ABSTRACTS

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BLOOD COAGULATION


In a normal blood vessel the polarity is such that the intima is negative and the adventitia positive. If this is reversed, thrombosis results. The thrombus resembles those formed spontaneously in injured vessels. A current density as small as 0.4 microamperes per square millimeter will create a thrombus in the normal aorta in 4.5 hours. The density of this current is within the physiological limits of injury current across a damaged segment of aorta.

OppoNHEIMER


Eighteen adults with prolonged bleeding time were treated with cortisone, and one infant was treated with corticotropin. In every instance but one the administration of the drug was followed by a decrease in the bleeding time and by the prevention, or the cessation, of hemorrhage.

BERNSTEIN


Minor injury to blood vessels as during dissection renders the intima more negative as compared to the positive adventitia. Transaction or severe injury usually makes the intima positive as compared to adventitia. Fresh grafts have a positive intima before and after implantation. Crush injury increased this positive intimal potential difference. Crush injury did not affect the potential difference of freeze-dried grafts. Electrical insulation by polyethylene tubing prevented thrombus formation due to severe injury. Similar pseudo-insulators made of metal do not prevent thrombus formation; the metal is a good conductor. Calculated and observed injury currents in injured and subsequently thrombosed vessels agree well. It is pointed out that these values resemble the current per unit area which causes thrombosis when applied experimentally.

OPPENHEIMER

CONGESTIVE HEART FAILURE


Data on two normal subjects emphasize again the ability of the organism, when only minimal amounts of sodium are ingested, to conserve sodium by tubular reabsorption of nearly all that was contained in the glomerular filtrate. After this condition had been instituted in one of the normal subjects by sharp restriction of dietary sodium, chloride whose urinary excretion requires a nearly equivalent appearance of total base in the urine, was administered. Less than one-fifth of the base requirement was supplied as sodium. During a second period of ammonium chloride administration while the sodium intake was still restricted, it was found that the urinary sodium was even less. In another healthy subject, following a regimen that caused a marked and rapid depletion of body sodium, the contribution of sodium accompanying the increased urinary excretion of chloride, administered as NH4Cl, fell to only 2 per cent.

An edematous nephritic patient reacted to the administered chloride by excreting only 20 per cent.
of it. This might be explained by the inability of the kidneys to increase production of ammonia and by the small contribution of sodium due to its very efficient reabsorption by the tubules. When tubular reabsorption of sodium was depressed by administration of a mercurial diuretic, the plentiful appearance of sodium in the urine without increase in ammonia was accompanied by a large excretion of chloride. Studies conducted on an edematous patient with heart disease and on two normal subjects showed that under conditions of water restriction, when body water is forcibly lost through evaporation, the anticipated proportionate loss of sodium through the urine did not occur. On the contrary, calculations show that a large transfer of water from the cells into the extracellular space took place in the normal persons. In the edematous patient with heart disease no such transfer was demonstrated. These studies indicate that both the patients with nephritis and those with cardiac disease possessed a very efficient mechanism for the renal tubular reabsorption of sodium. Since in both of the patients the volume of the extracellular fluid was excessive, one is led to conclude that the stimulus which resulted in reabsorption of sodium and water had become greatly increased. The mechanism itself in such patients may be normal and the change be merely quantitative.

BERNSTEIN

CORONARY ARTERY DISEASE


A method was devised to estimate quantitatively the severity of illness of patients with acute myocardial infarction on admission to the hospital. By a predetermined formula, certain specific admission findings and historical data (shock, congestive failure, serious arrhythmias, gallop rhythm, associated serious diseases, history of heart or vascular disease) were assigned a numerical value. This scoring system, termed "Pathologic Index Rating," was found to be closely related to the mortality rate of a large group of patients, ranging from 8 per cent in the group with the lowest rating to 95 per cent in the group with the highest rating. It was felt that this method might be useful in the design of a controlled experiment in which patients could be paired on the basis of their index, and then assigned at random to treated and control groups, rather than the usual method of simple alternation of pairs without regard to severity of illness.

