ABSTRACTS

Editor: Samuel Bellet, M.D.

Abstracters

David I. Abramson, M.D., Chicago
Lawrence H. Beizer, M.D., Philadelphia
Arthur Bernstein, M.D., Newark
Ruth Cortell, M.D., New York
Benjamin A. Gouley, M.D., Philadelphia
Jacob Grossman, M.D., New York
Raymond Harris, M.D., Albany
Hans H. Hecht, M.D., Salt Lake City
Herman K. Hellerstein, M.D., Cleveland
J. Roderick Kitchell, M.D., Philadelphia
Emanuel Klosk, M.D., Newark
Aldo A. Luisada, M.D., Chicago
M. Price Margolies, M.D., Philadelphia
S. S. Mintz, M.D., Philadelphia
Carl S. Nadler, M.D., New Orleans
Morton J. Oppenheimer, M.D., Philadelphia
Alfred Pick, M.D., Chicago
Otto Ritter, M.D., Lausanne, Switzerland
Francis F. Rosenbaum, M.D., Milwaukee
Eliot L. Sagall, M.D., Boston
David Scherf, M.D., New York
Paul Schlessinger, M.D., Rio de Janeiro, Brazil
Leon Schwartz, M.D., Philadelphia
John B. Schweidel, 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., Philadelphia
Martin Wendkos, M.D., Philadelphia
Stanford Wessler, M.D., Boston
Abraham G. White, M.D., New York

BACTERIAL ENDOCARDITIS

Lillehei, C. W., Bobb, J. R. R., and Visscher, M. B.:
The Occurrence of Endocarditis with Valvular Deformities in Dogs with Arteriovenous Fistulas.

The authors noted that the creation of large arteriovenous fistulas in dogs was associated with the subsequent appearance of endocarditis. It was not necessary to introduce any bacteria into the animals intentionally. Endocarditis occurred in 75 per cent of the dogs in which sufficiently large shunts existed for more than four weeks. Grossly, the endocardial lesions varied from soft friable vegetations to firm, smooth nodules; rupture of valve cusps was frequent. Vegetations in different animals were found to have affected the mitral, aortic, and tricuspid valves, the mural endocardium, and the site of the arteriovenous fistulas. Adrenal gland enlargement followed the creation of large arteriovenous shunts and preceded the development of valvulitis.

Wessler


The author reports a case of subacute bacterial endocarditis caused by Gaffkyia tetragena (Micrococcus tetragena) in a patient with chronic rheumatic valvular disease. This is the eleventh such case to appear in the world literature and the second in the American literature. The organism, generally considered as being of low virulence, nevertheless became rapidly resistant to streptomycin and penicillin, although the latter was given in massive dosage, and death occurred.

Hanno

McDonald, R. H.: Valvular Thrombotic Vegetation in Newborn ("Fetal endocarditis"). Arch. Path. 50: 538 (Nov.), 1950.

The author reports an instance of fetal vegetative endocarditis on the tricuspid valve of a 17 hour old infant with a syphilitic mother who had received 4,800,000 units of penicillin in her fourth month of gestation.

The infant was premature, but appeared to be normal at birth. There was, however, a harsh systolic murmur over the precordium, a few rales were heard in the right lung, and the infant's blood Wassermann was positive. The actual cause of death is not clear. Autopsy revealed a normal heart except for a tricuspid vegetation measuring 8 by 4 mm., well attached by organization to the valve structure, in which there was fibroblastic activity, eosinophilic degeneration of the collagenous matrix and sparse polymorphonuclear infiltration. Bacteriologic study was negative, as was the search for spirochetes.

The author suggests that the vegetation was a bland thrombus formation in a ruptured valvular hematoma or blood cyst commonly seen along the free margins of the valvular leaflets in the newborn.

Gouley

Highman, B., and Altland, P. D.: A New Method for the Production of Experimental Bacterial
**ABSTRACTS**


The authors state that bacterial endocarditis may be induced readily in rats exposed four hours daily to simulated high altitudes (25,000 feet). Twenty-six of 44 altitude rats and only one of 39 nonaltitude controls developed bacterial endocarditis after the intravenous injections of *Streptococcus mitis*, *Str. sanguis* and *Str. bovis* obtained from human cases of subacute bacterial endocarditis. Endocarditis was found in 20 of 26 altitude rats and in 7 of 14 nonaltitude controls injected with *Str. faecalis*. The incidence of endocarditis and the character of the lesions in other organs varied with the species of streptococcus used.

The authors suggested that altitude rats may be used to study the reaction and to test the effectiveness in vivo of various therapeutic agents against specific strains of organisms causing bacterial endocarditis in man. It was also suggested that exposure to altitude may be a useful experimental method for rendering resistant species of animals susceptible to some diseases other than endocarditis.

**Mintz**


The authors analyzed the records of 100 autopsied patients dying of subacute bacterial endocarditis. The available clinical data concerning renal function was correlated with the histopathologic lesions found in the kidneys of these patients. There were 14 instances of frank uremia found in the entire group and the probability of its existence in 9 other cases. Embolic glomerulonephritis was diagnosed as a pathologic entity in 9 patients. Acute, subacute, chronic or "combined" nephritis was found in the remainder of the 23 patients in whom renal insufficiency was found or suspected.

Blood cultures were obtained in 61 patients. Of 7 patients with renal insufficiency, only two had positive cultures ante mortem. *Streptococcus viridans* occurred in 30 of 47 patients without uremia. Although the patients with positive blood cultures did not frequently have renal lesions and the patients with renal lesions had few positive cultures, the authors conclude that subacute bacterial endocarditis resulting from *Str. viridans* may be second in importance only to beta hemolytic streptococcus as a cause of glomerulonephritis. The diagnosis of subacute bacterial endocarditis should be considered when renal insufficiency is found in a patient with valvular heart disease and fever.

**Shuman**


A 20 year old Negro female was admitted to the hospital because of fever, joint pains, and weakness. Examination revealed the presence of a migratory polyarthritis and a systolic apical cardiac murmur. The blood culture was positive for the presence of *Streptococcus faecalis*. Sensitivity tests indicated that the growth of the organism was inhibited by 16 units of streptomycin per cc. and by 16 units of penicillin per cc. Treatment was begun with streptomycin, a total of 138 Gm. being administered over a period of 29 days. In spite of this large dose, the blood cultures remained positive. For this reason, penicillin therapy was instituted, 350 million units over a period of 35 days being administered intramuscularly in conjunction with caronamide given orally. A cure followed the completion of this course of penicillin.

**Wendkos**

**BLOOD COAGULATION**


The authors noted that human serum became increasingly hemolytic against the red blood cells of patients with paroxysmal nocturnal hemoglobinuria (Marchiafava-Micheli Syndrome) during the course of several hours after the blood had been withdrawn and coagulated. This led them to an investigation of the possibility of a common factor being involved in coagulation and hemolysis.

A first series of experiments distinguished sharply between the paroxysmal nocturnal hemoglobinuria hemolytic system and the complement-antibody hemolytic system. All of the known factors in the normal coagulation mechanism were then investigated for their effect upon the paroxysmal nocturnal hemoglobinuria hemolytic mechanism. The hemolytic reaction was found to be an enzyme-like reaction and evidence was elicited suggesting that the heat-labile hemolytic factor in paroxysmal nocturnal hemoglobinuria, if not identical with the serum coagulation accelerator, resembles it in many respects, and is present in plasma as an inert precursor which is activated by thrombin.

Dicumarol was able to inhibit hemolysis in a patient with paroxysmal nocturnal hemoglobinuria but it did not reduce the hemolytic precursor and did not prevent hemolytic crises. However, it may be of value in the disease when thrombosis is a threat. Heparin, on the other hand, may be dangerous, since dilute heparin facilitates the activation of the hemolytic enzyme by thrombin.

It is suggested that some as yet undiscovered dicumarol-like drugs which would inhibit the production of serum Ac-globulin factor and of the hemolytic factor might offer a means of treatment for patients with paroxysmal nocturnal hemoglobinuria. In addition, a new approach to the coagulation problem is provided by the knowledge that paroxysmal nocturnal hemoglobinuria cells are lysed.
by a substance related to the coagulation mechanism.


The one-stage prothrombin consumption test (serum prothrombin time) is theoretically dependent upon at least four factors: (1) the concentration of unconverted prothrombin in the serum; (2) the concentration of thrombin; (3) the "serum accelerator effect"; (4) and the amount of unconverted labile factor (factor V or plasma Ac-globulin).

The labile factor appears in excess and its concentration can be disregarded as a variable. In addition, if an adequate incubation period is allowed, thrombin is neutralized by the natural anti-thrombin. The serum prothrombin time, therefore, is influenced principally by the residual prothrombin concentration and the accelerator effect of serum.

The present studies demonstrate that in conditions characterized by limited thrombin formation and a high residual serum prothrombin activity (hemophilia, severe thrombocytopenia), the serum accelerator effect is weak. The authors conclude, therefore, that the serum prothrombin activity as determined by the one stage technic is a good index of the efficiency of the prothrombin conversion mechanism.


This paper reports the effectiveness of large doses of water-soluble vitamin K preparations (Hykinone and Synkayvite), administered intravenously, in controlling excessive hypoprothrombinemia caused by dicumarol in 8 patients. Patients who were abnormally sensitive to the effects of dicumarol (that is, who show excessive prothrombin time prolongation with low plasma levels of dicumarol) responded satisfactorily within 24 hours after a single dose of water-soluble vitamin K, but repeated doses were necessary in those patients with hypoprothrombinemia who had high plasma dicumarol concentrations.


