ABSTRACTS
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Abstracters

BACTERIAL ENDOCARDITIS

Eleven patients with subacute bacterial endocarditis were studied. Eight were treated with Aureomycin. In only two cases in whom Aureomycin was used initially were cures obtained. In no instance was Aureomycin successful when penicillin previously had failed. In two cases, however, penicillin was effective after Aureomycin had proved unsuccessful. Aureomycin was no more effective against Streptococcus faecalis than penicillin, although the organism was highly sensitive to Aureomycin in vitro. All patients treated with Aureomycin exhibited gastrointestinal symptoms. Of the five cases treated with Chloromycin, only one could be classified as a cure. In two cases large doses of penicillin resulted in a cure where Chloromycin had been ineffective. The authors conclude that penicillin is the antibiotic of choice in the treatment of subacute bacterial endocarditis due to Str. viridans and Str. faecalis. Aureomycin or Chloromycin should be tried if in vitro studies are favorable and if the patient has not responded to large doses of penicillin or to a combination of penicillin and streptomycin.

SAGALL

BLOOD COAGULATION

The authors' experiences confirm previous reports that ethyl biscoumacetate (Tromexan) is a satisfactory anticoagulant for clinical use. Ethyl biscoumacetate acts somewhat more rapidly than dicumarol after the first dose has been administered, and its effect disappears somewhat more rapidly when administration is stopped. Menadione sodium bisulfite appears to have accelerated the return of the prothrombin time to normal in a limited number of cases in which ethyl biscoumacetate has been used. Their experience has shown somewhat more difficulty in maintaining the hypoprothrombinemia within the therapeutic range, particularly during the first 7 to 10 days of treatment, when ethyl biscoumacetate was used than when dicumarol was used, because of the tendency to more marked fluctuations in the prothrombin time from day to day. As has been noted in experiences with dicumarol, the administration of fixed doses of ethyl biscoumacetate is followed in different patients by variable responses which cannot be predicted in advance, and frequent determinations of the one stage prothrombin time are essential as a guide to effective and safe administration of this anticoagulant.

SIMON

CONGENITAL ANOMALIES

In nine patients with auricular septal defects,
pulmonary capillary, pulmonary venous, left auricular, right auricular, and pulmonary artery pressures were recorded. There was no resemblance between the tracings of the pulmonary capillary pressure and the pulmonary artery pressure or the left auricular pressure. The tracings from the left auricle differed from those from the right auricle in that there was a sharper presystolic upstroke, a steeper fall due to the descent of the base, and a more rapid second rise during auricular diastole. The mean pulmonary capillary pressure ranged from 6 to 19 mm. Hg with an average of 12 mm. Where the catheter did not obstruct the pulmonary vein, the mean pressures ranged from 8.5 to 13 mm. Hg, with an average of 11.5 mm. Hg. If the pulmonary vein was obstructed by the catheter tip, there was a rise in the mean venous pressure. The mean left auricular pressure ranged from 6 to 12 mm. Hg with an average of 9.5 mm. and the mean pressure in the right auricle ranged from 4 to 10 mm. Hg with a mean of 9.4 mm. There were three patients in whom the mean right auricular pressure exceeded the left auricular pressure. In these patients, pulmonic stenosis or tricuspid atresia was present. Where the left auricular pressure exceeded 10 mm. Hg, the pulmonary capillary–left auricular pressure gradient increased. Therefore, the authors believe that the pulmonary-capillary pressure does not represent left auricular pressure if the latter is above 10 mm. Hg. In patients with right to left shunt, the pressure in the right auricle exceeded that in the left during the whole cardiac cycle. In patients with left to right shunts there was a short period at the onset of auricular filling where the right auricular pressure exceeded that in the left. It is felt that this reversal in pressure gradient may be sufficient to result in a small right to left shunt through the defect. There was no relationship between the pulmonary capillary and pulmonary artery pressures.

Margolies


Based on angiographic studies, which are illustrated by numerous instructive diagrams, the authors present a classification of congenital anomalies of the lesser circulation. If anomalies of the pulmonary veins are excluded, four main groups can be distinguished: anomalies of the infundibulum, of the valvular orifice, of the main trunk and of the branches of the pulmonic artery.

The pulmonary conus (infundibulum) may be dilated, atresic or stenosed in its middle or lower portions. Anomalies of the valvular part of the pulmonary artery consist in abnormal origin of the vessel (from the left ventricle or overriding the septum), in anomalies of its diameter (dilatation, stenosis, or lack of perforation) or in absent, supernumerary or fenestrated valves. The main trunk of the pulmonic artery may have an abnormal caliber (hypoplasia to complete atresia or dilatation to aneurysmic deformity). It may further show an abnormal position in relation to the aorta or abnormal communication with the aorta (persistent ductus arteriosus, aortopulmonary aneurysm) and it may be completely absent (truncus arteriosus communis). The main branches of the pulmonary artery may be abnormal in number (agenesis of one or both branches), in size, in origin (directly from the aorta), or may show abnormal communications (arteriovenous aneurysms).

A great number of these anomalies can be diagnosed by the help of classic dextroangiography, with the patient in a suitable position. Patency of the ductus arteriosus or a direct aortopulmonic communication can be visualized readily by retrograde aortography.

Pick


The authors describe their postoperative observations on 214 children with congenital pulmonary stenosis. The preoperative diagnosis in 199 cases was tetralogy of Fallot, and in 15 cases, tricuspid atresia. In 177 cases, an aortic-pulmonary anastomosis (Potts-Smith) was done, in 21 cases, a Blalock operation, and in one case, a localized stenosis of the left pulmonary artery was resected. Fifteen children had exploratory thoracotomies, with no anastomosis being performed. Of this group, seven died shortly after surgery. Of the 199 children who had the anastomoses, 18 died in the immediate postoperative period, and one lost his life in an automobile accident. One hundred forty-five of the remaining 180 patients have been observed for postoperative periods ranging from 6 to 42 months. During the period of observation, eight of these children (5.5 per cent) have died of varied causes.

Paroxysmal dyspnea which occurred in 66 children before surgery was not observed postoperatively. Squatting also disappeared after the successful anastomosis. The red blood count and the hemoglobin averaged 6,930,000 per cu. mm. and 18.3 Gm. per 100 cc., respectively, prior to surgery, and 5,350,000 per cu. mm. and 14.4 Gm. per 100 cc. after operation. There was a marked and immediate decrease in the cyanosis following surgery. By the end of the first year, the changes in the clubbing of the fingers and toes were usually complete, but a suggestion of clubbing still persisted. There was usually an increase in the exercise tolerance which in some cases was dramatic. There has been cardiac enlargement to some degree after surgery, and should be expected if the anastomosis remains patent.

Significant and consistent electrocardiographic changes observed two to three years after surgery,
ABSTRACTS


The author describes a sign he believes is pathognomonic of patent ductus arteriosus. This is characterized by a defect in the outline of the main pulmonary artery best seen in the left anterior oblique position two to three seconds after injection of a contrast medium. The defect is due to blood free of contrast medium flowing from the aorta through the ductus to the pulmonary artery.

Margolies

CONGESTIVE HEART FAILURE


The carboxylic and sulfonic types of ion exchange resins are described, and their important similarities and differences noted. These cation exchangers react according to known physical laws, possessing about equal affinity for ammonium and sodium, somewhat greater affinity for potassium, and still more for bivalent cations. However, the actual amounts of the various elements they pick up are determined not only by these affinities but also by the ionic concentrations in the intestinal tract. In the exchange process, ammonium or hydrogen ions are given up for sodium and potassium. Both reactions have an acidifying effect, since ammonium is converted in the liver to urea. For each 100 mEq. of cations taken up, 100 mEq. of ammonium or hydrogen are released, the equivalent of ingestion of 5.4 Gm. ammonium chloride or 100 cc. normal hydrochloric acid.

A survey of the experimental observations on animals shows the following results of resin ingestion: (a) sodium and potassium absorption from the gastrointestinal tract are reduced, and their fecal excretion increased; (b) the magnitude of these changes depends on the intake of cations and of resin; (c) the ratio of sodium to potassium picked up by the resin is equal to, or greater than, that in the diet; (d) significant changes in retention of sodium and potassium are seen in normal animals only when the diet is practically free of these ions, when low muscle concentrations of sodium and potassium develop before low blood levels; (e) calcium absorption is diminished by some resins and not by others; (f) uptake of cationic organic compounds including amino acids and vitamins has not been determined; (g) the effective capacity of resins in vivo is between 30 and 40 per cent of that in vitro, and the cation binding power is subdivided among sodium, potassium and calcium.

