value of position shifts of the
lower extremities in the diagnosis and surgery of pheochromocytoma is also discussed. The authors point out that during such anesthesia, depression or elevation of the lower extremities may be utilized to lower or raise the subject's blood pressure as the situation demands. One must be constantly aware of the drastic circulatory changes that may ensue if these position shifts are produced or resolved suddenly and without continuous observation.

Kittel


The authors measured the total non-glucosamine polysaccharides bound to serum protein, serum glucosamine, mucoprotein, and the non-glucosamine polysaccharides in the mucoprotein fraction of serum. The patient group consisted of 15 non-diabetic controls, 66 diabetics of whom 14 were clinically uncomplicated, 18 had degenerative vascular disease without renal impairment, and 34 had vascular disease and hypertension, proteinuria, and renal insufficiency. In addition, 10 non-diabetic patients with renal disease were also studied.

It was found that diabetic patients without clinically detectable degenerative vascular disease had normal concentrations of these polysaccharides. However, in diabetic subjects with vascular disease the total polysaccharides bound to proteins and to serum glucosamine were increased. Renal involvement did not seem to influence these values significantly. There was no relationship between the blood sugar levels and various serum polysaccharide substances.

These results may reflect the degenerative alterations widespread in blood vessels and other structures which are characteristic of the changes in arteriosclerosis because the presence of the primary metabolic defect in diabetes did not lead to an increased level of certain polysaccharides in the sera. These results do not exclude the possibility of a relationship of these polysaccharides to the eventual development of specific glomerular and retinal capillary deposits of hyaline material.

Waife


The findings in five proved cases of periarteritis nodosa and one of sarcoidosis are described. The similarities of the etiologic, clinical, biochemical, histologic, and therapeutic aspects of both entities are emphasized. It is considered very likely that periarteritis nodosa and sarcoidosis are not two distinct and separate entities but constitute different stages of the same disease entity. This entity should be labeled "hypersensitivity granuloma," acute or chronic, perivascular or extravascular.

Wendkos


Because experimental atherosclerosis can be easily produced in rabbits but not in rats, and because heparin may retard the development of atherosclerosis in cholesterol-fed rabbits, the author studied the distribution of mast cells in organs from these two animal species, because heparin is very likely produced by these cells. Various sections of the organs were stained and mast cells identified on the basis of their metachromatic granules. It was found that, with the exception of the brain and spleen, which contained no mast cells, the connective tissue in all other organs of the rat was constantly supplied with mast cells. They were extremely abundant in the thymus and skin and numerous in the circulatory, respiratory, and urinary systems. However, with the exception of the skin, skeletal muscle and heart, no mast cells were found in the other organs of the rabbit.

Examination of the formalin-alcohol-fixed organs by a new differential tissue stain, which selectively stains mast cells, confirmed these findings. Older reports show that mast cells occur abundantly in rats, dogs, goats, and bovines but sparsely in rabbits, birds, and cats. The author feels that it is possible that human atherosclerosis may be related to a mast cell deficiency.

Waife


A method based on a surface tension effect which opposes the perfusion of air through small blood vessels was used to measure the internal diameter of the largest blood vessels connecting arteries and veins of any particular organ. Large anastomoses are present in the rat's hind legs, rat's tail and dilated vessels of the rabbit's ear. In kidney, intestines and lungs the largest vessels did not exceed 25 μ and most were 13–16 μ. Liver vessels are midway between kidney, intestines and lungs on one hand and limbs on the other.

Oppenheimer

OTHER SUBJECTS


It has been suggested that a shift of hydrogen
ions into muscle cells in exchange for potassium is the basis of extracellular alkalosis. These authors studied the acute effect of the administration of potassium to nephrectomized rats with hypokalemic alkalosis. These animals were fed a diet deficient in potassium and were given desoxycorticosterone acetate. It was found that intravenous potassium salts after nephrectomy resulted in an uptake of potassium by the muscle cells. There was also a fall in the bicarbonate concentration and in the plasma pH. Thus, the disappearance of the alkalosis on administration of potassium was not due to renal activity, and the hypothesis attributing the alkalosis to a net loss of acid from the body is incorrect. This is apparently an extracellular alkalosis and is associated with intracellular acidosis resulting from the transfer of hydrogen into the cells in exchange for potassium.