The authors report that in 24 cases with thromboembolic phenomena, intramuscular heparin in Pitkin's menstruum was effective in all but three cases in doses of 200 to 400 mg. every 12 hours. There was a latent period of 6 to 48 hours before adequate clotting times were obtained necessitating the use of intravenous heparin where a rapid effect was needed. Coagulation times fluctuated considerably from day to day in the same patients and were markedly different from patient to patient as the result of differences in rate of absorption and sensitivity to heparin. They found the severity of local reactions and the tendency toward extensive bleeding into the injection site to be serious disadvantages.


The author reports that in six normal subjects, heparin in Pitkin's menstruum, in 300 mg. dosage, gave effective prolongation of the clotting time from 9 to 12 hours in 5 cases and up to 21 hours in 1 case. Protamine sulfate in 1 cent solution given intravenously was found to be effective in proper dosage in shortening the coagulation time. Ten cases with thromboembolic phenomena were treated with 8,000 to 10,000 I.U. intravenously and 300 to 400 mg. heparin/Pitkin subcutaneously with good results. No single dose was effective for more than 12 to 24 hours so dosage schedules were arranged on this basis depending on the clotting times.


The author presents a method for estimating the plasma viscosity and the viscosities of the fibrinogen, globulin, and albumin fractions of plasma. Variations in the viscosities of the fractions reflect changes in the plasma proteins. Changes in the differential plasma viscosity pattern are largely nonspecific, occur in a wide variety of disorders and depend on the degree of acuteness or chronicity of the disease and the degree of involvement rather than on the nature of the morbid process itself.


The authors present a heparin assay technic based on the prothrombin time determination. Commercial preparations of heparin may be assayed rapidly by this method and the results closely approximate those obtained with the tentative U.S.P. method dependant upon per cent clot formation in recalified plasma. Heparin in blood may be determined by the prothrombin time-heparin assay method if the accelerator factors are destroyed by boiling or ether extraction. The assay of heparin anticoagulant activity of blood, serum, plasma and unknown solutions has been made possible by this technic. With this method, the authors demonstrated the failure of blood to inactivate heparin even after 48 hours of incubation. They feel that
continued studies may provide further insight into
the physiologic mechanisms controlling the in vivo
action of heparin.

**Beizer**


In this study an evaluation was made of the acceleration of the dilute prothrombin time in relation to thromboembolic disease. In only one-third of the patients with intravascular clotting was the prothrombin time decreased to 284 seconds or less. A similar number of control patients also manifested an accelerated prothrombin time. Therefore it was felt that this test did not aid in the diagnosis of thromboembolic disease.

It was demonstrated that patients with accelerated prothrombin times required no more dicumarol for maintenance of therapeutic levels than did patients with normal prothrombin times at the initiation of therapy. This evidence opposes the concept of hyperprothrombinemia in patients with accelerated prothrombin times. Fibrinogen determinations were performed simultaneously with the dilute prothrombin time in one group. Acceleration of the prothrombin time papeared to be associated with an elevated plasma fibrinogen level.

**Shuman**

**CONGENITAL ANOMALIES**


The authors report findings in 4 patients strongly suggestive of a patent ductus arteriosus, who had an exploratory operation. In none of these cases was a patent ductus arteriosus found. All of the patients had a high pulse pressure, prominence in the region of the pulmonary conus, an atypical murmur, and a femoral thud. Three patients had systolic and diastolic murmurs at the base, increased prominence of vascular lung fields, and a capillary pulse. On the basis of these findings and the negative operative results, an aortic pulmonary communication due to a defect of the aortic septum was thought to be the most likely diagnosis. There was no postmortem evidence because all of the patients recovered postoperatively.

Convincing evidence in the first case was that cardiac catheterization failed to demonstrate an intracardiac shunt; there was a markedly increased pulmonary blood flow; and at operation the thrill was completely eliminated by pressure near the origin of the aorta and pulmonary artery. In the second case, catheterization studies were compatible with an aortic-pulmonary communication; the angiocardiogram showed a second filling of the lung coincident with filling of the aorta; and at operation, a definite thrill was palpated over the origin of the pulmonary artery. In the last 2 cases at operation a thrill was found in the same location.

Sixteen cases have been previously reported in the literature. The defect is fairly uniform in size and location, varying from 0.5 cm. to 1.5 cm. in diameter, and is situated a short distance above the semilunar valves. The authors believe that the lesion may be more frequent than the published reports indicate. They further suggest the possible use of retrograde aortography to establish the diagnosis and thus spare an exploratory operation.

**Margolies**


The authors describe the electrkymogram of 12 patients with coarctation of the aorta. The electrokymographic curve distal to the stenosis differs from that in the ascending aorta in that the onset is later, the rise occurs more slowly and the notches on the descending limb tend to disappear. These effects are similar to the relationship of the pulse waves in the femoral artery as compared to those in the carotid artery.

**Schwedel**


Cerebral abscess occasionally complicates congenital heart disease. Surgical “cures” have rarely been reported. This paper describes two instances with good therapeutic results. A 10 year old boy with probable Eisenmenger complex had an abscess in the left posterior parietal region. Aspiration and penicillin led to considerable improvement although a residual slight hemiparesis remained. In an 8 year old boy with the tetralogy of Fallot a subcortical abscess developed three years after a Blalock operation. Surgical and antibiotic therapy led to prompt recovery. No organism was isolated in either case. Since the cerebral abscess is usually single it is potentially amenable to surgery and the prognosis is improved by modern antibiotics.

**Waife**


The authors report 81 cases of congenital heart disease in 13,883 autopsies. Of this group there were 5 examples of the tetralogy of Fallot; 3 examples of associated ventricular and atrial septal defects; 2 of ventricular and atrial septal defects associated with a rudimentary right ventricle; 11 of an isolated ventricular septal defect. Cerebral abscesses were observed in 4 of the cases of the tetralogy of Fallot; in 2 of the cases of associated ventricular and atrial
septal defects; in 1 of the cases with a rudimentary right ventricle associated with ventricular and atrial septal defects; in 4 of the cases with an isolated ventricular septal defect. It is believed that the shunting of blood into the systemic arterial vessels without the benefit of the filtering action of the pulmonary capillaries plays an important role in the etiology of these abscesses.

**Wendkos**


The author found that in 9 of 21 patients a patent ductus arteriosus was demonstrable and an apical diastolic murmur was heard. In 5 of this number, phonocardiographic studies confirmed the presence of an apical diastolic murmur which could readily be confused with the murmur of mitral stenosis. The apical diastolic murmur associated with a patent ductus arteriosus is ascribed to (a) enlargement of the left ventricular cavity secondary to the increased work imposed upon the left ventricle by reason of the shunt, (b) increased rate of blood flow through the mitral valve, (c) increased blood volume reaching the left auricle. The enlarged left ventricular cavity distal to a normal mitral ring creates the situation of a relative mitral stenosis, and sets the stage for the production of a diastolic murmur when the other factors already mentioned are also operating.

**Wendkos**

**CONGESTIVE HEART FAILURE**


Comparative studies were carried out in patients who had gross hepatomegaly and ascites as a result of congestive heart failure and in cases of portal cirrhosis with ascites. In both groups the sodium and chloride excretion in the urine was found to follow a similar pattern during the period of clearing of ascites and edema. The cardiac patients showed almost consistently abnormal bromsulfalein dye retention values when freed of their ascites and edema. The bilirubin and total protein content of subcutaneous tissue fluid and of pleural and peritoneal fluid was less than that of plasma. However, there was no constant relationship between the ratio of plasma bilirubin over plasma protein to the ratio of subcutaneous tissue fluid bilirubin over tissue fluid protein, or to the ratio of pleural or abdominal fluid bilirubin over protein in these fluids.

The authors concluded that a permanent impairment of hepatic function may exist in the cardiac patients studied and that it may add to the effects of cardiac decompensation in disturbing water and sodium balances.

**Schwartz**


The concentrations of electrolytes in the saliva of patients with congestive heart failure on a low-salt regimen and on a regular salt intake were compared to control noncardiac subjects. It was found that congestive failure was associated with lowered sodium and chloride and higher potassium concentrations in the saliva, when compared with normal subjects. However, those on a salt-poor diet did not show significant differences in the electrolyte concentrations of saliva. No relationship was found between serum electrolyte and saliva electrolyte concentrations.

**Waife**


The authors report the case of an extremely obese 53 year old white male who developed auricular fibrillation and left ventricular failure, from which he succumbed eight days later, after undergoing a combined abdominoperineal resection of a carcinomatous bowel. Except for the finding of some fatty infiltration of the heart, the necropsy did not reveal any significant cardiac pathology. The myocardial fibrils were normal and the coronary vessels were normal except for slight intimal thickening. The endocardium was thin and a few areas of fat deposition were noted around the subendocardial vessels. It is suggested that this case may be an example of cardiac failure induced by physiologic disturbances within the myocardium, inasmuch as significant structural cardiac changes could not be demonstrated following microscopic examination of the cardiac tissues.