MAXWELL


Two cases with antemortem diagnoses of subendocardial infarction based on the characteristic electrocardiographic findings are presented. In both cases postmortem examination confirmed the diagnosis and showed general narrowing of the coronary vessels without an actual occlusion. The authors postulate that in the presence of an impaired coronary circulation, anemia in the first patient and prolonged vomiting and shock in the second, resulted in subendocardial infarctions. In this form of infarction characteristic Q waves are absent and electrocardiographic changes are limited to R wave and S-T segments. In leads that face the uninjured epicardial surface S-T segment depression is found. Elevation of the S-T segment is found in leads that face the ventricular cavity. These findings must be differentiated from those of "left-sided heart strain" and "digitalis effect."

SAGALL


Anatomic, histologic, clinical and electrocardiographic findings are discussed in 42 cases with subendocardial infarction with special reference to the physiology of normal and abnormal coronary circulation. A variety of etiologic groups was represented in the material. Eighteen cases had arteriosclerotic coronary disease but in only 6 was there a thrombotic occlusion of a vessel. In one case a congenital anomaly of the coronary circulation was present. Seven cases had syphilitic aortitis and/or myocarditis. Six cases had valvular disease, four of them pure aortic stenosis and two combined mitral and aortic lesions. There were 10 cases of extracardiac causes of myocardial ischemia such as pulmonary embolism, shock, hemorrhage and arterial hypertension. All had in common chest pain and a more or less characteristic electrocardiographic pattern with S-T depression in the standard and left precordial leads.

Thus coronary arteriosclerosis is a frequent but not invariable cause of interference with coronary circulation. Myocardial infarction is a consequence of its severest acute variety localized to a circumscribed area of the myocardium, whereas subendocardial ischemia and necrosis appear to reflect chronic or subchronic alterations of the coronary flow involving the myocardium of the left ventricle in a more global form. The particular involvement of the subendocardial layer by this type of coronary insufficiency, and the corresponding electrocardiographic pattern are related to the particular distribution of the coronary tree within the ventricular walls and to progressive decline of the pressure gradient across the wall from epicardium to endocardium.

Pick

Intra-aortic injections of 3 to 6 cc. of 1 per cent procaine immediately preceding the injection of contrast material, will partially or completely prevent arterial spasm induced during aortography. The procedure has been used successfully in 25 patients without ill-effects.

WESSLER


Detailed chemical analysis was performed upon sections of the left coronary artery removed at autopsy from 14 nondiabetic, and 13 diabetic patients of equal average age. The calcium content of the arteries was lower in the group of diabetics than in the group of nondiabetics. Neither the cholesterol nor the total phospholipid content was significantly different in the two groups, nor were the cholesterol-phospholipid ratios importantly different. The lecithin content was lower and the cephalin content was higher in the arteries from the diabetic patients than from the nondiabetic individuals.

ROSENBbaum

ELECTROCARDIOGRAPHY, VECTORCARDIOGRAPHY AND BALLISTOCARDIOGRAPHY


The authors present an electrocardiographic study in 52 cases of patent ductus before and following surgery. In 14 cases the tracing was normal, 29 cases showed alterations consistent with left ventricular hypertrophy, usually isolated or combined with right ventricular hypertrophy. In both of the latter two groups there were a few instances with right or left-sided intraventricular conduction defect. Two cases showed only right bundle-branch block. Following surgery there usually was a marked regression of the signs of left ventricular hypertrophy whereas the other alterations did not change much. The clinical significance of the various electrocardiographic patterns in relation to other associated lesions is discussed.

PICK


Changes in the form of the T waves in patients with auricular flutter and varying atrioventricular block, as well as in auricular fibrillation, depend mainly on variations of rate. These alterations involve only the terminal phase of the T wave, the RS-T segment remaining unchanged. They are seen mostly in leads V3, V4 and V5. These variations may be present only temporarily, as illustrated in patients with acute myocardial infarction. The changes are attributed to variations in the rate of repolarization in abnormal parts of the myocardium. These may be located even in the subendocardial fibers.

RINZLER


The spread of electrical activity through the wall of the ventricle was investigated by means of multipolar recording techniques in open-chested dogs and cats. Multipolar intramural tungsten electrodes permitted recording with a multichannel oscilloscope at very close points within the heart muscle. By constructing isochronous planes in blocks of heart tissue, the direction and speed of cardiac excitation was derived.