The authors have found from their experience and from review of current clinical investigations that similar results appear in edematous patients. Either carboxylic or sulfonic resins take up sodium, potassium, and possibly some calcium in the gastrointestinal tract, excreting hydrogen or ammonium ions for them. This results in smaller absorption of cations. The optimal dose of resin is about 40 to 100 Gm. a day. When administered at, or near, meal time the resins will divert from absorption about 1.2 mEq. sodium and 1 mEq. potassium per Gm. Thus, it is feasible to prevent the absorption of 1 to 2.5 Gm. sodium daily. This is often enough to result in a loss of edema fluid, even when diuretics have failed; or the resins may be used to supplement diuretics. Some degree of compensated acidosis appears with resin administration, but this is not considered harmful. The chief complication is potassium deficiency, which is most likely when dietary sodium is very low; a condition under which resins will pick up potassium in preference to sodium. This complication can be circumvented by the use of potassium-containing salt substitutes, by potassium citrate, by fruit juices, or by using a resin partly in the potassium cycle. Calcium deficiency has occurred infrequently, and may be related to long term resin therapy. Thiamine and magnesium deficiencies have not presented any problem. Gritty, constipated stools have occurred after prolonged administration. The authors conclude that resin treatment warrants further use, and that it may well be used in hypertension to reinforce sodium restriction.

Enselberg


In a series of 50 cases with chronic congestive heart failure, including 38 cases of mitral valvulitis, two with aortic lesions, nine cases of hypertension and one case of myocardial infarction, ligation of the inferior vena cava had the following results: 33 cases (66 per cent) were definitely improved, seven cases showed transient or no amelioration and 10 cases (20 per cent) died following the operation. Clinical signs of improvement were seen frequently
immediately after surgery and 42 per cent of the patients could return to their profession. The main postoperative complication was the development of phlebothrombosis despite heparinization and early mobilization. The selection of patients suitable for the operation remains very difficult. It should be performed only after longer observation of the patient in a hospital and after careful evaluation of the effect of medical treatment.

Pick

CORONARY ARTERY DISEASE, MYOCARDIAL INFARCTION


Transplantation of the left internal mammary artery into the left ventricle was done in three patients as a treatment for coronary artery insufficiency. Although one patient died shortly after the operation, the other two appeared to have been improved at the time of the discharge.

There appeared to be no disturbance in cardiac function resulting from the implant procedure, and no evidence of hemorrhage or intramural hematoma. The implanted artery was found to be completely patent 62 hours after the implantation in the one fatality that occurred.

Schwartz


A case of acute myocardial infarction which became complicated by supplicative infection of the infarct is reported. The infecting organism was Escherichia coli. Acute pyelonephritis was present and was considered to be an accompaniment of an assumed septicaemia.

Three other cases of abscess formation in an acute myocardial infarct reported in the literature are reviewed. In each of the latter the source of the septicemia was a pyogenic pneumonia. In one of these cases the abscess formation within the myocardial infarct was further complicated by rupture of the heart.

Simon


The author reports 20 individuals who developed angina pectoris at the beginning of physical effort but were able with or without a slight pause to continue the physical effort without pain. This phenomenon is regarded as similar to the "second wind" in respect to dyspnea. He believes that this phenomenon occurs in one out of five individuals with angina. The prognosis is no different from ordinary angina. It can be prevented by nitroglycerin. It may be due to the inability of the coronary arterioles to dilate soon enough on first effort.

Soloff


Forty of 139 instances of myocardial infarction had prodromal symptoms for three days to 12 weeks with an average of three and one-half weeks. The individual attacks lasted from five minutes to six hours, and occurred both at rest and after effort. A crescendo quality of the pain was obtained in 29. The electrocardiograms of four showed evidence of myocardial ischemia at rest, two showed ischemia on effort, four showed no ischemia at rest and were not subjected to effort. The mortality of those with prodromal symptoms was 15 per cent compared to 50 per cent of those withoutprodromal symptoms.

The prodromal symptoms are attributed to gradually decreasing lumen of a coronary artery with consequent increasing myocardial ischemia.

Soloff

ELECTROCARDIOGRAPHY


The treatment and clinical findings in an unusual, well studied case of prolonged ventricular tachycardia are reported in detail. Following an acute anterior wall myocardial infarction the patient developed recurrent attacks of paroxysmal ventricular tachycardia. The most prolonged of these lasted 57 days and displayed a retrograde Wenckebach effect electrocardiographically. Among the drugs used without great success were quinidine, intravenous quinine and procaine hydrochloride, magnesium sulfate, diethylaminoethanol hydrochloride, strophanthidin acetate, Mecholly hydrochloride, propylthiouracil, and digitalis. On the fifty-sixth day of the continuous ventricular tachycardia, 0.4 Gm. of atabrine dihydrochloride were injected intramuscularly. The following day the patient experienced a severe bout of vomiting after which sinus rhythm returned. Subsequently additional bouts of ventricular tachycardia occurred and the patient committed suicide. The authors recommend the trial of atabrine in refractory cases of paroxysmal ventricular tachycardia, especially in those showing intolerance or idiosyncrasy to quinidine.

Harris


Among 10,000 electrocardiograms, the authors found five instances of coronary sinus rhythm and a single case of extrasystole originating in the same region. According to the authors, a sharp distine-
tion should be made between coronary nodal rhythm and coronary sinus rhythm. In the electrocardiogram, the latter is characterized by inverted P waves in leads II and III, and a normal or only slightly shortened P-R interval, while in the former the P wave is upright in leads I to III and P-R distinctly shortened. In coronary nodal rhythm, the impulse takes its origin in the "auricular sinus" and is transmitted from above toward the base. This anomaly of rhythm is seen rather frequently and has no clinical significance. Coronary sinus rhythm, on the other hand, originates in the coronary sinus and the spread of the impulse in the auricle is reversed. It is seen only very rarely and in the presence of organic heart disease.

**Pick**


A case of long-standing intermittent bundle branch block is described, in which direct or indirect vagal stimulation at all times abolished the block, when present. A review is presented of the clinical and experimental work relating to the presence of vagal action on intraventricular conduction. Most data indicate that such vagal action, when demonstrable, is inhibitory in nature. Possible rare exceptions may occur.

The existence of intermittent conduction defects for prolonged periods has led to the use of the term "functional," since the unfavorable prognosis attached to such lesions was not borne out. Such designation is not correct in view of the serious underlying heart disease which is usually present. Rather, it is probable that complete blockage of bundle branch conduction has not occurred. It might be presumed, therefore, that the intracardiac lesion is not so advanced as in permanent bundle branch block. It is this factor, rather than the conduction defect, that determines the prognosis.

**Bernstein**


Bundle branch block is an infrequent lesion in the general population. Right bundle branch block is of much greater frequency than left bundle branch block, particularly in the younger age groups and is commonly associated with little or no demonstrable cardiovascular impairment. The presence of bundle branch block per se does not imply a high mortality in the absence of other cardiac abnormalities; hence the prognosis where block is found will depend on the underlying cardiac disease. The difference between the mortality in right and that in left bundle branch block is relatively slight.

**Bernstein**


The authors describe and present photographs of an integrating apparatus that scans a pair of scalar (conventional) electrocardiographic leads and which moves mirrors that cause a deflection of a light beam that is an integration of the two movements.

They describe the frontal, sagittal and horizontal vectorcardiograms obtained by this method in 100 normal adults aged 16 to 70 years. These patterns are similar to those obtained by elaborate electronic methods.

The vectorcardiograms are smooth except in the older age groups. The QRS loop varied from 0.06 to 0.1 second, with the apex reached in 0.03 to 0.05 second. The T loops tended to rotate in the same direction and their axis lay within a few degrees of the QRS loop. The return loop in some cases extended above the origin of the loop and the ratio of the height to the depth never exceeded 1:4.

**Soloff**


No serious electrocardiographic abnormalities were noted during operation on 10 individuals for resection of coarctation of the aorta. Those changes seen tended to occur at the time of clamping of the aorta. The changes are tachycardia in all, prolongation of the P-R interval in two and lowering and/or notching of the QRS without or with S-T segment depressions. After release of the aortic clamps, the tracings tended to revert to their preoperative appearance. The changes may be due to vagal stimulation and myocardial hypoxia.

**Soloff**

**HYPERTENSION**


Reduction of the blood flow to the liver decreases the systemic blood pressure of dogs with an experimental renal hypertension produced by the use of Goldblatt clamps on the renal arteries. Reduction of the blood flow in the portal vein is more effective in lowering the systemic blood pressure than total occlusion of the arterial blood supply to the liver. In order to produce this decrease in the systemic blood pressure in dogs with an experimental renal hypertension, reduction of the blood flow to the liver must be sufficient to produce a fatty infiltration of the liver cells whose nuclei are well preserved. This pathologic change in the liver may or may not be detected by the presently accepted tests for liver function. Portocaval shunts were performed on the animals with partial occlusion of the portal
vein and those with partial occlusion of both the portal vein and the hepatic artery. This procedure did not alter the sustained reduction of the systemic blood pressure but did improve the general condition of the animals. The reduction in systemic blood pressure observed in these experiments does not occur immediately after partial occlusion of the portal vein, which fact suggests an indirect, rather than a direct, participation in the mechanism controlling the systemic blood pressure. These results also point out that the liver plays a role in the humoral mechanism involved in experimental renal hypertension and lend support to the two current theories which have been proposed to explain the mechanism of experimental renal hypertension.