**Wendkos**


In this discussion, the authors have attempted to indicate some of the problems involved in the therapy of intractable heart failure and some of the immediate areas of attack. Particular emphasis is placed upon the electrolyte disturbances which can accrue in cases of heart failure with or without an intensive diuretic program. The proper identification of the disturbed relationships of the various constituents within the electrolyte partition of the body assumes importance in such cases because the reversibility of heart failure is largely dependent on their correction. For this reason, free use should be made of modern laboratory techincs for the detection of hyponatremia, hypochloremia, acidosis, alkalosis, hyperkalemia, hypokalemia and azotemia. The authors feel it is important to recognize the prerenal factors which constitute additive causes of the pronounced renal insufficiency often seen in intractable...
heart failure, because these factors are reversible. Unquestionably, the chemical disturbances associated with heart failure represent currently an area for therapeutic exploration which will be pierced and exploited as investigators attain a clearer view of the biochemical problems involved.

WENDKOS


The authors report the case of a 71 year old female who had experienced for two years sudden episodes of dyspnea associated with a sensation of heaviness in the chest. The attacks usually persisted for an hour or two, were usually provoked by the ingestion of a heavy meal and were relieved by assuming the prone position. Aside from a moderate degree of obesity, physical examination did not disclose any significant findings. X-ray study of the esophagus and stomach established a dome-like shadow in the chest to be an air filled thoracic stomach lying in the posterior mediastinum. The pylorus occupied a position just below the right leaf of the diaphragm. The electrocardiogram was normal. It is considered that interference with the venous return of blood by the obstruction produced by the distended thoracic stomach might have been an important factor contributing to the paroxysmal dyspnea simulating left ventricular failure, although there is the possibility that reflex diminution of coronary flow induced by the distended viscus in the thorax might have been responsible for the symptoms.

WENDKOS

CORONARY ARTERY DISEASE, MYOCARDIAL INFARCTION


The authors found that injection of an irritant (croton oil, pricine or cantharidine) beneath the adventitia of the ascending aorta in rabbits and dogs was followed by the development of severe myocardial lesions and by significant changes of the electrocardiogram. The histologic changes of the myocardium consisted in vascular lesions, hemorrhagic interstitial infiltration and degenerative alterations of the muscle fibers reaching the state of coagulative necrosis, and were usually scattered throughout the myocardium. In one experiment, a confluent necrosis of the anterior wall was seen macroscopically. The electrocardiographic changes consisted in T wave alterations, in QRS and T anomalies of the type seen in myocardial infarction, and in disturbances of the cardiac rhythm (bradycardia and premature beats).

The authors consider the possibility of a reflex mechanism in the development of myocardial infarction, which could account for myocardial necrosis observed in the presence of normal coronary arteries, in pulmonary embolization or in disease of the aortic wall.

Pick


In the past there have been four main approaches in the attempt to augment the circulation of the ventricular myocardium in cases of coronary artery sclerosis: (a) the application of a graft to the surface of the heart; (b) cardiopericardioectomy; (c) cardiac vein ligation; (d) arterialization of the coronary venous system. Further studies of vascularization of the ventricular myocardium by left internal mammary artery implantation are reported. Macroscopic and microscopic findings of animals developing collateral circulation are shown and described. The frequency of anastomotic formation and the degree of protection afforded by these anastomoses are discussed. An anastomosis has been shown to occur between the internal mammary artery and the left ventricular circulation in from 50 to 73 per cent of the animals. The degree of protection against coronary occlusion varies according to the size of the anastomotic channels. When there is a large anastomosis present, death and infarction from coronary occlusion do not occur. Thrombosis of the implant limits the size of the anastomosis. When thrombosis occurred, in many instances small anastomoses developed through recanalized channels. The operation is technically simple and appears not to damage the heart. Several advantages of the procedure and its potential value in certain human cases of coronary insufficiency are emphasized.

Beck


The authors, with the aid of two illustrative case reports, stress the importance of recognizing the painful shoulder-hand syndrome which often follows myocardial infarction. A correct diagnosis will prevent needlessly prolonged bed rest, occasioned by the mistaken impression that the pain in patients recovering from a myocardial infarction represents continued myocardial damage; and inappropriate therapy based upon erroneous diagnoses of arthritis, bursitis, psychoneurosis, and other conditions may be avoided.

Hanno


The authors present a study of the effects of dicumarol in a series of 122 cases of acute myocardial infarction, as compared with the results in 128 control cases treated without anticoagulants. The incidence of peripheral arterial emboli and phlebothrombosis was lower in the treated group (26 thromboembolic episodes in 19 cases) than in the controls (32 thromboembolic episodes in 26 cases), but the total mortality figures were higher (18.9 per cent and 12.5 per cent, respectively, in the treated and untreated cases). Bleeding complicated anticoagulant therapy in 10 cases, with two deaths resulting from hemorrhage.

The authors conclude that Dicumarol, as administered under routine hospital conditions, is largely ineffective in the treatment of acute myocardial infarction. Variations in the sensitivity of different patients to Dicumarol, inexperience on the part of the different physicians handling the cases in maintaining safe but therapeutically effective prothrombin levels, and the unavailability of prothrombin time determinations on weekends and holidays, all militate against ideal results with dicumarol.

HANNO


The authors feel that apparent similarities between origins of delayed ectopic discharges following coronary occlusion and focal epileptogenic discharges suggests that such drugs as Dilantin and phenobarbital sodium might suppress ectopic ventricular discharges which accompany acute myocardial infarction. The anterior descending branch of the left coronary was occluded in two stages, 30 minutes apart. No animals were lost by fibrillation by this method. After 4.5 to 8 hours ectopic ventricular tachycardia develops. Ectopic frequencies above 180 per minute require 125 to 200 mg. per Kg. of Dilantin sodium intravenously in divided doses to reduce the rate to zero and keep it at less than one half control rates for five hours. At rates below 170 Dilantin in total amounts of 100 mg. per Kg. or less is effective.

Phenobarbital sodium alone reduced ectopic rates briefly. When two doses of Dilantin sodium (total 25 mg. per Kg.) followed, all ectopic beats were eliminated for two hours and the ectopic rate had only returned 30 per cent in six hours. It is concluded that prior and intercurrent use of phenobarbital increases the effectiveness of Dilantin and reduces the amount required to suppress ectopic activity. Dilantin also depresses the pacemaker, but to a lesser extent than ectopic foci. Dilantin sodium must be given slowly. Rapid injections produce an acute hypotension and hyperpnea. In a few trials the administration of sufficient Dilantin alone to suppress all ectopic activity produced restlessness, rigidity of limbs, and opisthotonus. After the use of phenobarbital, the relatively small amounts of Dilantin needed did not cause such symptoms.

Oppenheimer


The present study is a report on resection of the sympathetic anginal pathway including the first to the fourth thoracic ganglia on both sides. Ten patients who were subjected to this procedure had satisfactory relief. Three patients had complete relief of pain, but there was a residual sense of throat constriction. The authors feel that the pernicious cycle of anginal pain in status anginosis can be broken by sympathectomy on the same basis that reflex sympathetic dystrophy is helped. They do not feel that Horner's syndrome is a valid contraindication to carrying the resection to the lower stellate ganglion, especially when the resection is bilateral. Findings suggest that good results might be expected in cases of the shoulder hand syndrome and Dupuytren's contracture. Disadvantages of the operation include ptosis or Horner's syndrome, postural hypotension, and severe sweating in the groins with swollen nasal membranes. The last symptom tends to subside early.

Kitchell

ELECTROCARDIOGRAPHY


The authors studied the spread of impulse in the auricles in 4 normal dogs and one monkey by variously located leads from the cavity of the right auricle taken simultaneously with esophageal leads. From a circumscribed area in the right auricle, located between the orifice of the superior vena cava and the auricular septum, bifid P waves were regularly obtained. The first peak of this wave corresponded to the peak of P, obtained in other parts of the right auricle, while the second peak occurred simultaneously with the auricular deflection of the esophageogram. Histologic examination of the area, which yielded biphasic P waves, revealed no pathologic lesion but the presence of muscle fibers resembling those of the specific conduction system. The authors conclude that the impulse transmission from the right to the left auricle is confined to a specific conduction system, which was as described previously in a similar location as Bachmann's interauricular bundle.

Pick

The authors studied two hundred normal males and females varying in age from 17 to 57 years who were free of cardiac complaints and had a normal physical examination. Following the recording of the normal electrocardiogram, the subjects were given the single two step test, and standard leads I, II, and III and V4 or V5 were taken immediately and one, two, and five minutes afterward. At least 24 hours later, the procedure was repeated. The electrocardiograms were analyzed for rate, RS-T segment deviation, P and T wave alterations, QRS complexes, and arrhythmias.

On the basis of the criteria pertaining to the RS-T segment depression, 2.5 per cent of the 200 normal persons had positive single two step tests, 5.5 per cent had positive double two step tests, and 0.5 per cent had either positive single or positive double two step tests or both. In four persons without associated RS-T segment depression, the T waves became flat immediately after exercise. There was no instance of inversion of the T wave in lead I, II, or V4. Increased amplitude of the P wave occurred in a few instances. The P-R interval was essentially unaltered. The authors discuss the advantage of the precordial lead in detecting RS-T segment changes, and particularly the advantage of the V lead over the CF lead, because in the latter lead any negativity recorded in the precordial lead would be offset by negativity recorded in the left leg.