Through most of the ventricle, rapid subendocardial activation (average speed: 1.8 meters per second) is followed by slow spread perpendicular to the epicardial and endocardial surfaces (average speed: 300 mm per second). The rapid subendocardial spread may be via the Purkinje tissue, but this has not been established. The results indicate a syncytial spread of electrical activity. Conduction through the wall is not parallel to muscle fibers nor is it channeled through the individual muscle bundles which make up the tissue. It is not interrupted by connective tissue barriers.

MAXWELL


On the basis of experimental electrocardiographic studies reported previously, two types of intraventricular block could be distinguished. The first, caused by impairment of conductivity in the specific system, was termed conduction block. The second, caused by slowing of the speed of the impulse through ordinary ventricular muscle fibers, was termed fiber block. The latter type was submitted to further experimental investigation.

Fiber block can be produced by injection of a toxic substance like cocaine or potassium chloride into a coronary artery, or by ligation of a branch of a coronary artery. The resulting electrocardiographic alterations consist in progressive widening of QRS.
with secondary T-wave changes. When the damage is very severe, these alterations are associated, or preceded, by S-T deviations with monophasic deformation of the curve. These alterations are focal in type, since it can be shown with the help of direct epicardial leads that they are most marked over the area of maximal damage, and show gradual transitions towards normal, as the electrode is moved away from the area of maximal injury. Toxic and ischemic alterations produced very similar patterns, except that the latter showed (in addition to the changes of ventricular activation) a displacement of the baseline. All observed alterations were only of short duration and resulted either in complete recovery or in death of the involved tissues.

The tracings obtained by this method in the dog are very similar to tracings known to occur in human pathology, e.g.; the severest stages of experimental fiber block resemble initial stages of myocardial infarction, while the tracings obtained with only mild focal damage compare very well with patterns characteristic for heart strain. On the basis of these observations the authors present a new concept for interpretation of various abnormal patterns observed in clinical electrocardiography. They imply various degrees of impairment of the speed of activation and deactivation of the ventricular myocardium caused either by focal (subepicardial or subendocardial) damage, or by through-and-through damage of the entire thickness of the ventricular wall. Theoretic principles are discussed on the basis of which it should be possible to predict an electrocardiographic pattern when the site, the extent, the degree of block, and the position of the electrode are known.

**Pick**


The authors studied the incidence and the type of abnormal P waves in various types of congenital malformations of the heart. The "P congenitale" is a large and pointed triangular wave, usually tallest in lead II, and thus, does not fit the usual criteria of a P mitrale or a P pulmonale, as far as contour and axis deviation are concerned. It is found frequently in congenital heart disease but is not characteristic for any particular lesion. No correlation was found between the occurrence of this type of abnormal P wave and alterations of atrial dynamics found at catheaterization, or anatomic lesions of the atria found at autopsy.

**Pick**


Electrocardiograms were recorded on patients before and during endotracheal intubation. Induction of anesthesia was produced by the intravenous injection of 100 to 200 mg. of thiopental sodium in concentrations of 2.5 to 5 per cent. Moderate muscular relaxation was then obtained by the intravenous administration of sufficient doses of various muscle relaxing agents, such as 6-tubocurarine, dimethyltubocurarine iodide or decamethonium bromide. After allowing three to five minutes for the full effect of the muscle relaxant, laryngoscopy was attempted. Laryngospasm occurred in about one-third of the cases. Patients requiring the additional employment of supplementary anesthesia for successful intubation were discarded from this series. In all, 76 patients were studied. In 60 per cent of the patients (46 cases) sinus tachycardia varying from 100 to 150 beats per minute was induced by intubation. In one case additional arrhythmias recorded were occasional ventricular contractions (two cases), nodal rhythm (one case), ventricular tachycardia (one case) and bigeminal ventricular tachycardia (one case). All the episodes of arrhythmia were transient and disappeared with adequate oxygenation. With easy performance of intubations arrhythmias were not induced. To avoid cardiac complications during intubations any decreased pulmonary exchanges produced by thiopental sodium should be compensated for by manual assistance of respiration and adequate oxygen.

**SAGALL**


A procedure using frequency modulation was described which permitted transmission of electrocardiograms and electroencephalograms over available local and long-distance telephone facilities. Successful transmission was reliably accomplished over a wide variety of telephone lines in a multiplicity of combinations. Frequency modulation permits the design of standardized transmitting and receiving equipment and thus simplifies the problem of local and long-distance transmission of low-frequency signals.