WAIFE


Respiratory physiologic studies were performed on 29 patients with mitral valvular disease. All but one had mitral stenosis with or without mitral insufficiency. There was a close correlation between clinical dyspnea and the presence or absence of respiratory function. Thus, dyspnea was most severe in patients with evidence of impaired diffusion of oxygen and the abnormal distribution of gas and blood to the alveoli. Impaired distribution appeared to be related to the presence of at least minimal pulmonary edema. On the other hand, impairment of diffusion was a result of structural or functional changes in the capillaries. The abnormalities of distribution and diffusion existed independently. In far advanced disease there are abnormalities in all aspects of pulmonary function. With the persistence of mitral stenosis and the development of vascular hypertension, abnormalities of alveolar function appear. These may take the form of an abnormality in distribution which is manifest by an elevation of the dead space ratio or the ratio of venous admixture to total blood flow. Such an alteration is associated with a reduction in vital capacity and in maximal breathing capacity, and probably occurs as a result of vascular congestion. In other cases, a low diffusing capacity may result from structural changes on the diffusing surface or, conceivably, from vasomotor changes altering blood flow in some capillaries.

WAIFE


Small amounts of venom produce vasodilatation with fall in blood pressure, tachycardia and brief increase in cardiac output, contraction of the spleen which increased the hematocrit and specific gravity of blood, electrocardiographic changes and a prolonged ejection time. When injections of venom are continued, arterial pressure remains low, petechiae appear, the lower intestine is congested, and dyspnea, reduced coagulation of blood and low cardiac output supervene.

OPPENHEIMER


Rheumatic heart disease, formerly in first place (1923), has now dropped to third place (1953) (from 39.5 per cent to 23.5 per cent). Dr. White believes this drop in rheumatic heart disease to be more related to improvement in social conditions and in the way of life than with specific therapy or antibiotics. He bases this on the fact that the decrease began before preventive measures came into use. It is possible also that the natural history of the disease with a spontaneous reduction might explain some of the change. The second striking change has been the great increase in coronary heart disease which has come from 20.2 per cent (or third place) to 48.5 per cent (now first place). The third change is the striking decrease in morbidity and mortality from cardiovascular syphilis (from 3.9 per cent to 1 per cent). The fourth interesting change is the apparent remarkable increase of congenital cardiovascular disease from 1.5 per cent to 7.9 per cent. This increase probably is not real and may be explained by more accurate diagnosis and by the fact that more congenital heart cases are brought for examination nowadays. Fifth, owing to improvement in the recognition and early adequate therapy of thyrotoxicosis, thyrotoxic disease has dropped in relative incidence from 2.9 per cent to 0.5 per cent. Dr. White feels that more research will be needed to determine with accuracy the absolute prevalence of the types of heart disease in New England as well as elsewhere.

KITCHELL


The administration of a large amount of water to normal subjects results in the copious excretion of diluted urine. Some of the factors which influence the magnitude of this diuresis in normal man are discussed in this paper. Among such influences are the postural effects, the dietary intake of sodium, and the administration of various solute loads. In three normal men and seven male patients with diseases which did not affect the renal or cardiovascular systems, the effect of 1500 ml. water drunk
ABSTRACTS

during a 10 to 40 minute period was studied. Throughout the experiment the water load was maintained by oral administration of enough water after each voiding to restore body weight to its previous values. This load was maintained for periods of from four to nine hours.

With the subject seated the rates of urine flow and sodium excretion declined during the course of the experiment. In four of five experiments, when the subject subsequently reclined, augmentation of urine flow and sodium excretion was observed. The diuresis was also affected by the dietary intake of salt. Furthermore, the ingestion of sodium chloride, sodium bicarbonate, potassium chloride, ammonium chloride or urea was associated with an augmented urine flow and solute excretion. The urine flow was rather consistently related to the parallel excretion of sodium. There was evidence that contraction of the effective extracellular volume produces minimal antidiuretic hormone activity despite continued hypotonicity. This also suggests that diuresis alterations may be related to sodium excretion changes. The urine flow was more closely related to renal tubular absorption of water than to glomerular filtration rate.

Waife


Although either the intermittent positive or the positive-negative type respirators may be safely applied on patients who are in an essentially normal circulatory state, the effects of respirators in emergency situations are not predictable on the basis of studies in normal persons. In patients with respiratory and/or circulatory failure intermittent positive pressure-type respirators may cause a depression of blood pressure and cardiac output threatening the life of the patient. The use of alternating positive-negative pressure type respirators permits administration of artificial respiration without danger. Since the circulatory status of patients in need of artificial respiration is not uniformly good, it is recommended that a negative pressure phase be employed in mechanical respirators. Such apparatus, with alternating positive and negative pressure, and having a mean mask pressure at least as low as atmospheric pressure, is safe and effective in producing artificial respiration.