Cornell


An 82 year old male died during a syncopal attack which lasted three hours and during which repeated convulsions occurred. In this terminal unconscious state, a series of electrocardiograms was taken. At the beginning, the standard limb leads showed complete A-V heart block with an idioventricular rate of 30 per minute, and coupled ventricular extrasystoles. Later he developed a paroxysm of pre fibrillatory ventricular tachycardia (ventricular flutter) with a rate of 300 per minute, during which there were a number of cycles of ventricular fibrillation, followed by a period of ventricular asystole during which the auricles continued to beat at a rate of 70 per minute. Finally, a prolonged period of ventricular tachycardia occurred which continued for a period of about 10 minutes. Abrupt cessation of this mechanism with complete standstill of the galvanometer string occurred at a moment when the machine had been stopped for rewinding, and only a feeble ventricular response could be produced with the intracardiac injection of adrenaline. Necropsy revealed moderate dilatation of the heart but no definite cardiac enlargement. There were small areas of fibrosis, but no gross evidence of any acute myocardial process was visible. Except for sclerotic changes at the base of the aortic valve and septum, there were no findings of significance in the rest of the examination, including the microscopic study. This case illustrates the importance of recognizing the underlying cardiac mechanism in Stokes-Adams syncope. The treatment will differ significantly depending upon whether the syncope is due to a heterotopic ventricular rhythm or to ventricular standstill.

Wendkos


Serial electrocardiograms were taken on 6 patients ranging in age from 4 to 26 hours old, during the exsanguination replacement procedure. Four hundred eighty to 650 cc. of citrated blood was administered over 70 to 130 minute periods. Ten cc. of 10 per cent calcium gluconate was given intravenously over a two to four minute period at the conclusion of the transfusion.

There were electrocardiographic changes characteristic of hypocalcemia during the replacement procedure. In 4 patients there were marked fine skeletal muscle tremors which obscured the P and T waves, thus preventing the measurement of electrical systole. However, in the other 2 patients there was an increase in the Q-T interval from 0.422 and 0.428 to 0.525 and 0.512 seconds respectively. The Q-T interval increase was due to a prolongation of the S-T segment. A slight decrease in the amplitude of the T waves in leads I and aV1 also appeared. There was no change in the QRS complex, the duration of the P-R interval, or the electrical position. In 2 patients, the heart rate increased 20 or more beats per minute.

The intravenous administration of calcium reversed the electrocardiographic picture abolishing the muscle tremors and returning the Q-T interval to normal. However, changes characteristic of hypercalcemia appeared after all the calcium had been absorbed. There was a constant reduction in the heart rate from 24 to 34 beats per minute, and a constant decrease in the Q-T interval to below the value at the start of the procedure. In 4 cases the T waves became isoelectric or inverted immediately after the calcium had been given. During the course of the transfusions, 2 patients showed slight elevations and 2 showed slight reductions in total serum calcium. This demonstrates that in the presence of a normal or elevated serum calcium, the electrocardiogram can detect a reduction in ionized calcium.

Margoles

After studying various degrees of ventricular aberration following conduction of auricular premature beats, the author presents his concept of ventricular preponderance as an expression of a conduction delay within the septum. In contrast to patterns representing bundle branch block and conduction defects in the free wall (peripheral block), preponderance patterns are not associated with a delay of the intrinsicoid deflection in either left- or right-sided chest leads. However, septal conduction delay (preponderance) can be associated with a peripheral block and may produce unusual patterns. Right axis deviation, sometimes seen in disease of the left heart, and the “concordant” type of left heart strain can, in the author’s opinion, be explained by the combination of a delay in activation of the left side of the septum and of the free wall of the right ventricle.

Pick


A-V block of congenital origin is a rare disturbance; only about 30 true examples have been presented in the literature. The authors report 2 of their own observations among 650 cases of congenital heart disease, in which an electrocardiogram was available. The first was an infant with situs inversus, in whom the disturbance of the heart rhythm was detected at the age of 4 months. In the second patient, with signs of Eisenmenger’s disease, the congenital origin of the heart block was uncertain, since the presence of heart block was first found at the age of 7 years.

Endocrine Effects on Circulation


The authors studied the hepatic blood flow and cardiac output by the catheterization technic in 40 patients with active hyperthyroidism. In spite of a definitely increased cardiac output the hepatic blood flow was not significantly increased. The splanchnic blood flow was essentially normal but there was increased oxygen extraction in hyperthyroidism. Regional oxygen consumption was greater than the over-all metabolic rate in this disease, and may partially explain the centrolobular anoxia and necrosis.

There was an elevation of systolic and mean pressure, but not of diastolic pressure, in the right ventricle and pulmonary artery. Associated with this there was an elevated pulmonary blood flow but a normal pulmonary peripheral vascular resistance.

This data indicates that normal peripheral vascular resistances are found in the lungs, splanchnic area, and brain, in the presence of an over-all decrease in resistance. This suggests that a reduction in resistance occurs in such sites as the skin.

Waife


Using the nitrous oxide method, cerebral blood flow and metabolism was measured in 8 patients with myxedema. In 7 other myxedematous subjects the cardiac output was determined by the direct Fick method.

It was found that the cardiac output was reduced (47 per cent from normal) and that the total vascular resistance of the body was increased in myxedema.

Cerebral blood flow was reduced (38 per cent), as was the cerebral oxygen consumption (27 per cent), although cerebral vascular resistance was increased greatly (91 per cent). An excellent correlation was found between the basal metabolic rate and the cerebral blood flow.

Three patients restudied after thyroid therapy had a definite return toward normal in their cerebral metabolic functions.

It is suggested that the mental changes in myxedema are the result of decreased cerebral oxygen and glucose metabolism and that the reduction in cardiac output is secondary to a generalized reduction in organ blood flow.

Waife


The rise in blood pressure which ordinarily follows administration of DCA did not occur in the presence of cortisone. Increased heart size and presence of renal damage in DCA-cortisone treated animals are taken to indicate that cortisone cannot be considered antagonistic to the cardiovascular-renal effects on DCA. The animals in these experiments did not gain weight. This fact, coupled with a reduction in the number and quality of pituitary eosinophiles, suggests a possible mechanism to account for the inhibition of growth. The effect of cortisone on blood pressure may be due to failure to gain weight. The ability of Cortisone by itself to elevate plasma potassium and chloride is more than overbalanced when DCA is given simultaneously. Cortisone, in the doses used (2 mg. daily), produced histologic
renal glomerular lesions which were added to those of DCA when the two were given simultaneously.

Oppenheimer


The authors incubated Pitressin with citrated blood of patients in the latter half of pregnancy. When this material was injected into normal subjects undergoing water diuresis there was little or no decrease in the urinary output. However, when Pitressin and blood from nonpregnant patients was given, antidiuresis developed.

In the nonpregnant controls, the concentration of chlorides in the 90 minute volume was markedly increased, whereas the chlorides in the pregnant blood experiments were only slightly increased or even lowered. Sodium and potassium levels in the urine paralleled the chloride results. The authors conclude that blood in the latter half of pregnancy has the ability to inactivate the antidiuretic effect of commercial Pitressin.

Waife


Congenital adrenocortical hyperplasia is a familial disorder, characterized by increased production of adrenal androgen and decreased production of the electrolyte regulating hormones. Although newborn females with this disease invariably have obvious genital abnormalities, male infants ordinarily demonstrate no gross disorder of sexual development. The characteristic increase in 17-ketosteroid excretion is essential for diagnosis in the male. Adrenal insufficiency with hyperpotassemia is a common complication.

The authors report 3 such cases in siblings, in 2 of which marked abnormality in cardiac rhythm was a dominant clinical feature. Electrocardiographic studies on one child revealed a normal sinus rhythm with left bundle-branch block and partial auriculo-ventricular block, followed some hours later by numerous ventricular beats occurring frequently in pairs. An electrocardiogram in the second case disclosed auricular fibrillation with periods of complete heart block, and a later tracing showed a normal sinus rhythm with definite hyperpotassemic effects. The authors recommend the V leads for detecting hyperpotassemic changes.

Hanno


Twenty-one patient are presented with the study of three factors: the mother and the hyperthyroidism, the pregnancy and its complications, and the child. The author concludes that subtotal thyroidectomy after proper preparation can be done during the first two trimesters. Full term living infants born to such patients have been normal. In 15 cases followed to term there were ten full term normal deliveries with eleven healthy children; one abortion at five months; two premature births at eight months; one case of toxemia at term with death of the infant and one caesarean section with death of the infant. This represents a fetal loss of 33 per cent. Discussions are presented which show dangers of hypothyroidism subsequent to thyroidectomy or induced by antithyroid drugs. Therapy directed towards fetal salvage is suggested including avoidance of overdosage with antithyroid drugs, administration of thyroid and iodine, and possible use of diethylstilbestrol during pregnancy.

K offline


The authors measured work performance of gostroneum muscle and arterial blood pressure simultaneously in 2 normal and 4 desoxy corticosterone-treated adrenalectomized dogs. The adrenalectomized dogs had 605 to 650 mg. per cent of NaCl and glucose 60 to 85 mg. per cent. Three of the adrenalectomized dogs had blood pressures of 95, 110, 150 mm. Hg, the fourth was 70 mm. Hg. Normal dogs survived direct muscle stimuli at rates of 3 per second for 6 and 12 hours without fall in blood pressure or decrease in muscle contractions. In the three adrenalectomized animals blood pressure, after being sustained for a time, fell to levels of 60 to 75 mm., at which levels decreased muscle contractions appeared 10 to 45 minutes after onset of falling blood pressures. Blood pressure fell until the dogs died. The dog with the low pressure had a rapid fall in blood pressure and an immediate decrease in contraction of skeletal muscle. Death occurred in 60 minutes. A relation between blood supply and fatigability in the intact adrenalectomized animal is demonstrated. Transfusion or pressor drugs produce temporary elevation in blood pressure and partial or complete restoration of the initial height of contraction. It is emphasized that blood pressure fall preceded signs of muscular fatigue. It is further suggested that failing work performance of adrenalectomized animals is a result of circulatory maladjustment to demands of work. The role of C-11 oxysteroid lack in relation to fatigue is stressed.