**MAXWELL**

**ENDOCRINE EFFECTS ON CIRCULATION**


The organs of Zuckerkandl comprise a mass of paraganglia situated along the aorta near the origin of the inferior mesenteric artery. These organs are
found in the human fetus and reach their maximum development in early life. It has been known that extracts from these organs have vasoconstrictor action, and that tumors of these organs represent a majority of extra-suprarenal chromaffin tumors.

The authors studied the histology and the pressor amine content of the adrenal medulla and the organs of Zuckerkanndl in nearly 100 children. They found that the organs of Zuckerkanndl develop earlier than the adrenal medulla, and that at birth they contain more pressor amines than the adrenal medulla. At this time the organs of Zuckerkanndl contain only noradrenaline. During the first year of life there is a decline in pressor amine activity in these organs, accompanied by structural changes of involution. At the same time the adrenal medulla is rapidly maturing, and adrenaline appears in both types of organs. By the third year of life, the organs of Zuckerkanndl are quite fibrotic, and only a trace of pressor activity remains.

The authors conclude that it is very probable that the organs of Zuckerkanndl supply a potent pressor amine to the body and help maintain blood pressure in the fetus and young infant. During infancy this function is gradually taken over by the adrenal medulla, as the organs of Zuckerkanndl atrophy.

**HYPERTENSION**


Broken cell preparations from the constricted kidney of a hypertensive rat had a much smaller oxygen uptake than its contralateral kidney. The uptake of the constricted kidney was increased by vitamin B6. Oxidation of amino acids and amines was depressed by preparation of the constricted kidney. Pyridoxal did not appreciably affect these oxidations.

**OPPENHEIMER**


In view of the lack of information on the chronic effects of dietary sodium chloride, a long-term study was undertaken in male albino rats. Diets with varying salt content (0.01 to 9.8 per cent) were fed at will from the age of 5 weeks.

Water consumption was related directly to the amount of salt in the diet, and diets both high and low in salt reduced the rate of growth. Sustained arterial hypertension occurred in the rats eating high levels of sodium chloride, with edema and a nephrotic-like syndrome developing in 18 per cent of these animals. Pathologic lesions were observed in the kidneys and to a lesser extent in other organs of rats on the high-salt diet. The authors point out some of the similarities to human hypertension but emphasize the need for further study before drawing any definite conclusions.

**MAXWELL**


In this detailed study a number of findings are presented. In general, the effects of venous congestion of the limbs upon renal clearances and the excretion of salt and water are essentially similar in normotensives and in hypertensive patients before and after splanchnicectomy. Characteristically, about 10 minutes after congestion of the limb, the urine flow decreases and frequently falls to one-tenth its previous rate. There is an accompanying decrease in renal plasma flow, filtration rate, and sodium, chloride, and potassium excretion. The decrease in electrolytes and clearance substances was not as great as that of water, so that the concentration of these materials in the urine usually rose. It is reasonable to suppose that the renal responses to venous congestion of the limbs are integral parts of homeostatic mechanisms for counteracting the effect of an inadequate circulating blood volume. Just what causes salt and water retention as a result of a decrease in effective circulating blood volume is, at the moment, unknown. Changes in venous, right atrial, right ventricular, or pulmonary arterial pressures do not seem to be likely possibilities. Neither do stimuli such as discomfort, venous distention or loss of fluid locally appear to be responsible. Furthermore, it appears that these effector mechanisms are not dependent upon the splanchnic sympathetic nervous system since, as this paper shows, the responses occur similarly in splanchnicectomized hypertensives as well as in normotensive or unoperated hypertensive subjects. It would appear that these mechanisms are mediated at least in part through humoral or local renal mechanisms. Among these may be considered the posterior pituitary antidiuretic hormone and the adrenocortical hormone.

**WAIFE**


In six patients mean arterial blood pressure fell by an average of 30 per cent but no change in mean cerebral blood flow occurred. The mechanism of the
fall in cerebral vascular resistance with fall in blood pressure is unexplained.