**Bernstein**

**Chris, S. M.: Sympathectomy for Hypertension.**

Brit. M. J. 4708: (March 31), 1951.

Using rigid criteria for operability, the author performed a sympathectomy by a simple transpleural approach upon the lower thoracic chain and its branches on 35 patients with essential and malignant hypertension. Over an average period of 18 months a survey of this group revealed that only 25 per cent of the series maintained a significant fall in blood pressure. On the other hand, 66 per cent of them have been relieved of incapacitating symptoms and have returned to work. The most successful results occurred in women who developed hypertension after pregnancy complicated by toxemia or eclampsia. Older patients with complicating disease did poorly. The author concludes that for a limited group of hypertensives, sympathectomy is a valuable palliative procedure.

**Tandowsky**

**Bevans, M., Davidson, J. D., and Kendall, F. E.: Regression of Lesions in Canine Arteriosclerosis.**

Arch. Path. 51: 288 (March), 1951.

In view of the fact that the morphologic aspects of both human and canine arteriosclerosis closely parallel each other, the authors believe that both are influenced by the same factors. They therefore studied the regression in canine arteriosclerosis that is noted as soon as the causative dietary factors are removed. The canine lesion is easily produced by cholesterol-thiouracil feeding. Dogs maintained for four months on such a regimen with blood cholesterol levels ranging from 700 to 1500 mg. per cent were examined with particular reference to the degree and site of maximum deposit of atheroma. The usual advanced atherosclerosis of cerebral, coronary and iliac arteries was noted in most dogs with 1200 mg. per cent cholesterol blood level. The thyroid arteries were also strikingly involved. Dogs similarly treated, but allowed to live for two months and four months after cessation of the experimental feeding, showed an unexpected disappearance or subsidence of the vascular lesion. The plaques flattened, the borders became poorly margined and microscopy showed in such areas only slightly thickened intima with little or no lipid. The blood cholesterol levels quickly recede to normal on stopping the special diet. The interesting feature was the definite regression and ultimate disappearance of the lesion of atherosclerosis on normalizing the diet.

**Gouley**


Before sympathectomy tilting into the upright position led to reductions in estimated hepatic blood flow with little change in pressure or increase in hepatic-portal resistance. After lumbo dorsal splanchnicectomy, reductions of hepatic blood flow in hypertensive patients were associated with sizeable decreases in arterial pressure and with little change in average hepatic-portal resistance. The authors conclude that the splanchnic sympathetic system mediates the portal vasoconstrictor response to the upright position in hypertensive, and probably normal, subjects.

**Waife**

**Griep, A. H., Barry, S. R., Hall, W. E., and Hoobler, S. W.: The Prognosis in Arterial Hypertension.**

Am. J. M. Sc. 221: 239 (March), 1951.

A group of 117 hypertensive patients under the age of 53 years at the time of their initial studies were evaluated 8 to 10 years later either by letter to their physician or by re-examination. The patients selected were those who would have been considered candidates for splanchnicectomy, with blood pressures exceeding 160/110 and without primary renal disease, congestive failure, recent cerebrovascular accidents or severe renal impairment.

Of the original group, 46 per cent were alive at the end of the 10 year period; of those who died, 46 per cent died of hypertensive complications and 8 per cent died of other causes. The hypertensive deaths were almost equally divided between cerebrovascular accidents and cardiac causes; uremic deaths were uncommon. In this series it was not possible to predict the type of death to which the patient would succumb.

Important factors influencing prognosis in hypertension were: (1) hypertensive complications, such as left ventricular enlargement, electrocardiographic abnormalities, history of cerebrovascular disease, focal encephalopathy and persistent albuminuria; (2) sex (females outlived males 3:2); (3) the levels of diastolic blood pressure; (4) gradations of retinal vascular disease. The age of the patient and duration of hypertension were of little prog-
nostic value. The most important factor in prognosis was the presence of hypertensive complications (1) as 80 per cent of patients having such findings died, whereas only 20 per cent of those without evidence of vascular damage died in the 10 year interval. Of the survivors, 80 per cent are capable and useful individuals (35 per cent of the total group). Significant reductions in blood pressure occurred in four patients, two have normal pressures. Generally there was little change in the blood pressure of the survivors and the benign course of the disease in the absence of vascular complications is clearly shown.

SHUMAN


Two cases of severe hypertension showed gross obstruction at the orifices of the renal arteries at autopsy sufficient to reduce materially the renal blood flow. Atrophy and degeneration of the tubules in both cases were of a much greater degree than the glomerular and arteriolar lesions and were therefore attributed to the obstruction of the major renal arteries.

In the first case obstruction, due to nodules of hyperplastic intima, was bilateral and equal. In the second case, with a congenital anomaly, the arterial obstruction was predominantly unilateral and due to arteriosclerosis. Both cases lend additional support to the theory of a renal mechanism producing human hypertension.

SCHWARTZ


This study was done to determine the effect of desoxycorticosterone and propylene glycol in both normal and hypertensive dogs.

The intravenous administration of propylene glycol was found to have an immediate pressor effect of about 15 to 30 mm. Hg and it lasted for about three minutes in both normal and hypertensive dogs. There was no difference in the blood pressure rise of the hypertensive and normal dogs.

The intravenous administration of 5 mg. of desoxycorticosterone acetate in 2 cc. of propylene glycol or 5 mg. of aqueous solution of desoxycorticosterone glucoside produced no additional pressor effect.

Desoxycorticosterone acetate given subcutaneously daily for a six-week period of time produced a gradual rise in blood pressure to a level of 25 to 30 mm. Hg above the control value following a gradual decrease to the normal level in about six weeks. In subsequent periods of observation with the same dogs and using the same dose of desoxycorticosterone acetate as had been previously used, or if the dose were doubled, approximately the same rise in blood pressure was produced as had been previously observed. There were no significant differences in the blood pressure responses of the normal and hypertensive animals. This same rise of blood pressure was found to occur in normal and hypertensive dogs with a high sodium intake. The rise in blood pressure could be abolished by rigid restriction of sodium in normal and hypertensive dogs.

MINTZ


Follow-up studies of a group of outpatients treated with the rice diet in 1947 and another group treated in 1948 are presented and evaluated. The authors conclude that the rice diet in most ambulatory patients produced no better results than more conservative medical therapy (weight loss, reassurance, mild sedation and psychotherapy). In certain patients severely ill with hypertension, however, the disease process apparently was dramatically reversed. The rice diet is unpleasant, monotonous, expensive and potentially dangerous and the justification of such a rigorous therapeutic regimen must be matched by the actual or impending rigors of the disease.

SAGALL


Untoward severe but not fatal reactions were observed in four cases of a group of 56 separate tests performed on 21 patients suspected of having pheochromocytoma. Two patients showed reactions to 933 F (benzodioxane); the first developed a rise in blood pressure exceeding 300 mm. Hg and the second developed acute pulmonary edema. A third patient developed anuria for 14 hours after administration of Dibenamine. The fourth patient had a marked hypotensive response to tetraethylammonium bromide. These cases point out that pharmacologic tests for pheochromocytoma with adrenolytic substances are not without danger.

SAGALL


Cortisone or pituitary adrenocorticotropic hor-
mone (ACTH) in doses of 100 mg. daily had no definite or reproducible effects on arterial pressure in each of two pairs of patients with severe essential hypertensive vascular disease, although pressure decreased briefly in two after treatment was stopped. Of the specific renal functions (renal blood flow, glomerular filtration and tubular secretory capacity for paraaminobipurate, \(T_{\text{MPAM}}\)) renal blood flow was increased in two patients (one receiving cortisone and one receiving ACTH).

Urinary corticoids were not consistently increased in two patients given cortisone, but were increased in those receiving ACTH. ACTH treatment also depressed sweat sodium concentration in one patient, but, like cortisone, it had no effect on patients with low control levels of sweat sodium due to dietary restrictions. All four patients showed decreased serum cholesterol concentrations during treatment and a “rebound” to greater than control levels in the post-treatment period. Three of the four patients showed a decrease of maximum renal tubular reabsorptive capacity for glucose (\(T_{m_g}\)) during treatment. This persisted into the post-treatment period and was associated with glycosuria. Depression of this renal function seems to be an early and lasting result of hypercorticoidism.

BERNSTEIN


Two cases of pheochromocytoma, one with a clinical picture of sustained malignant hypertension and the other with paroxysmal attacks, are presented. Because of its prolonged adrenolytic action, Dibenamine was administered to both patients during the immediate pre-operative period and apparently exerted its hypotensive effect during operative manipulation of the tumor. In both cases infusion of norepinephrine during the operation and the immediate postoperative period prevented a marked drop in blood pressure without producing the side effects occasionally encountered with epinephrine. After operation tests failed to reveal any excess pheochrom tissue.