Oppenheimer

Hypertension

ABSTRACTS


The authors determined the level of cholinesterase in the blood serum of 40 normotensive persons and in 50 hypertensives of various etiology. Differences in the level of cholinesterase found in the two groups were not of statistical significance. The cholinesterase content of the serum does not permit a distinction of various forms of hypertension, nor can it be correlated with the degree of pressure elevation.


The authors treated 14 patients with severe hypertension with a total of 39 infusions of a dilute mixture of Dibenamine. In all patients, the first effect was pupillary constriction. The effect on the blood pressure was variable in degree and duration, and could not be correlated directly with either the dosage or rate of injection. The most striking therapeutic effect consisted in the relief, for from three days to several weeks, of hypertensive headache in seven patients in whom headache had been refractory to all other measures. Distinct improvement in vision was also noted in three patients. Three patients who were very irritable before receiving Dibenamine became docile and cooperative after administration of the drug. Toxic reactions consisted of nausea, vomiting, drowsiness, restlessness, mental confusion and convulsions. By appropriate tests, visceral damage by this drug could not be demonstrated. Seventeen ambulatory patients with a benign type of essential hypertension received the drug by the oral route, but all developed nausea and vomiting following ingestion of amounts which were effective in either lowering the blood pressure or lessening the response to the cold pressor test. It is concluded that Dibenamine is clinically useful only by the intravenous route in the hospitalized patient with severe hypertension and hypertensive encephalopathy. Intravenous Dibenamine is contraindicated in the treatment of the ambulatory hypertensive patient not only because of its toxicity, but also because of the profound and protracted orthostatic hypotension which results from its administration by this route.

Wendkos


In dogs under Nembutal both unilateral acute renal ischemia and unilateral chronic renal arterial constriction associated with elevation of blood pressure were accompanied by a consistent alteration of pH of the cortex of the kidney toward the acid side as compared with the normal kidney. Under the same circumstances oxygen tension was also lowered. Acidification of the cortex did not depend entirely on hypoxia. After moderate degrees of clamping of the renal artery oxygen tensions fell and then readjusted to control values. The decided change in pH toward acidity persisted under these conditions. As a result, slight renal ischemia with a normal oxygen tension and an acid pH obtained. Both acute and chronic unilateral preparations were less sensitive to small doses of epinephrine than the control normal kidney.

Oppenheimer


The first paper, Baseline Study: Effects in Eighty-Six Cases of Prolonged Hospitalization on Regular Hospital Diet presents complete baseline studies in 86 hospitalized patients with blood pressures of 220/120 or more who ate regular hospital diet for a mean period of 9 weeks. Twenty to 50 per cent of the patients improved symptomatically, especially those with cardiac failure. Headaches persisted, however, and the blood pressure changed little. The variations in response to hospitalization were so great and unpredictable that each subject had to serve as his own control.

The second paper, Results with Unmodified Kempner Rice Diet in Fifty Hospitalized Patients, presents data on 50 patients with essential hypertension who were maintained on the Kempner rice diet under controlled hospital conditions for a mean period of 10½ weeks after a control period of 10 weeks. The results were in essential agreement with those described by Kempner. Nine patients failed to improve, but marked symptomatic improvement occurred in many patients. The most serious complication of the rice diet was the activation of obsolete peptic ulcers.

On the rice diet, a mean fall of 29 mm. Hg and 16 mm. Hg respectively in the systolic and diastolic pressures occurred. The fall in pressure was related largely to the low salt content of the diet. Cardiac catheterization showed a lowered peripheral vascular resistance. No significant change occurred in the mean serum concentration of sodium, calcium, and inorganic phosphate; the mean serum potassium and bicarbonate rose; and the serum chloride fell significantly. Liver impairment was suggested by the decline in the cholesterol esters, the rise in serum neutral fats, and the changes in the liver function tests.

The authors believe the rice regime, because of its low sodium content, specifically reduces the blood pressure in a significant proportion of patients with severe essential hypertension. Cholesterol determinations before and during treatment are recommended to appraise the effects of the rice diet. Protracted effective maintenance of the Kempner regime imposes such hardship upon the patient as
to render it virtually impracticable for general use. Modifications of the diet are suggested.

HARRIS


The rice diet produced a significant fall in the total, free, and esterified serum cholesterol levels in a large group of patients with hypertensive vascular disease. Prior to the beginning of the rice diet 29 of 154 patients had a total serum cholesterol of 220 mg. per 100 cc. or less; 124 patients had a total serum cholesterol concentration greater than 220 mg. per 100 cc. The mean ratio of free to total cholesterol in the first group remained unchanged during the diet. In the second group of patients whose initial total serum cholesterol was 221 mg. per 100 cc. or more, the mean ratio of free to total serum cholesterol increased during the rice diet.

HARRIS


Analysis of the causes of death in 376 patients with essential hypertension of varying severity revealed that the milder hypertensive patients lived longer. If they died of causes related to hypertension, they usually succumbed to coronary disease, congestive heart failure, and cerebrovascular accidents. Patients with malignant hypertension lived a shorter period and died in uremia. The incidence of significant coronary sclerosis was highest in the milder hypertensive patients and lowest in the patients with malignant hypertension. Associated renal impairment was definitely correlated with the severity of the hypertension. Although correlation existed between the weight of the heart and the severity of the hypertension, no correlation occurred between the weight of the heart and the duration of known hypertension.

HARRIS


The authors studied the course of 500 hypertensive patients subjected to bilateral thoracolumbar sympathectomy over a six year period. Comparison of the survival curves of this group with a comparable group treated medically at the end of three years showed no significant difference in groups 1, 2, and 3. A definite prolongation of life in the advanced cases of hypertension (group 4) was found in the operated cases.

The original Smithwick procedure is the operation of choice, since the degree of blood pressure reduction and the subjective improvement obtained with more extensive procedures do not justify the increased morbidity, postoperative complications, and higher mortality rate. Thoracolumbar sympathectomy is indicated as a palliative procedure for hypertensive patients in group 4 and for selected cases in group 3. Contraindications to operation include intractable cardiac failure, renal insufficiency with urea nitrogen above 20 mg. per cent, evidence of mental confusion, history of a cerebrovascular accident, myocardial infarction less than six months before operation, and a history of a serious psychiatric disturbance at any previous period.

HARRIS


The authors found in a previous study that no significant difference existed between the blood pressure response to 1-norepinephrine between normotensive subjects and in hypertensive patients before sympathectomy. Thoracolumbar sympathectomy did not strikingly alter the pressor response of hypertensive patients to intravenous norepinephrine, although some hypertensives soon after splanchinecctomy may show increased sensitivity to the smaller doses. However, the pulse rate response, which was a definite bradycardia in normotensives, failed to occur in the preoperative hypertensive group. Following thoracolumbar sympathectomy the pulse rate of hypertensives slowed normally during the hypertensive response to intravenous norepinephrine.

WAIFE


Rats were rendered hypertensive by means of a silk perinephritis. Animals on low (0.0 to 0.05 per cent) sodium chloride had pressures which declined 15 to 51 mm. Hg. after 40 days. Diets with lowest sodium had the greatest hypotensive effect. Natural sources of food as rice or potato made no difference. The diets studied lowered pressure without any significant loss in body weight. Casein (4 to 18 per cent) was without effect on the hypotensive response to salt restriction. Twice as many rats with hypertension survived 220 days postoperatively on low sodium diets as did hypertensive controls. Since removal of the sick capsule lowered pressure in 3 of 4 animals, and Etamon chloride or surgical anesthesia with Nembutal failed to do so, the authors concluded that hypertension in these animals depended on renal factors rather than nervous ones.

OPPENHEIMER

The author describes techniques for the performance in two stages of total, or less complete but extensive, sympathectomy and splanchnicectomy by use of the transthoracic and extraperitoneal approaches. The procedures described have been carried out 55 times in 30 hypertensive patients whose mean age was 42 years. The author strongly favors the surgical approach described because of the adequacy with which the nerves are exposed, the direct ease with which any vessels which might prove troublesome can be dealt with, the exactness with which the resection can be carried to the desired extent, and the generally good manner in which the procedure has been tolerated. These operations are attended by a reasonably low mortality and morbidity.

Beck


The authors performed this study to determine the effect upon the blood pressure at maturity of varying degrees of choline deficiency for a five day period after weaning and to observe the effect of a similar choline deficiency on mature rats.

Twenty out of 28 (71 per cent) of weanling rats, surviving a five-day choline-deficient diet and maintained on a normal diet for six months thereafter developed arterial blood pressure levels of over 150 mm. Hg. Hypertension did not develop in the animals fed 0.4 mg. or 2.0 mg. of choline. Similarly, hypertension did not develop in the group of older rats fed either a choline free or low choline diet for 10 days and then a normal diet for six months.