Kitchell


The use of intra-arterial blood transfusion has in recent years acquired an increasing vogue in the therapy of oligemic shock. Those favoring the use of this procedure feel that it more quickly and effectively elevates tissue perfusion rates, especially coronary artery flow. Rapid intra-arterial and intravenous infusion of blood and dextran were administered to dogs in controlled hemorrhagic hypotension. These were given alternately in equal amounts and at similar rates. It was found that the intra-arterial route did not elevate coronary flow or arterial pressure either more rapidly or more effectively than the venous route. It is suggested that although insufficiency of coronary flow may be an important complicating factor in severe oligemic shock, intra-arterial infusion is no more effective than intravenous infusion in correcting that insufficiency.

Kitchell


Two cases of gangrene in the upper extremity following intra-arterial transfusion are reported. One of these involves a transfusion into the brachial artery, the other a transfusion into the radial artery. The authors discuss methods of avoiding such complications and point out that in elective cases circulation in the hand may be pretested by occlusion of the arterial flow to the elevated hand for several minutes. The hand is then lowered while the radial artery remains occluded by digital pressure. If a flush appears in the medial portion of the hand while the index finger and thumb remain pale, it may be evidence of poor collateral circulation and under such circumstances the femoral artery may be a better choice. The facts that centripetal transfusions have been reported harmful to patients with damaged myocardiums and that animal experiments have pointed out the risk of cardiac and cerebral damage following overtransfusion are emphasized.

Kitchell


Systemic scleroderma is primarily a collagenous disease of unknown origin with a secondary vascular role. Release of vascular tone has an amelioratory influence in about 88 per cent of the patients where the involvement is in the face, yoke, various skin areas, esophagus, and larynx. Extensive sympathectomy seems more beneficial than any drug therapy. When the face, yoke and arms are involved, but not the esophagus, sympathectomy from the first to the fifth thoracic segments is of value. However, when the esophagus is involved, and where the face also is involved, sympathectomy of the first to the twelfth thoracic segments is necessary. A gap is left on one side supplying the greater splanchnic nerve to prevent a possibly incapacitating postural hypoten-
sion in the normotensive patient. The authors discuss the failure of treatment with drugs such as para-aminobenzoic acid, diphenhydramine, testosterone, corticotropin, cortisone, prisocline and antibiotics. Alpha tocoherol, glucosulfone sodium, vitamin C, nicotinic acid, ergosterol, bismuth sodium triglycolate, erythrityl tetranitrate, and typhoid vaccine were tried without any lasting benefit. Patients with primary Raynaud's disease and mild secondary scleroderma of the hands without facial or yoke involvement are now advised to undergo sympathectomy of the first to the ninth thoracic segments.

**Kitchell**


Evidence is presented which indicates that endocardial fibrosis is a relatively common cause of death from heart disease in infancy and that a presumptive diagnosis of this condition can often be made during life. The salient features are: age under 1 year, marked dyspnea without persistent cyanosis, absence of a loud cardiac murmur on repeated examinations, enlargement of the heart, presence of femoral pulsations, and electrocardiographic evidence of left ventricular hypertrophy in the precordial leads. The chief conditions to be considered in the differential diagnosis are: an aberrant coronary artery, interstitial myocarditis, and glycogen storage disease of the heart, all of which are much less frequent in the autopsy data. Four cases are presented in detail. In two of these the diagnosis was correctly made before death.

**Bernstein**


A carotid sinus reflex may occur in a patient during operation, and if unrecognized as such it may be diagnosed as cardiac standstill and will be treated as such. This reflex may arise in a patient without a previous history of a hypersensitive carotid sinus.

The reflex may be described as: reflex vago stimulation with bradycardia, asystole, cardiac arrhythmia, fall in blood pressure, cerebral anoxia, and finally convulsions and coma which may arise entirely or partly from stimulation of the hypersensitive carotid sinus. Operations in the neck on or about the internal carotid bulb are the most likely to be complicated by this reflex.

After recognition of the presence of such a reflex, one should immediately stop the operative procedure. Any packs, instruments, or other pressure should be removed from the proximity of the sinus. The anesthesia should be stopped, and the patient should be placed in the Trendelenburg position. Then 1 per cent procaine should be injected about the carotid sinus. This therapy is usually effective. Drug therapy such as atropine sulfate, epinephrine, or ephedrine is usually of no value. Prophylactically the use of barbiturates preoperatively aids in diminishing the vagal and depressor types of reaction to stimulation of the sinus.

A case in point with a successful outcome from the prescribed management is presented.

Lahey has suggested the use of a needle introduced into the myocardium to differentiate hypersensitive carotid sinus reflex from cardiac arrest. In the latter no motion of the needle hub is noted, and therapy for cardiac arrest can be instituted at once.