MCKUSICK


Hexamethonium in hypertensives led to a reduction in blood pressure without a reduction in renal plasma flow, glomerular filtration, or tubular excretory capacity with the subject in the supine position. In the ambulatory group, there was a depression of glomerular filtration, renal plasma flow, and Tm para-aminohippurate due to vasoconstriction before hexamethonium therapy. Following the use of this drug there was a further drop in pressure and a reduction in renal functions which was often more marked than in the untreated patient. Ambulation after hexamethonium is accompanied by a decrease in the excretion of sodium, potassium, and water. Although renal functions are depressed, there is a return to control values during recumbency even though the blood pressure remains reduced. It would seem that this period of recumbency may also allow for the necessary homeostatic balances or compensations to prevent retention of renal excretory products such as urea nitrogen.

WAIFE


Cross transfusion from renal hypertensive rabbits into recipients on a regimen of 2 per cent sodium chloride drinking water produced an elevated blood pressure in the recipients. Similar transfusions into normotensive animals who were not receiving salt were without effect. When blood from normotensive rabbits was given to animals on the salt regime no rise or only very small elevations were observed.

OPPENHEIMER


The author states that occasional patients may develop symptoms of hypotension during and after exercise even though the blood pressure in the upright position has been only slightly reduced. This peculiarity can be recognized and appropriate regulation of dosage accomplished, if the blood pressure during exercise is determined in the treated patient.

MCKUSICK


Current theories of the humoral and neurogenic factors in the genesis of hypertension are reviewed. Since most therapy is directed at the neurogenic factor, the various nervous pathways which influence sympathetic vasomotor tone are diagrammed. Drugs are grouped according to their site of action, with discussion of their relative merits, side-effects, doses, and contraindications.

At the cortical level, barbiturates are the most useful drugs, although these may be replaced eventually by Rauwolfia serpentina. At the hypothalamic level, 1-hydrizinophthalamine and protoveratrine are the most effective; whereas at the ganglionic level hexamethonium bromide or chloride is the drug of choice. Block of sympathetic nerve endings, smooth muscle or of capillaries is at present of minimal practical value in the treatment of hypertension. Salt depletion by diet and dietary adjuvants appear to affect the non-neurogenic or intrinsic factors in hypertension. Sympathectomy should be reserved for patients with a large neurogenic element who fail to respond to adequate medical therapy. The treatment of hypertension should be undertaken only when that disease under observation represents a hazard to a patient’s life or health.

MAXWELL


In the dog, rise in blood pressure is proportional to the injected intravenous dose of renin and may be used as a method of assay. A more complex indirect method for the assay of hypertensin is described. Anesthesia reduces the sensitivity to renin and hypertensin. Tachyphylaxis to renin does not occur if the blood pressure is allowed to return to normal between doses. To secure a sustained elevation in blood pressure with renin the supply of hypertensinogen must be adequate and the conditions of the arterioles must be such that they are capable of adequate response to more hypertensin. Half of an intravenous dose of 250 U of renin disappears from the blood in 10 minutes and not more than 3 per cent remains in one hour. The fate of this substance is not known.

OPPENHEIMER

PATHOLOGIC PHYSIOLOGY


The local circulatory effects of ultrasonic irradiation of the upper limbs were studied under con-
trolled conditions by venous occlusion plethysmography. A consistent, sustained increase in flow occurred only with high intensities (over 3.0 watts per square centimeter) of ultrasonation; with more tolerable ultrasonic intensities (2.0 watts per square centimeter), vasodilatation was inconstant. Ultrasonic irradiation of the extremities at tolerable levels of intensity is not an effective means of promoting a sustained increase in blood flow. Such vasodilatation as occurs seems to result from heating of the deep tissues and may be produced more efficiently by other simpler measures.

Maxwell


A technic of measuring left ventricular coronary blood flow in dogs and man from the rate of myocardial nitrous oxide desaturation is presented. After saturating the subjects with 15 per cent nitrous oxide, a series of one-minute integrated samples is drawn continuously and simultaneously from arterial and coronary venous catheters during the first few minutes of breathing room air. The curves and values obtained are closely similar to values obtained by an immediately preceding observation of the rate of saturation, an accepted technic. The desaturation method is, therefore, considered valid, and affords several technical advantages over the saturation method. The coronary blood flow in resting normal man averaged 96 cc. per 100 Gm. of left ventricle per minute.

Maxwell


It is known that during the first hour of light anesthesia there is an increase in muscle blood flow. The authors studied forearm blood flow during cyclopropane anesthesia in seven patients undergoing varicose vein ligations. They found a mean increase of 82 per cent in forearm flow during light anesthesia. However, in the contralateral limb, which had been subjected to nerve block, there was no increase in flow.