Mintz


In 5 patients hypertension and acute cerebral disturbances were associated with transient hypochloremia and increases in blood urea. There was no evidence of chronic glomerulonephritis although chronic pyelonephritis was present in 2 cases. Vomiting was probably not the cause of the plasma hypochloremia (230 to 310 mg. per 100 ml.) because some vomited little or not at all and the plasma carbon dioxide values were normal. Subcutaneous administration of saline seemed to improve their condition.

Waife


Abdominal sympathectomy had a beneficial effect only in patients belonging to groups 0, I and II of Keith, Barker, and Wagener and was effective in group III when preoperative tests indicated the presence of a vasospastic factor and only moderate impairment of renal function. Extensive dorsolumbar sympathectomy should be preferred to abdominal extirpation because the late effects are more favorable, particularly in patients belonging to groups III and IV. Group IV, however, should be carefully selected with elimination of cases with greatly impaired renal function. Surgical treatment is justified even in the presence of a slight degree of heart failure.

Renal biopsy during operation permits a fair estimation of the results and a relatively exact prognosis for the future. The more favorable results are obtained when renal alterations are not yet marked. Changes in the retinal vessels correspond roughly to changes observed in the kidneys, but may occur earlier or later than the renal alterations.

Although surgical treatment does not settle the problem of hypertension it brings about an appreciable fall, and protects against sudden increase, of the arterial pressure. Thus, it may prevent a functional, neurogenic hypertension from becoming an irreparable condition with organic, sclerotic vascular changes.

Pick

PATHOLOGIC PHYSIOLOGY


The heart size of intact dogs is correlated with the duration of diastole, mean systolic pressure, stroke volume and work per beat. When epinephrine is infused intravenously, hearts are large and slow with high mean systolic pressures. Stroke volumes and work per beat are less than in controls. Correlation between mean systolic pressure and heart size is set by the fact that when pressures are high the duration of diastole is long. After vagotomy, epinephrine infusion produces a rapid small heart associated with high mean systolic pressures. Stroke volumes and work continue to be less than in controls. Bleeding does not change the differences. At high normal venous pressures, reflex changes in diastolic time are parallel to changes in venous pressure and heart size. When venous pressure is very low the heart is large or small, depending on diastolic filling time. When duration of diastole is very short the venous pressure is determined by the venous return and may be high or low. The most important factor in fixing the diastolic size of the heart, in the intact animal, is the filling time as determined by the heart rate.

Oppenheimer
Chambliss, J. R., Demming, J., Wells, K., Cline, W. W., and Eckstein, R. W.: Effects of Hemo-

The authors report that a potent vasodilator substance is released when small amounts of whole
blood are rapidly injected through a small bore needle into a cannulated coronary artery. Increases
in coronary flow from 50 per cent to slightly over 100 per cent resulted. These increases were not
accompanied by changes in arterial or perfusion pressures. The duration of effect was 5 to 30 seconds.
Whole blood slowly injected was without significant effect. Saline or serum rapidly injected increased
coronary blood flow. Laked blood has similar properties. The authors demonstrated that forcible injec-
tion through a small bore needle traumatized red blood cells. Blood traumatized in a beaker increased
coronary blood flow when slowly injected. Hemolysis of red cells is the common factor in all injections.
This was true for critical evaluation of data from experiments making use of extracorporeal circulation
of blood through long perfusion tubes, squeeze type pumps, differential flow meters, and other types of
mechanical apparatus is emphasized.

Oppenheimer

Nickerson, M. and Nomaguchi, G. M.: Blockade of Epinephrine-Induced Cardiacacceleration in

The authors conclude that the chronotropic re-
sponse of the frog heart to epinephrine produces a
stimulation of utilisable acetate. This may proceed
by a stable pathway, which is constant the year
round and is blocked by β-haloalkylamine and
adrenergic blocking agents, or a labile pathway
present normally only in winter frogs, which is
activated by anterior pituitary gland and blocked
by fluoracetate or iodoacetate. A second mechanism
involved in the chronotropic response to epinephrine
involves a trigger action which is effective only in
the presence of a suitable acetyl substrate. Both path-
ways appear to be independent of energy sources
utilized in the normal contraction of the heart and
in its positive inotropic response to epinephrine.
Epinephrine thus appears to promote production of
the metabolic substrate required for the expression
of its own chronotropic action.

Oppenheimer

Jourdan, F., Heyraud, J., and Collet, A.: Influence
of the Vagal Nerves upon Experimental Nodal
Rhythm. Compt. rend. Soc. de Biol. 144: 1067

The authors produced persistent nodal rhythm
in 5 rabbits by extirpation of the sinus node, and
studied the effects of electrical stimulation of the
peripheral stump of the cut vagus nerve. Stimulation
on the right as well as on the left side had a
marked chronotropic effect, and produced extreme
slowing of the heart rate to complete and prolonged
standstill of the whole heart. A negative dromotropic
effect was demonstrated in electrocardiograms, which
showed a marked increase of the shortened P-R
interval, and occasional development of second de-
gree A-V block with a 2:1 or even higher ratio.
With stimulation for more than 10 seconds escape
of a slow rhythm was observed, which in the electro-
cardiogram still showed the criteria of an A-V nodal rhythm.

Pick

Leeds, S. E.: A Cannula for Simultaneous Drainage
of Both Cavae in Artificial Heart Experiments.
1950.

The authors constructed a single right angle can-
nula which permits blood from both the cava to
pass through it and thence to flow to the pump. The
cannula consists of thin walled (26 gage) metal
tubing of uniform diameter with two arms at an
angle of 90 degrees. The tube is open at both ends
and is also open at the vertex of the angle. With the
cannula ligated in place, no blood from the cava
is enter the right auricle, and the blood must be
diverted. The right auricle or ventricle may be
opened with very little blood loss since only the
coronary flow enters the operative site. The coronary
flow constitutes about 5 or 6 per cent of the cardiac
output.

The cannula was used successfully in 19 experi-
ments in which the extracorporeal pump was
employed. The entire venous flow of blood was diverted
for a period of 13 to 68 minutes followed by survival
of the animals for an indefinite period.

Mintz

Blake, W. D., Wegria, R., Ward, H. P., and Frank,
C. W.: Effect of Renal Arterial Constriction on
Excretion of Sodium and Water. Am. J. Physiol.

A Goldblatt clamp was placed about the right
renal artery and the left kidney served as a control.
Minimal constriction of the renal artery with no
detectable decrease in glomerular filtration rate
was accompanied by decreased urine flow and sodium
excretion. This depended on increased sodium re-
absorption in at least two experiments. Intrarenal
mechanisms other than filtration rate which may
affect sodium reabsorption and excretion are sug-
gested, such as concentration of sodium in plasma
and rate of flow of urine through tubules.

Oppenheimer

Pathology

Askey, J. M.: Spontaneous Rupture of a Papillary
Muscle of the Heart. Review with Eight Addi-
The writer reviews 37 cases of spontaneous rupture
of a papillary muscle of the heart, including 8 new cases. This condition usually follows myocardial infarction, but may occur with necrotizing periarteritis, endocarditis, sepsis, and syphilis. The ante-mortem diagnosis of a ruptured papillary muscle of the heart or of a ruptured interventricular septum should be considered when a cardiac murmur suddenly appears or a previous murmur is intensified. The murmur is usually systolic in a rupture of the interventricular septum, but may be both systolic and diastolic in a rupture of a papillary muscle of the heart. A thrill, frequently present in a rupture of the interventricular septum, is absent in a rupture of the papillary muscle.

HARRIS


Of 4 cases of disseminated coccidioidomycosis, non-specific myocardial changes were found in three. In only 1 case did specific myocardial lesions occur. The lesions consisted of small foci of necrosis with infiltration of mononuclear cells, lymphocytes, and Langhans-type giant cells.

HANNO


Autopsy of 2 cases of diabetic acidosis disclosed focal necrosis and lymphocytic infiltration of the myocardium. Because similar lesions have been reported in animal and human subjects with potassium deficiency, and because hypopotassemia occurs in diabetic acidosis, the authors conclude that the myocarditis found in their cases is hypokalemic in causation.

HANNO


The authors report on the myocardial lesions in progressive muscular dystrophy. They found lesions similar to those found regularly in skeletal muscle in 6 of 11 cases. Both simple and pseudohypertrophic types of the disease showed myocardial involvement. Two of the 6 cases exhibited an irregular heart action. There was no electrocardiographic study and clinical data was meager. At necropsy, the myocardium throughout both ventricles was infiltrated with grey scars. The intervening muscle was pale, in one case yellow, and in most instances presented, on cross section, a coarse appearance which was due to irregularly entwining scar tissue. Microscopically, some of the scars contained groups of fat cells; many of the isolated or trapped myocardial fibers contained fat vacuoles. The coronary arteries were normal in all cases, as were the valves.

Death in most instances was due to terminal pneumonia. In one case, it was due to heart failure, autopsy revealing bilateral hydrothorax and ascites.

Gouley

PHARMACOLOGY


The author describes a very sensitive device (based on the principle of the photoelectric cell) for the measurement of volume variations of the pulse wave, which he used in a study of the effect of various vasodilating agents in normal persons and in patients with impaired peripheral circulation.

Intravenous injection of nicotinic acid or of 2-benzyl-4,5-imidazoline chloride produced a marked, but transitory, increase of the volume pulse in various parts of the body. Intravenous injection of ß-pyridyl carbinal had a more permanent vasodilating effect, mainly on the cerebral circulation, and had no side effects such as were observed following administration of nicotinic acid.