SEIGAL

PATHOLOGIC PHYSIOLOGY


Muscle clearance studies utilizing radioactive sodium (\(Na^{24}\)) and iodine (\(^{131}\)) were performed on 60 control and adrenalectomized rats. The latter were maintained on desoxycorticosterone acetate (DCA) and saline. Clearance of radioactive sodium was increased in the adrenalectomized animals maintained on DCA alone. Because radiosodium clearances varied under experimental conditions, whereas radioiodine clearances remained essentially the same, the authors conclude that the two radioisotopes cannot be used interchangeably to quantitate peripheral circulation.

WESSLER


Since Fiedler’s original description of interstitial myocarditis, many other cases have been published with acute, subacute or chronic course. This disorder occurs mainly in young persons and sudden death is very common. The usual clinical picture is that of rapidly progressive heart failure in a previously healthy young person.

The case presented here is that of a 3 year old girl who died after a month’s illness and in whom no etiologic agents could be ascertained to account for the diffuse myocarditis found at necropsy. A zone of unilateral cortical necrosis of the kidney was a feature of this case, and, despite the presence of antemortem thrombus in the left ventricle, the appearances of the renal lesion, by reason of its site and extent, were considered to be those of cortical necrosis and not infarction. Either vascular spasm or renal anoxin may have been the cause of the cortical necrosis.

BERNSTEIN


Chronically hypertensive rats showed no significant difference in liver glycogen or skeletal muscle glycogen when compared to control groups. However, the cardiac glycogen was significantly higher in the hypertensive rat. It had previously been shown that in conditions in which a ketonemia is produced there is a positive correlation between blood ketone levels and cardiac glycogen storage. In this experiment, no increase in blood ketones was found and, therefore, no evidence that the increased storage of glycogen by the hypertensive heart was related to a generalized disturbance in carbohydrate utilization.

WAFF


It is known that potassium is filtered through the glomeruli and reabsorbed partially by the tubule in normal man and animals. There is also some evidence that under certain circumstances potassium may be secreted by the tubules. During an experiment on sodium and potassium excretion in rats, a few instances were found in which the
potassium clearance was higher than that of inulin. This occurred in animals which, in spite of the administration of 5 per cent of their body weight of water had an abnormally low urine flow, probably as a result of accidental dehydration, and in rats in which the rate of urine flow was so high that a faulty measurement of urine volume was assumed.

From his calculations the author believes it likely that the enhanced potassium excretion was the result of a tubular secretion of that ion. Such secretion, however, did not seem to occur in newborn rats in which the depression of glomerular filtration seems to be the principle factor regulating renal excretion of potassium.

WAIFE


A new, simple, accurate method for continuous measurement of resistance is introduced. The proximal and distal ends of a femoral artery are cannulated. The two cannulas lead to a small chamber, separated from a recording mercury manometer by a slack rubber membrane. The pressure in the manometer is transmitted through the rubber membrane to the blood in the small chamber. Blood flows from the chamber via the distal cannula into the femoral artery. Short occlusions produce a downward projection on the continuous blood pressure record. The length of the spikes, cross sectional area of the manometer tube, and duration of occlusion permit calculation of rate of flow at that point. Dividing the mean blood pressure by rate of flow gives the resistance. Using this method, intravenous epinephrine was shown to increase blood pressure and cause a vasoconstriction of progressive intensity. Maximum resistance is reached after pressure starts to fall. When epinephrine was injected intra-arterially there was no change in blood pressure. Increasing concentrations by this route first caused vasodilation, then dilation followed by constriction, and at highest values only constriction. Priscoline lowers blood pressure with vasodilation. When epinephrine follows Priscoline there is often a fall in pressure with vasodilation.

OPPENHEIMER


The authors studied (a) the velocity of the blood flow in the affected leg and (b) the degree of reflexory response to stimulation of the anterior tibial muscle in 29 patients with disturbance of the circulation in the lower extremities, of various etiologies. The circulation time was determined by timed arteriography and the muscle irritability by a special device ("Muscle Meter"). The cases could be divided into four groups.

In the first group were patients in whom the arteriogram showed no abnormalities of the vascular wall and both circulation time and reflex tone were normal. A second group consisted of cases with no abnormality in the arteriogram, but with decreased velocity of blood flow and with increased muscular irritability in the affected leg, considered by the authors to indicate a disturbance of the vasoconstrictor regulation of the flow in the terminal vascular area, including the arterioles. A third group revealed similar alterations of circulation time and muscle tone and showed, in addition, evidence of organic involvement of the vascular wall in the arteriogram, due to the development of secondary arteriosclerosis. In a last group of patients, who, in the presence of abnormal arteriograms, had a normal circulation time as well as normal muscular tone in the affected extremities, the impairment of circulation was ascribed to an organic vascular lesion without any functional component.

Pick


Knowledge of the factors operating to maintain a vessel in a certain diameter under any given blood pressure and vascular "tone" are fundamental to an understanding of small blood vessels. Two forces are in equilibrium in the wall of the vessel. Hydrostatic pressure acts at right angles to the vessel wall to increase its diameter. Opposed to this is the tension in the wall of the vessel, acting at a tangent to the radius, to decrease its diameter. This tension may be considered in absolute units (dynes) for unit length of vessel. This force will pull apart the two edges of a longitudinal slit made through the vessel wall. The equilibrium of forces in the wall of a blood vessel is governed by Laplace's law which states that the excess of hydrostatic pressure within the vessel over that outside (dynes per cm²) is equivalent to the tension in the wall (dynes per cm.) divided by the radius (cm.).

The total tension of the wall is made up of elastic and active tensions. Elastic tension is due mostly to stretch of elastic fibers in the vessel wall opposing stretch. This tension is determined by the increase in circumference beyond the unstretched value. Tension of smooth muscle due to stretch is considered to be elastic. Active tension depends on contraction of smooth muscle in vessel walls, governed by nervous or humoral factors. Interfacial tension between liquid and vessel wall also plays a role in total tension.

From the radius of blood vessels and the known pressure within them, the total tension in many mammalian vessels has been computed from Laplace's equation, \( T = P \times R \). Radius is the most
important factor determining the total tension in
the wall since it changes by a factor of 10,000
between aorta and capillaries as compared to pres-
sure which changes about four times. Although
pressure falls from capillaries to veins, tensions in
the wall rise because the radius increases so much.
Elastic fibers in vessel walls and maintenance ten-
sions are well correlated. This permits walls to hold
against prevailing blood pressures without continu-
ous energy cost. Because of their small radius, capillaries need no great strength to stand pressures
as high as arterial in occlusion experiments.

Elastic diagrams (tension in vessel wall plotted
against radius) demonstrate that elasticity follows
Hooke’s law (a straight line) for only small amounts
of stretch, becoming steeper when stretch increases.
The linear part is considered to be due to elastic
fibers and the steeper part to the restricting jacket
of fibrous tissue which limits distensibility when
distension is great. With age the linear part has a
smaller slope (elastic fibers weakened) and later steeper part appears at smaller degrees of stretch
(fibrous wall more important).

Equilibrium can be stable under elastic tension
alone but not under active tension alone. Under
active tension alone the vessel will either expand
progressively in an explosive manner or be com-
pletely closed. These facts are shown by equilibrium
diagrams which relate the total tension to elastic
curves. Intersection of the straight line for total
tension and the curve for elastic tension establishes
the equilibrium point under elastic tension alone.
Elastic tissue is needed to make possible a graded
constriction or dilation under vasmotor tone (ac-
tive tension). Elastic tissue automatically changes
tension to a greater extent than required by
Laplace’s law with change in radius. As in sphin-
eters, where there is little or no elastic tissue, vessels
are either opened or closed. Equilibrium, under
both elastic and active tensions together, is possible
over a range of diameters.

Large increases in active tension are required to
produce first constrictions. Slight further increases
greatly increase the degree of constriction. The
maximum increase in active tension occurs near
where elastic tension is zero, that is, any active
tension greater than maximum will close the vessel.
With a given active tension, if the pressure in the
vessel be lowered, the vessel will eventually reach a
point where it will have to close completely. This is
the “critical closing pressure” which exists for any
given active tension. Whenever pressure falls below
this point the vessel will close completely. Critical
closing pressure ($P_c$) is the active tension ($T_a$) in
the wall divided by the “unstretched” radius of the
vessel ($R_0$). If the radius of a vessel is known the
critical closing pressure will be a measure of the
active tension in the wall, the vasmotor tone. Critical
closing pressures are independent of blood
viscosity.

Important concepts relating to aortic aneurysm
and kidney in hypotensive shock are presented.
Critical closing pressures above 100 mm. Hg, due
to vasmotor tone, have been measured.