**Froese**


The authors used a controlled hemorrhage and either replaced the blood immediately or replaced it after one hour of hypotension at 30 to 35 mm. Hg. Bleeding volume index is the ratio of bleeding volume before and after hemorrhage and replacement. When blood was replaced immediately there were no significant differences between the three colloids. When hypotension was present for an hour before infusion heparinized blood and modified fluid gelatin permitted all animals to survive. Protection was incomplete with the other substances. The bleeding volume index for modified fluid gelatin was almost as good as that for blood.

**Oppenheimer**


The kidney constitutes the main defender of the constancy of the internal environment in regard to volume concentration, composition and pH. The aged patient lives in a narrower homeostatic balance than does the younger patient. A considerable factor in this narrow balance is the impairment of renal function; the kidneys may serve satisfactorily in the absence of distressful disease, but break down rapidly and more completely when disease develops.

The aged diabetic patient with ketosis responds more slowly to acid stress than does the younger diabetic. The tubular cells increase their excretion of titratable acid and ammonia to recover base, sodium, potassium and calcium used in the neutralization of ketone bodies. In the aged patient with relative or absolute renal insufficiency, the tubular ability to recover base is impaired or loaded to capacity early in ketosis. His acidosis, therefore, is not as well compensated; and the dehydration consequent upon decreased fluid intake and vomiting more rapidly produces a decline in plasma volume and hypotension, and a further decrease in the al-
ready reduced glomerular filtration rate. Thus therapy is more urgent in the older than in the younger patient and prophylaxis becomes all the more important. The aged patient with congestive heart failure already has a reduction in his glomerular filtration rate, before congestive heart failure occurs. With a further decline in renal blood flow consequent upon congestive failure, the total volume of filtrate may be strikingly low. The differing manifestations of congestive failure in the aged are due in great part to variation in the responsiveness of his kidney.

BERNSTEIN


Recovery from the acute catastrophe of a stroke is not the end of modern medical responsibility. A new vista in rehabilitation has been opened up and under the intensive regimen of physical medicine, treatment is now continued until the disabled person has been trained to live and to work at the optimum level of his remaining capacities. Inasmuch as stroke is a frequent, if not the most frequent cause of chronic disability in the aged, the importance of this work is obvious.

A program of rehabilitation is presented, which is at present in actual use, and which has served to improve both the prognosis and the speed of improvement in patients following a stroke.

BERNSTEIN


The cardiovascular lesions of the dog following bilateral nephrectomy result from injury of the cardiac muscle, of the smooth muscle of the media of small arteries and arterioles and the reparative changes which the injury stimulates. A spectrum of changes is observed from necrosis to fibrosis of the heart and sclerosis of the arteries. Demonstration of the healed sclerotic phase of the vascular lesions has resulted mainly from the prolongation of life of the animals by means of dialyzing procedures. The myocardial injury is a direct one, as indicated by the equal frequency of cardiac and of vascular lesions and, more emphatically, by the dissociation of the occurrence of cardiac necrosis and fibrosis and lesions of small coronary arteries and arterioles. It is evident that the cardiovascular lesions in these experiments should be considered as one entity and that emphasis should not be confined to the vascular lesions. Hypertension is not essential for the development of these lesions. The occurrence of hypertension is associated with a significant increment in the incidence of the lesions. The lesions occur in the absence of excessive retention of fluid in the body as judged by fluid-balance studies and the body weight. The role of several additional factors in the incidence of the lesions is considered. The data is discussed in relation to the three most attractive concepts of pathogenesis of the lesions, namely the toxic, electrolytic, and metabolic concepts.

BERNSTEIN


The high concentration of potassium in the plasma of stored blood is presented as a hazard of its intra-arterial transfusion. Decanting the plasma and reconstituting with saline solution is suggested.

McKUSICK


In a survey of the serum cholesterol levels in 980 consecutive patients admitted to the medical services of Fordham Hospital 13.7 per cent were found to have serum cholesterol values of 300 mg. per 100 ml. or over; 69.5 per cent of patients with hypercholesteremia had cardiovascular disease, and 20.7 per cent had diabetes. The authors discuss the effect of a polysorbate 80-choline-inositol complex on the serum cholesterol and protein-bound iodine levels and the urinary cholesterol, 17-ketosteroid, and formaldehyde steroid excretion in 16 hypercholesteremic patients. In 15 of the 16 studied a significant drop in the serum cholesterol level associated with a rise in the output of urine cholesterol and formaldehydehydrogen steroids was observed. The authors feel that the use of the polysorbate 80-choline-inositol complex has given some indication of the role of the adrenal cortex in the control of cholesterol metabolism and the influence of the state of the serum cholesterol emulsion on adrenal cortical function.