Hook


Mercury labeled with radioactive mercury was administered parenterally to 83 hospitalized subjects. When cardiovascular and renal functions are normal, about one-half of the mercurial diuretic administered intramuscularly is excreted in 1 to 8 hours (average about 3 hours). Excretion of the intravenous diuretic was somewhat more rapid.

Congestive heart failure results in delay in excretion of mercury. The state and phase of the failure influenced the rate of excretion and individual variations were large.

Subjects with impaired renal function retained considerable quantities of radiomercury even though urinary volumes were relatively high. The degree of impairment may be great enough to lead to a toxic accumulation of mercury on successive administration. One subject with renal insufficiency excreted only 2.5 per cent of injected mercury in about four and one-half days. There is a need for continual evaluation of renal function to ascertain whether mercury is being retained in excessive quantities.

Waife


The authors describe a case of delayed, fatal anaphylactic reaction to a small test dose of Vasiol-
done, a radiopaque dye. They attribute this to the administration of an antihistaminic drug, which so delayed the sensitivity reaction as to give an apparently negative result when there was, in fact, extreme sensitivity. The authors state that antihistamine drugs should be used in every case, but an hour before the main dose of the radiopaque substance. The latter should not be used at all in individuals with a strong allergic history, and, whenever used, very small initial test doses should be given.

SOLOFF


Dogs, digitalized to cardiac toxicity with ouabaine (0.07 to 0.08 mg per Kg.) or with digitoxin (0.3 mg per Kg.) were anesthetized with cyclopropane, ether and thiopental sodium. Under cyclopropane anesthesia 8 out of 10 dogs showed improvement or the abolition of the digitalis induced arrhythmias. Two dogs showed no improvement. All dogs demonstrated a return to, or maintenance of, pre-anesthetic abnormalities upon recovery from anesthesia. The increase in heart rate with cyclopropane in all dogs but one suggests a decreased vagal tone. This reduction in vagal tone combined with increased irritability of supraventricular tissues may explain the countereaction of digitalis arrhythmias by cyclopropane.

Ether caused a reversion of the arrhythmias to a normal rhythm in all but one dog. The mechanisms responsible for the increased heart rate with ether anesthesia are: paresis of the vagal inhibitory mechanism, augmentation of the cardiosympathetic impulses and liberation of certain hormones such as epinephrine or sympathin. Thiopental sodium exerted no constant effect upon the electrocardiographic abnormalities of overdigitalized dogs.

MINTZ


In a series of nineteen experiments upon 15 adult dogs which received from two to four times as much Diodrast per unit of weight as the human subject, the following effects were noted: a rise in pulse pressure due chiefly to a fall in the diastolic pressures; changes in the contour of the femoral pulse tracing consisting of a more rapid rise, loss of apical rounding, a more rapid fall, loss of the dicrotic wave, and increase in the height of the wave; a rise in the venous pressure; and a fall in the pulse rate. The same results were obtained, but to a lesser degree, when a 35 per cent solution of Diodrast was substituted for the 70 per cent solution.

The typical Diodrast reaction could be modified by changes in the speed of injection, but not eliminated, even when the injection was given slowly. Significant effects of the drug injection were vasodilatation, and stimulation followed by depression of the myocardium. Abdominal compression, epinephrine, ephedrine, pitressin, atropine, vagotony, tetraethyl ammonium and an antihistaminic failed to prevent the vasodepression.

No evidence of allergic sensitization occurred in dogs which received two injections of Diodrast several weeks apart.

SCHWEDEL


The authors treated 50 patients with electrocardiograms typical of neurocirculatory asthenia with intramuscular injections of 0.5 mg. Gynergen, and after an interval of two to three days, by injection of 0.3 mg. Hydrgren. The effect of the two drugs on the abnormal electrocardiogram was followed for about an hour. Hydrgren produced a more marked slowing of the heart rate, while normalization of the abnormal ST-T occurred more readily following Gynergen. Since the latter drug is known to produce coronary constriction, the normalization of the electrocardiogram cannot be explained by alteration of the coronary circulation and is probably due to changes in the muscular tone of the heart.

PICK


Following administration of 256 cc. of mercurpurin over a ten month period for treatment of congestive failure, a 61 year old white woman was admitted to the hospital in a lethargic state. Blood studies showed leukopenia, and sternal marrow examination revealed a marked maturation arrest of the myeloid series. The latter, ascribable to depression of the bone marrow by the mercurial compound, was apparently responsible for the changes in the peripheral blood. Following administration of BAL for five successive days, the white blood count in the peripheral blood returned to normal, but the patient ultimately succumbed as a result of progressive heart failure.

WENDKOS


The authors report a case of a 27 month old white male child with paroxysmal auricular tachycardia,
probably due to a congenital cardiac defect. On one occasion the tachycardia failed to respond to carotid sinus pressure, eyeball pressure, or prostigmine, but did respond to 0.2 mg. of acetylcholine bromide. During another attack, acetylcholine bromide also failed and the patient was controlled on combined digitalis and quinidine therapy. Intravenous Nesynephrine was of immediate benefit each time it was used during the last three episodes. The authors recommend the initial dose of 0.1 mg., which can be increased by 0.1 mg. at intervals of thirty minutes to as high as 0.5 mg.

Margolies


The author reports that in six patients, ranging in age from 33 to 62, delirium occurred in association with digitalis therapy. In each case, the disturbance cleared entirely on withdrawal of the drug or reduction in its dosage. Deficiency in cerebral circulation may play a predisposing role, but it is hazardous to place too much emphasis on arteriosclerosis or age. Three of the cases reported had aortic valve lesions, probably on a rheumatic basis. The delirium seemed to be due to drug intoxication, rather than to changes in circulation or absorption of edema products in these cases. Causative preparations included powdered leaf of digitalis, lanatoside C and digitoxin.

Wendkos


The author reports the first case of fatal generalized periarteritis caused by propylthiouracil. An elderly woman was given 50 mg. of propylthiouracil four times daily for 10 days, then reduced the dose herself to one-half the recommended amount because of gastric upset. After five more days she stopped the drug altogether. On her next return to the clinic she was admitted to the hospital and after further studies she was again given propylthiouracil. Within 24 hours her temperature rose, diarrhea developed, and later the patient became incontinent and showed signs of cerebral difficulty. The drug was stopped and within 24 hours the patient was greatly improved. One week later she was given a single dose as a test, and she again developed the original signs and symptoms. Two months later in the out patient clinic she was inadvertently started again on propylthiouracil. After 1,150 mg. of the drug was taken in six days she was brought to the hospital in an unconscious condition and died six days after admission. Postmortem studies disclosed diffuse periarteritis.

Kitchell


In order to estimate the benefit of oxygen therapy, the authors studied oxygen consumption, pulmonary ventilation and oxygen utilization before and during inhalation of pure oxygen in 32 subjects. The cases were divided into four groups, normal subjects, patients with coronary insufficiency in various stages, patients with congestive failure, and patients with coronary disease and congestive failure.

No significant changes of oxygen consumption which could be attributed to oxygen inhalation could be demonstrated, and the same small variations occurred in normal subjects as well as in patients with heart disease. A slight increase of utilization of oxygen, found in some cases during the inhalation of the gas, could be correlated with a simultaneously occurring decrease of pulmonary ventilation.

The authors conclude that a beneficial effect of inhalation of pure oxygen could not be demonstrated objectively in the studied groups of patients.

Pick

PHYSICAL SIGNS


The authors report the case of a 69 year old woman who, fifteen minutes prior to admission to the hospital, had severe crushing substernal pain which radiated to the shoulder and back. Blood pressure at this time was 160 systolic and 100 diastolic in both arms. Electrocardiographic tracing showed early changes of acute anterior myocardial infarct. Three hours later it was noted that the blood pressure had dropped to 90 systolic and 60 diastolic and an intense, harsh systolic murmur with a purring systolic thrill over the lower part of the sternum and to the left of the sternum in the fourth and fifth intercostal spaces was present. A clinical diagnosis of rupture of the interventricular septum was made at this time. She died suddenly about two and one-half hours after signs of rupture of the heart were detected. Postmortem examination showed a ragged longitudinal tear 1.2 cm. in length extending through all coats of the heart wall which was thin and friable, measuring only 0.8 cm. in thickness. The interventricular septum was not involved. This case is of interest because rupture of the heart occurred only four hours after the clinical infarct and softening must have taken place extremely rapidly. It is difficult to explain the murmur and thrill in such circumstances. Possibly it was due to the fact that the defect in the external wall was small in systole and a jet of blood was expelled under high pressure, and in diastole some of this reentered the ventricle producing a murmur and thrill simulating that of rupture of interventricular septum.

Kitchell
PHYSIOLOGY


Since a high degree of accuracy is desirable in the determination of plasma volume, the authors studied the kinetics of T-1824 (Evans blue) disappearance by a constant infusion method designed to eliminate the variable factor of mixing time. This method also makes it possible to estimate the amount of dye lost from the body.

The calculation of plasma volume is based on a variable that is a function of change in plasma concentration and, therefore, the effects of mixing time are eliminated. In rabbits the error produced by neglecting mixing time is negligible.