During deep anesthesia, blood flow was reduced in both the normal and the nerve-blocked forearms by about 40 per cent. When the anesthesia was lightened, blood flow increased again. These changes in flow were not related to changes in arterial blood pressure, oxygen concentration, or alveolar carbon dioxide concentration. The authors conclude that the vasodilatation occurring during light anesthesia is dependent upon an intact nervous supply. On the other hand, the vasoconstriction of deep anesthesia is probably due to a direct response of blood vessels to increased concentration of cyclopropane, or to the release of a vasoconstrictor substance.

Enselberg


High speed, color cinematographs of the exposed auricles in a patient with auricular flutter were recorded simultaneously with limb lead electrocardiograms during mitral commissurotomy. It was clearly shown that the left and right auricular appendixes contracted simultaneously. This observation is entirely incompatible with the circus movement theory. In this case electrocardiographic limb leads showed inverted auricular depolarization waves followed by upright repolarization waves. Such complexes occur when the ectopic focus is in the caudal region of the auricles distant from the sinoauricular node. This is a common type of clinical auricular flutter while the rare type arises from a cephalic focus. In all instances, the flutter wave travels away from the ectopic focus until it terminates at the opposite extremity. No circus movement occurs in the spontaneously fluttering auricles of man.

Kitchell


Stress was produced by forced exercise or exposure to cold. Capillary resistance is first increased and then critically decreased. After this resistance is very low, but is then restored to normal. The author refers to the critical fall and low resistance which follows as the "capillary crisis." Shaw adrenalectomy and ether anesthesia produced similar responses. Some variations of the fundamental pattern exist. The type of stress has no influence but intensity of stress, diet and individual characteristics do contribute to the capillary response. The opinion is expressed that the early rise may be due to ACTH cortisone mechanisms, the crisis being the result of decreased adrenal cortical activity which is independent of anterior pituitary activity.

Oppenheimer


This paper describes a double-lumen, intracardiac catheter equipped with a rubber balloon at the proximal opening. It can produce venous pressures up to 250 mm. of water in the superior and inferior
vena cavae of man. No significant untoward effects were noted in 49 patients.

**Waife**


"Pulmonary capillary" pressure curves were obtained from 31 of 49 patients with mitral valve disease, congenital and other heart diseases, and chronic pulmonary disease. Difficulties in the interpretation of the curves were due to artefacts in the catheter technic and the complications caused by hemodynamic factors responsible for the production of the pressure waves themselves. The height and shape of the curve appear to be of value in the diagnosis of mitral stenosis. The authors conclude that the technic requires further evaluation.

**Wessler**


The estimation of the amount of regurgitation through the stenosed mitral valve is of great importance, and may not be accurately made by known clinical methods. Indirect methods to evaluate the degree of insufficiency by electrokymography and heart catheterization include so far too many unknown factors to be conclusive. The pulmonary capillary pressure curve has been ascribed the most significant value.

Additional indirect methods of determining the left auricular pressure curve have been developed. They are: puncture of the left auricle through the left main bronchus during bronchoscopy and the obtaining of pressure measurements in the left auricle through the esophagus via an esophagoscope.

Because both of these methods are tiresome and uncomfortable for the patient, the authors have developed direct methods for obtaining these curves. These involved an anterior approach where the needle may be introduced through the anterior chest wall through the left ventricle into the left auricle. The posterior approach has been explored by one of the authors during intrathoracic surgery. This approach may be made from the left side or from the right side; this method was employed in nine cases. Simultaneous pressure measurements in the pulmonary capillaries and in the left auricle have been performed in one case with normal mitral valves and in six cases with mitral stenosis with a varying degree of regurgitation.

The pressure curve in the pulmonary capillaries closely reflects the pulse pattern in the left auricle in most cases. It is postulated that the left auricular pressure curve might be a good method in evaluat-

**Dennison**


In two typical cases of postural hypotension, it was found that daily excretion of epinephrine and norepinephrine was low. This may be connected to the inability of the sympathetic nervous system to react to postural changes. The subcutaneous administration of norepinephrine relieved the signs of low blood pressure. The normally occurring increase in excretion of epinephrine after insulin administration was lacking in these patients. Furthermore, the pulse rate and blood pressure did not show the typical changes of epinephrine activity during insulin hypoglycemia, and the hypoglycemic symptoms were different from those observed in healthy subjects. In one subject, infused norepinephrine was excreted normally. There was also a complete refractoriness to histamine in regards to subjective signs and epinephrine excretion. There did seem to be evidence that there was a decreased ability of the adrenal medulla to release epinephrine on direct stimulation.