KITCHELL


In a study of 800 consecutive autopsies of patients over the age of 60 years, 5 per cent or 40, were found who did not show any gross evidence of coronary arteriosclerosis, myocardial fibrosis, hypertrophy, or other heart disease. Neither did any of these patients present significant premortem clinical, anatomic, or functional defects on physical, roentgenologic, or electrocardiographic examination. The congruity of the data obtained by the different methods of examination is considered significant. Two conclusions can be drawn: (1) Even after the
AGE OF 60 MOST ANATOMICALLY NORMAL HEARTS ARE USUALLY FUNCTIONALLY NORMAL TOO. (2) CLINICAL, ROENTGENOLOGIC, AND ELECTROCARDIOGRAPHIC METHODS OF STUDY, IF CRITICALLY APPRAISED, USUALLY GIVE A FAIRLY ACCURATE DIFFERENTIATION BETWEEN THE "NORMAL" AND THE "ABNORMAL" HEART IN THE AGING PERSON.

BERNSTEIN


The present investigation was undertaken to determine the effect of pyrogen treatment upon the development of histologic changes in rabbits subjected to the serum sickness type of protracted anaphylactic reaction. These lesions consist of arthritis, cardiitis, and glomerulonephritis.

Of 60 rabbits sensitized with horse serum, 30 were given 14 daily injections of a pyrogenic Pseudomonas concentrate, with the remaining 30 rabbits serving as controls. At autopsy no difference in the incidence of cardiovascular and renal lesions was found in the two groups of rabbits. There were no impressive differences in precipitin titers or skin reactions to horse serum in pyrogen treated and control animals.

It was concluded that in the dosage used in this study, the pyrogen exerted no significant adrenocortical stimulatory effect. This is based on the known efficacy of corticotropin in suppressing the development of cardiovascular and renal lesions in anaphylactically sensitized animals, as well as the absence in pyrogen treated animals of characteristic morphologic changes which result from corticotropin administration.

MINTZ


The author reports a case of paradoxic embolism with postmortem verification. Following operation the patient developed thrombophlebitis in the deep veins of the calf of the right leg. Emboli from this leg were discharged into the venous system and became lodged in the pulmonary artery. Other emboli passed through the patent foramen ovale and entered a branch of the left renal artery to produce an infarct in the left kidney. Another long and roughly conical embolus, too large at its base to pass completely through the opening, became caught in the formane ovale and was found at autopsy. Less than 40 acceptable instances of thrombotic emboli which have passed through a patent cardiac septal defect have been reported. The author also reviews the factors necessary for the occurrence of paradoxic embolism.

HARRIS


The authors observed a pyrogenic response characterized by severe chills, fever, prostration, headache, and back pain following cardiac catheterization in 9 of 11 patients with mitral stenosis. Efforts were made to eliminate these reactions and were finally successful when the catheters were repeatedly washed with sterile saline and then suspended for 30 minutes in Detergicide after which they were flushed for one hour in tap water and then dried by suction. Prior to use, they were again flushed with Detergicide and rinsed several times with sterile saline. In considering the cause of these reactions, it was suggested that an heat-labile plasma transfusion reaction factor may be responsible. This factor has been described as a cause of certain pyrogenic reactions which follow the transfusion of whole blood. According to the authors in mitral stenosis, the patients may exhibit an increased sensitivity to this plasma transfusion reaction factor.

SHUMAN


The case of a woman aged 63 years is reported. Shortly after operative treatment for a perforated duodenal ulcer the patient vomited a large quantity of blood and died. Examination disclosed that a benign penetrating ulcer of the esophagus, contained within a large hiatus hernia, had eroded the wall of the aorta. Such a spontaneous perforation of the aorta by a benign esophageal ulcer is said not to have been reported previously. The author postulates that contiguity of the esophageal ulcer and the aorta led to thrombosis of the vasa vasorum, leading to interference with the blood supply of the aorta and ultimate perforation due to pressure of the hiatus hernia.

ROSENBAUM


Two instances of subendocardial trauma produced by right-sided catheterization of the heart in man are reported. Confirmation in the first case was obtained at post mortem by finding a circular solitary bright red subendocardial hemorrhage on the anterolateral wall of the right atrium which exactly matched the tip of the catheter used. The diagnosis of subendocardial trauma in the second case was based on the production of a right bundle branch block which lasted for six days.

RINZLER
The online version of this article, along with updated information and services, is located on the World Wide Web at:

http://circ.ahajournals.org/content/9/3/450.citation