The data indicate that in rabbits there is no significant difference in calculating plasma volumes of linear or exponential extrapolation. The excretory rate of T-1824 in rabbits is so low that estimations of clearance or maximum excretory rate are invalidated by relatively small experimental errors.

MINTZ


When new technics are used it can be shown that stimuli of intermediate or long duration near maximal strength (20-30 ma.) often produce a response during a 10 millisecond interval early in the cycle but fail to do so when placed a few milliseconds later. Ten to twenty milliseconds later still in the cycle maximal stimuli are again effective. In these experiments it is characteristic of the recovery process that the muscle periodically attains a degree of excitability that is not sustained. Periods of reduced excitability precede further recovery. Usually only one major “dip” or period of relatively increased excitability is present in the refractory phase of the cycle.

OPPENHEIMER


The authors report that rats maintained on a very low potassium diet developed a profound hypotension, a marked degree of generalized flaccidity of the skeletal muscles, and retarded growth. However, other rats on an identical diet, but supplied with potassium, maintained a normal blood pressure. Another group of animals on a standard diet, but partially starved, grew as slowly as those in the experimental group, but had a normal blood pressure. The authors believe that the hypotension observed was due to a specific potassium deficiency.

WAIFE


The authors point out the distortions which positional changes produce in the dog electrokymogram. In the left lateral position, the heart moves toward the sternum and the densograms taken in sternal areas are too small and in the spinal areas are too large. Near the middle of the heart the timing and probably the amplitude of the inward movements are correctly represented. The positional movements of the human heart are smaller and the densograms are less distorted by these movements. The large vessels also show positional changes and therefore electrokymographic records taken from these for timing of cardiac events must be used with caution.

OPPENHEIMER


The authors perfused the hearts of various animals with oxygenated Ringer-Locke solution and kept them beating for various lengths of time. Rather large openings were made in the walls of the auricles and a sound recording, visual record of the sound and an electrocardiogram were made at the same time that motion pictures were taken. It was observed that the auriculoventricular valves did not close when there was little or no fluid in the ventricles, and would close when there was sufficient fluid in the ventricles. It was noted that there was a very definite sphencter-like action of the mitral and tricuspid rings. Experiments were done which indicate that the first heart sound is due largely to the valves suddenly becoming taut and striking forcefully against each other; the forceful striking of the edges of the valves against each other produce a much louder sound than does the sudden tautening of the valves, such forceful striking being the main factor in producing the first heart sound.

WENDKOS

RHEUMATIC FEVER


Thirty-eight children with rheumatic fever received 50,000 units of penicillin orally twice a day during the fall, winter and spring over a two year period. An equal number of comparable subjects served as controls. Of 576 throat cultures in the untreated children, fifty-two were positive for beta hemolytic streptococci as compared with only three positive cultures out of 570 in the penicillin-treated group. Penicillin had no effect on the incidence of
nonstreptococcal upper respiratory tract infection. Recurrences of rheumatic fever developed in 6 control and 3 treated subjects. While the authors feel that there was some suggestive evidence that prophylactic oral penicillin was useful in preventing recurrences of rheumatic fever, they believe that the almost complete elimination of hemolytic streptococci from the throat suggests the use of prophylactic oral penicillin during epidemics of scarlet fever or streptococcal sore throats.

WAIPE


Sixty-three children with a definite history of rheumatic fever and 23 children with congenital heart disease were examined once a month from September through June. Routine throat cultures, sedimentation rates and vital capacities were done at each visit. Thirty-three of the rheumatic children and 23 of the congenital group received penicillin troches of 5,000 units three times daily. The remainder served as controls, receiving placebo troches of similar size, shape and taste.

In the control group of 30 rheumatic children, 2 had recurrences of rheumatic fever; in neither of these cases, however, was a culture of Streptococcus hemolyticus present. In the group of 33 rheumatic children receiving penicillin troches, there were no cases of rheumatic activity. None of the cases developed subacute bacterial endocarditis. The author concludes that penicillin troches are of value in temporarily eliminating Str. hemolyticus from the throats of rheumatic children. Because of the dangers involved in the use of the sulfonamides, the author suggests that penicillin troches replace the sulfonamides in rheumatic fever control programs.

MARGOLIES


To test the validity of the theory of Reid and others that the effectiveness of saline diuretics in acute rheumatic fever is due to cellular dehydration, the authors dehydrated 7 patients with rheumatic fever, using severe fluid restriction, sodium sulfate purges and 50 cc. of a 30 per cent solution of sodium chloride intravenously. This resulted in relief of joint pain on movement, tenderness and swelling, and a fall in temperature and pulse rate. The sedimentation rate remained unchanged three days after therapy. The authors point out the similarity between the effectiveness of salicylates and dehydration therapy but conclude that other factors than alteration in the volume and distribution of body fluids may play a role, for example, non-specific stimulation of the adrenal cortex.

BERNSTEIN

ROENTGENOLOGY


The authors discuss features of the technic and application of translumbar aortic puncture. The aorta is punctured usually at the level of the first lumbar vertebra with a spinal needle 6 inches long, 16 or 17 gage in adults, and 20 gage in children. They describe its use, which resulted in the demonstration of multiple arteriovenous anastomoses and a large multiculculated aneurysm of the hypogastric artery.

Retrograde catheterization was accomplished through a branch of the profunda femoris under direct surgical exposure. A No. 10 F catheter is passed upwards through the femoral artery to the desired level in the aorta. Thirty cc. of the opaque dye is injected and suitable roentgen exposures are made. Femoral artery catheterization was carried out fifteen times in 14 patients. An aneurysm of the thoracic aorta below the site of coarctation, and atherosclerotic plaques in major branches of the aorta could be demonstrated.

SWEDDEL


Four cases are presented in which the abdominal aorta and its branches were visualized during angiography. In one, trauma resulted in a lack of opacification of the left renal artery and kidney, and 30 minutes later a lack of renal pelvic opacification. Visualization of the abdominal aorta in the second case indicated obstruction at the level of the renal arteries, the left renal artery and kidney failed to opacify; again, the renal pelvis did not opacify one half hour later. This was corroborated at necropsy. Two other patients were subjected to this procedure. An aortic obstruction below the renal arterial level was found in one; the other was normal.

SWEDDEL

SURGERY IN HEART AND VASCULAR SYSTEM


The authors experimented with dogs using tantalum tubes to reestablish the continuity of sectioned femoral arteries. In some instances the tubes were treated with a coating of paraffin, while in others they were lined with a segment of corresponding vein.

The unlined tubes and those coated with paraffin
were all occluded by thrombi. However, two-thirds of the tubes lined with veins were found to be patent when examined at intervals varying from four hours to two months after operation. The best results were obtained with the use of vein grafts placed between two short tantalum cuffs.

According to the authors, tantalum is as good as vitallium or any other material which has been used to reestablish continuity of vessels.

ABRAMSON


The authors report experimental data suggesting that, in general, grafts stored for less than 40 days are preferable to those stored for much longer periods, although the latter give satisfactory short term results. The many practical problems related to the establishment of an artery bank and the limitations on the use of homogeneous arterial grafts, particularly in regard to the size and length of the transplant, are discussed. A case report is presented in which an adult type of coarctation of the aorta together with a mycotic aneurysm of the descending aorta in a 16 year old boy was resected and the gap in the aorta bridged by an 8 cm. human arterial homograft, which had been stored for 52 days. Six months after operation the vessel was apparently functioning well.

BECK


The authors describe the historical background of carotid-internal jugular anastomosis. Shunts were performed on Rhesus monkeys. Angiographic and gasometric studies show that following these shunts, the blood does not flow into the sagittal, straight or petrosal sinuses for distribution by retrograde flow. Instead it seeks a ready exit via the neck veins, the basilar veins and the lateral sinuses. The shunted flow can be directed into the intracerebral veins by ligation of the opposite lateral sinus under high pressures. In animals with the opposite lateral sinus ligated, the oxygen volume per cent of the sagittal sinus blood is not increased. There appears to be a stagnation of the blood in the sagittal sinus following the shunts.

BECK


Aneurysm of the hepatic artery, although a rare cause of biliary symptoms, must be considered in the differential diagnosis of jaundice. Hepatic aneurysm produces pain, jaundice, and bleeding into the gastrointestinal tract. Heretofore, the diagnosis has rarely been made before death and only 14 patients with aneurysm have been operated on.

Two additional hepatic aneurysms, both diagnosed at operation, are reported. Both patients died, one from massive hepatic necrosis, the other from recurrent hemorrhage.

The only reported cures of hepatic aneurysm have been achieved by ligation of the artery. Several recent developments may improve the results of treatment, although to our knowledge they are still untested in humans: (1) the use of antibiotics in the prevention of liver necrosis following ligation; (2) reconstruction of the artery by grafts of artery or vein; and (3) anastomosis of the ligated hepatic artery to the portal system.

AMERICAN HEART ASSOCIATION, INC.

1775 Broadway, New York 19, N. Y.

Telephone Plaza 7-2045

ANNUAL ELECTIONS

Officers

Dr. Louis N. Katz, Chicago, has assumed the Presidency of the Association for the 1951-52 term. Dr. Katz is Director of Cardiovascular Research, Michael Reese Hospital, and Professional Lecturer in Physiology, University of Chicago. He also has served as Chairman of the Association's Research Committee. Dr. Katz succeeds Dr. Howard B. Sprague, Brookline, Mass.

At the Twenty-seventh Annual Meeting of the Association in Atlantic City last month,