Oppenheimer

Kral, V. A.: Neuropsychiatric Sequelae of Cardiac
64: 138 (Feb.), 1951.
The author presents the case of an 18 year old
boy who suffered cardiac arrest for four and one-
half minutes during spinal anesthesia; he discusses
in detail the results of neuropsychiatric observation
of one year’s duration. Immediately after the cir-
culatory arrest was terminated by heart massage
and procaine injection, a state of decerebrate rigidity
developed. This lasted for 48 hours and was fol-
lowed by a state of decortication. In the second
month of the illness definite signs of cortical func-
tion became manifest. However, three months after
the cardiac arrest occurred there were signs point-
ing to involvement of the basal ganglia, the
cerebellum and the cerebral part of the spinal cord.
There was also damage of the pyramidal tract and the
sleep regulating apparatus in the diencephalon.
Severe cortical damage was reflected in the psy-
chiatric symptoms.

During the ensuing period of observation the
patient was apparently able to overcome the dam-
age of the spinal cord and the lower parts of the
brain, but a considerable loss of cortical function
remained unchanged and there was no appreciable
sign of further recovery.

Schwartz

Wagstaff, J. K.: Recurrent Syncopal Attacks from
(March 24), 1951.
The author presents a case in which recurrent
attacks of bradycardia and syncope occurred in an
infant of 2 months in which the etiology remained
obscure. Unconsciousness was followed by asystole
with no electrical activity for a few seconds, fol-
lowed by a regular rate of 37 per minute, which
progressively increased with return to normal. The
author feels that these attacks simulate cardio-
deressor syncope (vagovagal). Adrenaline failed
to prevent slowing, but this may have been fortuitous
or may have been effected through its action in
reducing the excitability of the vagal endings. The
author concludes that further study may yield
information which would classify cases such as this
as one of the causes for sudden death in infancy.

Tandowsky

Hall, C. E., and Hall, O.: Hypertensive Disease
Produced by Desoxycorticosterone Acetate in
Parabiotic Rats. Arch. Path. 51: 240 (March), 1951.

The authors implanted 100 mg. desoxycorticosterone acetate (DCA) (pellets) in the right partner of 20 pairs of parabiotic rats. After 30 to 40 days the rats were sacrificed. In the interim their blood pressure was recorded at 48 hour intervals. In 75 per cent (15 pairs) the treated rat showed no hypertension. In fact, a hypotension ultimately developed. The untreated partner became hypertensive and microscopic examination revealed arteriolar and parenchymal changes characteristic of DCA hypertention. In the remaining five pairs, in which the treated rat was moderately hypertensive and the untreated remained normal, the vascular union was unsatisfactory. The authors offer no explanation for the peculiarly contrasting results, namely, hypotension in the majority of the treated parabiotic rats and hypertension in the untreated partners.

Gouley


If the blood supply to the human brain is suddenly interrupted, consciousness is lost in six seconds. The circulation should, theoretically, be halted by an acceleration which reduces mean arterial pressure at the level of the head to near zero values. However, maintenance of consciousness has been reported during a blackout. To study this problem further arterial and cerebral pressure and oxygen determinations were made in three subjects during acceleration.

In spite of great falls in cerebral arterial pressure the venous saturation remained almost unchanged. This suggested that cerebral blood flow was being maintained. There was some evidence of active cerebral vasodilatation during acceleration. When a subject is placed in the erect position in a high gravitational field, cerebral vascular sufficiency may be maintained in spite of a great fall in arterial pressure. This may result from a decrease in pressure on the venous side of the cerebral capillaries, or from passive vasodilatation due to an expansion of the cerebral vascular bed. It is probable that whenever acceleration persists for more than a few seconds a combination of these effects develop together with some active cerebral vasodilatation.

Waife


The authors recorded intracardiac pressure together with electrocardiographic and pneumographic studies during anaphylactic shock. Following the intravenous shocking dose of antigen to sensitized rabbits, the systolic and diastolic right ventricular pressures rose. This was followed by gradual reduction in pressure to zero. In all but one rabbit, respirations ceased abruptly although heart action and intracardiac pressure pulsations continued for periods up to 10 minutes. The abrupt manner in which respiration stopped following the anaphylactic reaction suggests a sudden peripheral respiratory failure. Major electrocardiographic changes did not occur until after respirations had ceased and until after right ventricular pressure changes were no longer recorded. This suggests that death was not due to disturbances in conduction mechanisms of the heart or to myocardial damage.

Waife


Two cases of interstitial myocarditis in children are presented and the literature of the subject is reviewed. The first case was that of an 11 month old female with clinical signs of an upper respiratory infection and the second that of a 6 week old boy whose outstanding symptoms were those of a gastrointestinal disorder. Both cases showed exudative inflammatory changes involving the endocardium and epicardium as well as the myocardium. Although both cases had an interstitial pneumatic process, no definite causative agent was demonstrated. The authors conclude that "isolated myocarditis" in children is a manifestation of a more generalized disease process which under certain circumstances may lead to severe myocardial complications.

Sagall


The effect of posture on hepatic blood flow was estimated by the bromsulfalein extraction method in eight normotensive and 12 hypertensive subjects. In all subjects the estimated hepatic blood flow decreased following the tilt from the horizontal to the upright position. This was not associated with proportionate changes in mean arterial pressure so that the calculated hepatic-portal resistance was increased. These changes were not directly related to increases in pulse rate or to other signs or symptoms of poor circulatory adaptation to the upright position. These results confirm the impression gained from indirect evidence, that active vasoconstriction occurs in splanchnic organs when subjects are tilted into the upright position.

Cerebral blood flow and metabolism were measured in 16 patients with pernicious anemia. In a group with severe anemia, cerebral blood flow was increased and cerebral vascular resistance decreased; in the group with moderate or no anemia, cerebral blood flow was decreased and vascular resistance increased. In both groups, cerebral oxygen and glucose consumption was decreased, as was cerebral venous oxygen tension. There was a good correlation between the mental status defects and cerebral oxygen consumption and between severity of neurologic involvement and cerebral oxygen consumption. Specific therapy resulted in a moderate increase in cerebral oxygen consumption and cerebrovascular resistance. In no instance did cerebral oxygen consumption become normal. It is concluded that pernicious anemia results in specific nervous system involvement not related to the anemia, and that this damage is at least partially irreversible in many patients.

Bernstein


The method of continuous measurement of the concentration of intravascularly injected Evans blue dye in whole arterial blood by means of an earpiece oximeter or a cuvette oximeter for whole blood has revealed abnormal patterns in the dye curves obtained in the study of patients who have certain types of cardiovascular disorders.

Artefacts can produce abnormal patterns and can be caused by: (1) electrical or mechanical instability of the recording instruments, (2) failure to deliver the dye to the heart in a uniform manner, and (3) irregularities of respiration, heart rate, cardiac output or rate of blood flow past the oximeter.

A given dye curve may fall into one of five general patterns: (1) the normal pattern, (2) the heart failure pattern, (3) the pattern of left to right shunt, (4) the pattern of right to left shunt, and (5) the combination of left to right with a right to left shunt.

To date reliable anatomic localization of a congenital lesion has not been possible. Cardiac catheterization or some other procedure must be employed to permit this important differentiation. The dye method may have increasing usefulness as a screening procedure and thus render some diagnostic catheterizations unnecessary. The finding of a normal dye curve can rule out the presence of large shunts and likewise, the finding of an unsuspected abnormal curve may be an indication for catheterization of the heart, with the eventual possibility of surgical benefit. The procedure may be a possible method for following the course of cardiac failure or the changes in blood flow resulting from surgery on the heart and great vessels. Quantitative studies may find clinical application in the simultaneous determination of circulation time, cardiac output and Evans blue space in a variety of conditions affecting the circulation.

Mintz


By use of a thermocouple threaded to the tip of an intracardiac catheter temperatures in 24 afebrile subjects were measured potentiometrically. There was a small but consistent gradient of increasing temperature in the larger veins as they approached the heart. The gradient is deeper in the thorax than in the abdomen. Rectal temperature exceeded intracardiac and deep intravascular temperatures by a small but significant amount, while temperatures in the veins draining the liver and brain were higher than the temperatures in the veins into which they drained.

Differences between right heart temperature and rectal temperature were not of sufficient magnitude to be of practical importance in afebrile subjects. During fever, however, rectal temperature may exceed intracardiac temperature by a significant amount. Intracardiac, or its equivalent, femoral arterial, temperature represents an average blood temperature which seems to approach that of the deep tissues more closely than any other single measurement. It would seem that these temperatures would have considerable significance in thermal homeostasis since the temperature of the blood as it enters and affects vital centers in the hypothalamus is more apt to be indicated by these measurements than by any other now available.

Waife


Physiologic studies in cyanotic congenital heart disease and pathologic studies in chronic pulmonary disease have demonstrated the existence of collateral circulation between systemic and pulmonary arteries. These are in the form of pre-capillary anastomoses between bronchial and pulmonary arteries. The authors report studies on 10 patients with chronic lung disease, using the techniques of cardiac catheterization and oxygen analyses while breathing room air and oxygen. Estimations of
systemic blood flow, shunted blood flows and effective pulmonary flow were made according to formulas which are discussed in this report.

In 7 of the 10 cases, mixed venous blood was being shunted through non-aerated lung capillaries, and in each of these cases evidence was obtained indicating the presence of collateral channels between bronchial and pulmonary arteries. Two of these cases came to surgery, and the resected lung specimens supported the estimations of collateral flow.

In chronic lung disease the development of collateral flow cannot be ascribed to a high pressure gradient between systemic and pulmonary circulations, but is probably due to chronic inflammation. Since the collateral circulation develops in diseased parts of lung where further aeration is poor, it results in relatively slight benefit at the expense of an increased work load on the left heart, which may then fail. This mechanism is an important factor in the paradoxical observations of left ventricular hypertrophy reported in cases of cor pulmonale and cardiopulmonary disease.

Enselberg


Nine diabetic patients on clinical grounds were diagnosed as suffering from the specific renal lesion described by Kimmelstiel and Wilson. Two of these diagnoses have subsequently been confirmed at autopsy. The inulin clearance, paraaminohippurate clearance, maximum tubular reabsorptive capacity and maximum paraaminohippurate tubular excretory capacity have been measured in these patients, and the results are discussed.

These investigations were initiated in the hope that in diabetic glomerulosclerosis a characteristic pattern of disturbance of the various renal functions susceptible of measurement would, on the one hand, facilitate the diagnosis of the condition during life by means of special tests and, on the other hand, further knowledge concerning the pathogenesis of the condition. The results of this brief series of investigations show that the first hope has not been realized. The pattern of disturbance of renal function closely resembles that observed in chronic nephritis, and, while more refined statistical analysis of a much larger series of cases may reveal subtle differences between the disturbances of functions resulting from these two lesions, this will not be of any value in the diagnosis of the individual case.

The results throw no light on the pathogenesis of this condition. These renal function tests do not provide during life a means of differentiating the condition from nonspecific renal disease in diabetes.

Bernstein


A case of nonspecific pericarditis with a fatal termination is presented. The probable harmful effect of anticoagulant therapy is considered.

The difficulty in differentiating acute nonspecific pericarditis from acute myocardial infarction is shown quite clearly. Many of the classic features of myocardial infarction were present. The patient was in an older age group; the onset, location and radiation of pain were typical; fever and leukocytosis were present; and a friction rub developed. In retrospect it was seen that the significant points suggesting the presence of pericarditis were the relation of the pain in the chest to respiration, the constancy, duration and intensity of the friction rub and the failure of development of electrocardiographic changes suggesting myocardial infarction.

Postmortem examination unequivocally established the primary disease as being in the pericardium and showed intense hemorrhagic changes with an element of cardiac tamponade. In the reported cases of benign pericarditis in which pericardiacentesis was performed, the large majority revealed hemorrhagic fluid. It seems probable that in such instances anticoagulant therapy would intensify bleeding into the pericardial sac. The supposition that this above case terminated fatally in part owing to the anticoagulant therapy appears justifiable.

Bernstein

Peripheral collapse may occur during venous congestion of the extremities in normal subjects and in those who suffered recent blood loss. Patients receiving hypotensive agents, such as sodium nitrite, mixed dihydrogenated alkaloids of ergot, or hexamethonium, and to some extent tetraethylammonium, are unusually susceptible to this “congestion-collapse.” Hypotensive drugs such as veratum viride and sodium amytal, which do not ordinarily cause postural hypotension, did not induce congestion collapse.

Measurements of the blood volume trapped in the limbs indicate that this hypotension and collapse is not due to pooling of excessive amounts of blood in the limbs. This reaction is probably due to failure of compensatory vasoconstriction in other areas than in the congested extremities.

Sympathectomized subjects were more resistant to hypotension during the post-drug period than normal subjects.

Waiffe


Antistreptolysin titers were determined weekly for three to seven weeks in several hundred cases. The titers started increasing in the first week of the disease and became maximal in three to seven weeks. Young children generally had higher titers than adults, and also had a higher frequency of suppurrative complications and a lower frequency of myocarditis than adults. A significant correlation was found between prolonged initial fever and higher antistreptolysin values. Penicillin treatment tended to inhibit antistreptolysin production, reflected also in the increased frequency of relapse in penicillin-treated cases. Patients with suppurrative complications produced more antistreptolysin than did uncomplicated cases. The highest titers observed occurred in the cases of acute nephritis.

Enselberg

PATHOLOGY


Of 205 autopsies on infants under two years, there were two instances of congenital fibroelastosis of the endocardium. The authors reviewed 11 previously reported cases and added two new cases. Twelve were under 27 months and nine under 5 months of age. The presence of fibroelastic thickening of the endocardium in one premature infant suggests that the pathogenesis may be operative in early fetal life. Cardiac hypertrophy was observed in all but one case. All of the patients died in cardiac failure. Seven of the 13 cases had associated cardiovascular anomalies besides cardiac dilatation or hypertrophy. The abnormalities in five cases were located in the great vessels of the heart, and the remaining two cases had anomalies of the heart chambers. Fibroelastic thickening of the left ventricle was observed in all of the cases. Ten showed the changes in both the left ventricle and the left auricle, and one showed endocardial thickening in both ventricles and in the right auricle. There was a history of infection during pregnancy in five cases. However, on both gross and microscopic examination there was no evidence of an inflammatory anlage in the production of these lesions. Although the pathogenesis of this lesion is not definitely known, the authors believe that the explanation probably lies in a developmental aberration in the fetus.

Margolies


The authors' observations of 428 patients with poliomyelitis are reported. Fifty per cent of the patients were adults. Electrocardiograms were recorded in 28 patients; 11 showed abnormalities in the T waves, prolongation of the P-R or Q-T intervals, depression of the RS-T segments, or a Q-T pattern. One patient with a Q-T pattern had acute myocariditis at autopsy. The electrocardiograms became normal in those patients who recovered. Seven per cent of the patients had prolonged hypertension during the acute illness. This was more common in those individuals over age 16 years and in those who were cyanotic and severely ill. The authors believe suboxxygenation is the cause of hypertension in most of these cases and they were able to relieve it by administration of oxygen or by improving respiratory efficiency mechanically or both. Acute pulmonary edema was common in fatal cases of the bulbar form of poliomyelitis and it is suggested that intravenous fluids are best avoided. Since all cases with pulmonary edema were of the bulbar type, the authors consider a central origin for the edema most probable, but disease of the myocardium may have been a contributing factor in some instances. Myocarditis was present in 12 of the 16 patients who were examined at autopsy. One showed focal edema of the mitral valve, another had hemorrhage into the mitral valve, and a third had a sterile acute pericarditis. Myocarditis seemed more common and it was more severe in the older patients. The presence of myocarditis is considered evidence suggesting that poliomyelitis may produce damage in structures outside the nervous system.

Rosenbaum

Owing to the higher resolving power of the electron microscope the authors were able to see details that have not been reported in the literature. (1) The nuclei found in the newborn mouse heart are of greater number and more elongated than those found in the adult mouse heart. The nuclei contain more than one nucleolus, as a rule. (2) Two types of fibrils were differentiated in the heart muscle. Type A is cylindrical with regular segmentations, resembling a bamboo stick. These fibrils are characteristically connected only at the intersections, corresponding to the Z band of the skeletal muscle fibril. Between two of these intersections, forming the border lines of a sarcomere and parallel to them, a dark line or two small dark lines separated by a light area can be seen. These lines are the equivalent of the M band of striated muscle. Type B of the muscle fibers of the heart has a typical syncytial character. They do not present continuous single fibrils, but for a short distance a fibril can be seen before it merges with its neighbor. Z lines cross the entire width of these sheaths and in some areas broader dark lines exist perpendicular to the Z lines. (3) Capillaries are easily recognized. They have a dark endothelial lining. The endothelial nuclei are flat or curved and covered by an endothelial sheath. Some of them contained nucleoli. (4) The blood corpuscles were not circular but of a crescent or sausage outline and depending on the direction of the cut, they had the form of a ring or doughnut. The largest circularly shaped red blood cell had a diameter of about 4.5 to 5 microns. Occasionally spindle shaped cells 2.0 to 2.5 microns long and 0.5 microns wide were observed; these were regarded as thrombocytes. (5) The arrangement of the fibrils of striated muscle from the abdominal rectus muscle of mice showed a similarity to the arrangement of the bamboo stick fibrils of the auricle and ventricle. These fibrils are connected with each other in the region of the Z bands, in a warp and woof pattern.

Gelfand


Six cases of Friedreich’s disease are described. Four were males and two were females. Only one patient had symptoms referable to the circulation, consisting of congestive heart failure, parasympathetic and pericardial effusion with development later of pain suggestive of angina pectoris. Cardiac enlargement was present in three cases and cardiac murmurs in five. The electrocardiograms were abnormal in all of the five patients in whom they were recorded. The major electrocardiographic changes were: inversion of the T waves in two or three of the standard leads, lead aVF, and in leads from the left precordium (leads V5 and V6). In one case postmortem studies revealed diffuse myocardial fibrosis and extensive coronary arterial obstruction, chiefly in the left ventricle. No explanation for the arterial change is offered, but it is speculated that examination of skeletal muscle in these cases may show similar vascular changes. Electrocardiographic studies may be helpful in the diagnosis of suspected cases of Friedreich’s disease where the chief complaint is incoordination. An abnormal electrocardiogram tends to establish the diagnosis in such cases but a normal record does not exclude Friedreich’s ataxia.

Rosenbaum


Spontaneous occlusion of the cervical portion of the internal carotid artery may be a rare cause of the sudden occurrence of hemiplegia. It is difficult or impossible to differentiate between pulsation of the internal and external carotid arteries by palpation, but the internal carotid artery is larger than the external, so that an absence of pulsation or a marked difference in the carotid pulses above the bifurcation on the two sides should arouse a suspicion that occlusion of the internal carotid artery might exist. It may occur during early adult life, but atherosclerosis is the most common cause. Syphilitic arteritis, nonspecific arteritis, and embolism may also result in acute vascular occlusion of the carotid vessels in the neck.

The author presents two cases, both of whom had developed sudden hemiplegia, presumably on the basis of a cerebrovascular accident. Study some months later revealed occlusion of the internal carotid artery. In one case, the thrombosed segment was resected and it showed marked arteriosclerotic narrowing with an organizing thrombotic occlusion.

Cortell


The authors examined 1000 pig hearts grossly and 850 additional hearts microscopically. In the first group, 200 were from pigs under 8 months of age, and showed no evidence of endocarditis. The older group showed 12 instances of recent endocarditis, featured by edematous and hemorrhagic valvular infiltration; eight cases of acute vegetative endocarditis, in two of which bacteriologic study proved the causative factor to be Eriepilothrix rhustophiaie.

In the group of 850 porcine hearts microscopically examined, numerous chronic changes were noted in approximately 10 per cent, involving the mitral
valve leaflets, small musculoelastic arteries, the myocardium and the pericardium, and of a type closely resembling those lesions in chronic rheumatic heart disease generally labeled “rheumatic stigmata.” These constitute the minor histopathologic findings commonly noted in chronic rheumatic heart disease as contrasted with the specific Aschoff changes and sometimes used in the absence of the latter as the diagnostic basis in cases of atypical valvular pathology. Multiplication, distortion and calcification of the elastic structure, subendocardial fibrosis and cellular “palisade” are commonly seen in pig hearts, in the mitral valve and in the left auricle. This suggests to Saphir and Lowenthal that pigs have a chronic endocarditis residual from bacterial and vegetative endocarditis indistinguishable in the healed state from what commonly is accepted as chronic rheumatic heart disease in the human. The authors believe that many human hearts with moderate valvular fibrosis and without Aschoff bodies but showing “rheumatic stigmata” may thus be evidence of healed bacterial endocarditis rather than rheumatic fever.

Gouley


The demonstration of an enlarged left auricle by radiologic examination has been considered an important criterion in support of the diagnosis of mitral stenosis. In a survey of the clinical material available to the authors, seven patients out of 30 with this disease failed to demonstrate the roentgen characteristics of left auricular enlargement, either by fluoroscopy or esophagograms. This problem was further studied in a review of the records of 30 patients with mitral stenosis and left auricular enlargement found at autopsy following a period of clinical observation. In six cases, no evidence of left auricular enlargement had been discerned ante mortem. In one instance a giant left auricle was suspected despite normal esophagograms because of a double contour visible along the right cardiac border. In four of the six cases with unrecognized auricular enlargement, aortic valve lesions were found in association with mitral stenosis. In the entire study, there were 13 patients in whom left auricular enlargement was not radiologically demonstrable; in 11 of these patients, auricular fibrillation was present. It is concluded that mitral stenosis may exist without roentgen evidence of enlargement of the left auricle.

Shuman


Eight cases of abdominal aortic aneurysm which ruptured into the duodenum were found in 16,633 autopsied cases. Seven cases were arteriosclerotic in origin and one combined severe arteriosclerotic with syphilitic changes. The average age was 72 with a range from 66 to 80 years. The ratio of men to women was 5:3. Occupation was not important etiologically. Four patients had hypertension. Abdominal pain, continuous, burning or colicky, and unrelated to meals, was present in seven cases. It was epigastic in location and referred to the back in three cases. It was relieved by sitting up in two cases. The pain was usually a terminal manifestation and preceded melena and hematemesis by only a short period in all but two cases. Two patients had syncope, though weakness was noted by all; two noted an abdominal mass, one for 30 years and one for 19 months; two had weight loss. Physical examination was negative except for an abdominal mass in seven cases.

X-rays showed vertebral erosion with sparing of the discs; a soft tissue mass with organ displacement; calcification, when present, was thin and crescentic with the concavity toward the vertebral column.

The prognosis is poor.

Bernstein

Pharmacology


A cinchoninic acid derivative, 3-hydroxy-2-phenylcinchoninic acid (HPC), has been used in a small series of patients. Fever and acute arthritis were speedily relieved in rheumatic fever. Results in polyarthritis nodosa were equivocal.

The most striking effects in the series were obtained in three patients with scleroderma, a disease hitherto not responsive to any known treatment. Improvement occurred in all cases, as shown by the histologic examination of biopsy specimens obtained before and after treatment. The results were striking and have so far been maintained in one case, but were only temporary in two.

Very slight and inconstant improvement followed the administration of HPC in chronic lupus erythematosus, but was not confirmed by histologic examination. Toxic effects were infrequent and less severe than those which may follow the use of sodium salicylate, and consisted in slight nausea, diarrhea and, more rarely, vomiting.

Bernstein


Eight cases of disseminated lupus erythematosus, two cases of deep-seated exfoliative dermatitis, and one case each of periarteritis nodosa, scleroderma, discoid lupus erythematosus, superficial allergic dermatitis, and dermatitis herpetiformis, were chosen.
ABSTRACTS

Kitchell


A woman of 33, who had had lymphocytic meningitis five years before, developed severe anorexia and muscular weakness after an attack of peritonsillitis and a six-month abortion. She was at first thought to have Addison's disease, but treatment with sodium phosphate and deoxycortone produced severe cardiac disturbances and she was then found to have a very low serum potassium level. Her hypokalemia and weakness lasted for six months and could only be relieved by giving potassium phosphate regularly by mouth, her condition relapsing whenever the potassium therapy was discontinued.

It is important to recognize that such cases exist; that the condition may be hard to differentiate from Addison's disease, anorexia nervosa, and familial periodic muscular paralysis; and that potassium by mouth will relieve all the symptoms of hypokalemia over long periods and may be life-saving.

Bernstein


Acute hypokalemia developed in a woman of 44 with chronic kidney disease. It was combated successfually with parenteral and oral potassium salts. In four days the patient retained 1072 mEq. of potassium and was dramatically relieved.

The administration of neutral potassium phosphate caused hyperphosphatemia and hypocalcemia, with temporary tetany and inhibition of blood clotting. The administration of a concentrated solution of potassium chloride without a simultaneous supply of phosphate reduced the serum phosphate to zero. There were no demonstrable changes in serum calcium.

The authors found that in normal rabbits the administration of sodium phosphate lowered the serum calcium while the serum potassium remained constant. The infusion of potassium chloride solution in normal rabbits did not lower the serum phosphate. These findings agree with the concept that the fall in serum phosphate is intimately connected with the assimilation of potassium by the potassium deficient cells.


Seventeen patients with tuberculous pericardial effusion and associated circulatory failure were treated primarily with streptomycin. Forty-seven per cent improved; 35 per cent of the patients died. Seven cases had pericardietomies with only one death. No spread of tuberculosis was noted following operation in any case previously treated with streptomycin. These results are good in comparison with a series of 18 patients not receiving streptomycin, of which two improved with medical management alone and the remaining six survivors improved only after pericardietomy.

Kitchell


Two cases of cirrhosis of the liver with ascites were put on salt-free diets and weekly injections of mercurial diuretics. After failure of improvement on this regime abdominal paracentesis was done. Following this each patient developed a salt-depletion syndrome. The authors feel this may explain the disastrous results that sometimes follow repeated removal of large amounts of ascitic fluid after the use of salt-free diets and mercurial diuretics.

Bernstein


Oral therapy with rutin for control of capillary
fragility has been generally considered of no value in diabetes mellitus. In order to avoid difficulties with intestinal absorption during oral administration, rutin was prepared for intravenous injection as a methyl glucamine complex. In addition, two other types of "Vitamin P", Esculin and Adrenoxyl, were investigated for their capillary stabilizing effects. Vitamin E was also studied for its ability to influence capillary fragility. The drugs were administered parenterally and orally to a series of diabetic patients. Petechial counts were performed using a positive pressure method.

None of the agents employed singly or in combination had any significant influence upon increased capillary fragility. Spontaneous variations in the response to tests for capillary fragility were encountered in diabetes. It is pointed out that the adrenal steroids have a capillary stabilizing effect which may be responsible for such variability.


Norepinephrine is a primary amine identical in chemical formula to epinephrine except for the absence of a methyl group on the nitrogen atom. It has been synthesized and has also been extracted from postganglionic adrenergic nerves, from the adrenal medulla and from pheochromocytomas of man. It may be a possible precursor of epinephrine in the body, although the pharmacologic action of the two drugs varies significantly. Norepinephrine produces a slowing of the heart, a rise in systolic and diastolic pressures and a total increase of peripheral resistance without any significant effect on cardiac output. The latter response is entirely different from that elicited by epinephrine.

The authors used norepinephrine during and following thoracolumbar sympathectomy in an attempt to maintain blood pressure. The drug, given in a continuous intravenous infusion, was found to possess all the actions of a very satisfactory pressor agent.


Two cases illustrating a pyrexial reaction to mercurial diuretics are presented. The reactions followed the mercurial injections after about three hours and were characterized by fever up to 104 F., rigors, cyanosis, and cough. These symptoms increased daily and ceased when mercurials were discontinued. Different brands of mercurial drugs with slightly different molecular structure produced identical responses, and oral administration caused fever in one case but no effect on temperature or diuresis in the second. Dimercaprol (BAL) was tried and had no effect, but an insufficient amount seems to have been given before the mercurial administration. Both of the patients showed a heightened reaction to intradermal injections of these drugs as compared with controls.


Veriloid is a potent hypotensive drug which on injection rapidly causes a profound fall in blood pressure. For this reason it should prove of value in hypertensive encephalopathy and the convulsions of puerperal eclampsia. Given by mouth its absorption is difficult to control and its effect lasts a relatively short time, with the result that uniform lowering of the blood pressure is not readily obtained; but the variations can be kept at a lower level and symptomatic relief is usually attained. The margin between therapeutic and toxic levels, where high dosage is necessary, is small and makes the fixed arteriosclerotic type of hypertension unsuitable for treatment. Because of vagus action, veriloid is best avoided in the presence of peptic ulceration. Its main field of usefulness is in the younger patients with severe benign or malignant hypertension and possibly those with chronic nephritis.

The toxic effects of veriloid fall into two groups: (1) nausea, vomiting, faintness, and collapse due to its hypotensive action; and (2) bradycardia and subternal and epigastric discomfort from vagal stimulation. Nausea has been produced at times in all the patients, and though this is a nuisance it is also a protection against excessive dosage. The nausea is not invariably the result of hypotension or of vagal stimulation, for it may still occur where neither of these effects is manifest and may then perhaps be central in origin. The patients who developed faintness did so after a considerable amount of veriloid had produced a well marked hypotensive effect, and ephedrine, by abolishing the hypotension, gave immediate relief. The vagal effect is readily overcome by atropine.


The author has designed a defibrillator which consists essentially of an isolating transformer, a current limiting resistor, and a fast-acting electric switch. Additional testing circuits are included, intended primarily for convenience in animal experimentation when it may be desired to change the current. It is claimed that the apparatus is entirely safe and reliable and can deliver 2 amperes on short-circuit test of the electrodes. The author de-
ABSTRACTS


Experiments were performed in dogs to investigate the influence of an adrenolytic compound on the actions of adrenaline and noradrenaline on the arteries of the carotid sinus and thus on the general arterial pressure and respiration. The adrenolytic drug was found to reverse the local action of l-adrenaline and l-noradrenaline on the arterial walls of the carotid sinus.


The oral administration of quinidine sulphate produced a febrile response in two patients reported by the authors. In one instance, there appeared a maculopapular rash with petechiae and splenomegaly in association with drug fever. Cessation of quinidine therapy was followed by subsidence of the anaphylactoid purpuric and febrile reactions. A later exhibition of quinidine in a single dose of 0.4 Gm. produced an abrupt rise in temperature to 104 F. In the second patient, symptoms of cinchonism accompanied the drug fever, both of which subsided when quinidine was discontinued.

It is noted that the febrile reaction appears several days to a week after quinidine therapy has been started. The fever disappears within a period of several hours after withdrawal of the drug. Subsequent doses will produce fever promptly, indicating an acquired sensitivity to the drug.


Thirteen cases of acute benign pericarditis were studied and seven are reported in detail. The ages of the patients ranged from 21 to 53 years. The main symptom was that of substernal or precordial pain lasting hours to days. In most cases the pain was aggravated by a change in position. Additional symptoms of fatigue, cough, dyspnea, or preceding respiratory infection were commonly found. The outstanding physical findings were fever, a pericardial friction rub lasting from hours to several weeks, and cardiac enlargement. All patients showed electrocardiographic changes of elevation of S-T segments and inverted T waves in limb and one or more chest leads. Subsequent examination of all patients one and one-half to three years after the acute illness has not revealed any cardiac symptomatology or abnormal findings.


The effectiveness of mercurial diuretics in the treatment of congestive heart failure suggested to the authors that these agents may be of value in the recognition of this complication occurring in patients known to have asthma. This was investigated in a group of six asthmatic patients, aged 59 to 71 years, who had become resistant to the usual anti-allergic therapy. Emphysema and pulmonary fibrosis were present in all. Hypertension was noted in four patients and arteriosclerosis in the entire group. Because of evidence of cardiac disease, Mercuhydrin was administered, whereupon the previously refractory asthmatic state improved with a complete
subsidence of wheezing, rales, dyspnea, and orthopnea. The patients were maintained subsequently on intermittent mercurial injections in addition to their anti-allergic program with amelioration of the asthmatic paroxysms. A control group of uncomplicated asthmatic patients, aged 25 to 40 years, experienced no benefit from the use of Mercuhydrin. It is suggested from this study that allergic patients over 50 years of age whose symptoms fail to respond to anti-allergic management may have a complicating left ventricular failure which can be differentiated by the use of mercurial diuretics.

SHUMAN


The effect of drugs on the auricle and isolated papillary muscle of the cat were studied by an electronic stimulator. Acetylcholine lowered resting excitability by increasing the rheobase and increased excitability at the same time by shortening the chronaxy. Both of these changes were restored to control levels by the addition of atropine. Atropine alone and quinidine decreased resting excitability, while epinephrine increased it. The refractory period was lengthened by atropine and quinidine, and was shortened by acetylcholine and epinephrine. Contractility was increased by epinephrine and decreased by quinidine and by acetylcholine. The effect of acetylcholine was abolished by atropine, but atropine given alone had little effect on contractility. Spontaneous rhythmic contractions of the muscle were always stopped by acetylcholine and restored again by atropine. Atropine given independently, however, either precipitated or made it easier to initiate spontaneous rhythm. Spontaneous activity was nearly always started by epinephrine but not by quinidine.

SAGALL


The oxygen uptake, anaerobic glycolysis, and adenosinetriphosphatase activity of rat heart muscle were studied before and after the addition of quinidine sulfate. From the results obtained the authors believe that the depression of oxidative metabolism of auricular and ventricular muscle may be responsible for the observed pharmacologic actions of quinidine upon heart muscle and that a major site of action of quinidine upon oxygen consumption is upon glycolysis.

SAGALL


Intravenous infusion of potent veratum derivatives (germitrine, protoveratrine, germidine, germinerine, veratridine, and veratramine) in anesthetized dogs resulted in hypotension. This response was not altered by bilateral cervical vagotomy. This implies that the hypotensive effect of the veratum alkaloids is due to a vasodilatation resulting from a central action and not from a reflex via the vagus nerves.

SAGALL


Sublingual administration of nitroglycerin (0.0006 Gm.) produced increased cardiac output per minute, as well as increased systolic output and heart rate, without altering the blood pressure in 10 normal, healthy, young adults. The cardiac output was determined ballistocardiographically in all cases.

In one instance direct cardiac catheterization yielded qualitatively similar results. The authors believe that cardiac work per beat and per minute is increased by nitroglycerin in the dose used and that nitroglycerin relieves the anginal pain of myocardial ischemia by increasing the coronary flow relatively more than the work of the heart. Caution is advised in the use of nitroglycerin if the anginal pain is not caused by simple, temporary, myocardial ischemia since the drug may produce an undesirable increase in the work of an already handicapped myocardium or shock if the myocardial reserve has been too drastically affected by infarction. The mechanism of increased cardiac output, although uncertain, may be produced by the primary action of nitroglycerin in increasing the venous return by opening wider communications between arteries and veins. The vasodilator effect of nitroglycerin may also lead to an ephemeral decrease in blood pressure which increases heart rate and output reflexly via carotid sinus and aortic arch reflexes.

HARRIS