**Waife**


Using the intracardiac catheter previously described, detailed studies of the effects of elevated vena caval pressures were performed. Essentially similar changes in excretions and hemodynamic and blood pressure changes occurred when the obstruction was produced in the inferior vena cava above the renal veins, below renal veins, and in the superior vena cava. The findings were as follows: the urinary excretion of sodium and chloride and, less consistently, of potassium and water were decreased. This excretion was usually due to reduced water excretion because the urinary electrolyte concentrations tended to remain unchanged. There was a decrease of about 15 to 25 per cent in renal plasma flow and glomerular filtration rate at the onset of venous congestion. As the congestion was maintained, the hemodynamic functions improved and were returning to control values while the water and electrolyte excretions remained reduced. The systolic and pulse pressures fell slightly; the diastolic and mean pressures remained essentially unchanged. There were no effects noted on heart rate or in the electrocardiogram. Following release of the inferior vena caval congestion, the various determinations
returned to normal levels within thirty minutes. However, following release of superior vena caval congestion, the water and electrolyte excretions returned very slowly, or not at all at 30 minutes, whereas the renal hemodynamic changes promptly returned to control values.

**WAIFE**


This study was an investigation of the pathogenesis of the renal function changes that occur when blood is pooled in the lower extremities by the use of tourniquets. A significant but small fall in cardiac output was noted. There were highly significant falls in the effective plasma flow, urine flow, and sodium excretion. The fall in glomerular filtration rate was of borderline significance. All these functions returned to normal upon release of the tourniquets, although the return occurred at different rates. The decrease in cardiac output is probably due to a diminished effective blood volume. The reduced output, in turn, leads to a fall in renal plasma flow. It is interesting that the observed changes in renal function are similar to those in other conditions with diminished cardiac output, such as chronic congestive heart failure and shock. Sodium retention probably was due to increased tubular reabsorption. The authors noted an antidiuresis after the application of tourniquets and suggest that this may be due to increased activity of the posterior pituitary resulting from the diminished effective blood volume.

**PATHOLOGY**


Forty-five infants and children with a syndrome of myocardial disease characterized by cardiomegaly, absence of significant murmurs, electrocardiographic abnormalities and normal blood pressure have been studied. The following pathologic processes were found in 26 of these patients who came to autopsy: (1) glyoxygen-storage disease of the heart (three patients); (2) aberrant left coronary artery (one patient); (3) medial necrosis of the coronary arteries (two patients); (4) idiopathic myocarditis (10 patients), and (5) subendocardial sclerosis (10 patients). An attempt has been made to establish clinical criteria for the differential diagnosis of these five separate diseases in living patients. All of these patients showed marked generalized cardiomegaly by x-ray, and the vast majority demonstrated left ventricular hypertrophy and T-wave changes of myocardial damage by electrocardiography. The value of digitalis in the treatment of some of these patients is stressed.

**BERNSTEIN**


The author studied the histologic appearance of 53 appendages removed during mitral valvotomy and that of 92 taken from hearts with mitral stenosis on the postmortem files in her hospital in an attempt (1) to identify the different phases of evolution of the endocardial nodule present in the biopsy specimens and (2) to investigate the incidence and relationship between active rheumatic lesions in the appendage and in other regions of the heart.

The entire life cycle of the Aschoff nodule could be reconstructed from the appearances in these specimens. Seventeen of the 92 examined from the necropsy specimens were likewise positive. All of these showed lesions that were similar and in the same phase as those seen in the ventricle. Five others were positive only in the ventricular muscle.

It is felt that active carditis in valvotomy patients may constitute a hazard and may precipitate or contribute in some measure to a fatal outcome. It is even possible that in the period before operation it may be one of the factors responsible for the aggravation of symptoms that renders operative treatment necessary.

**SOLOFF**


The author indicates that the advent of newer diagnostic and therapeutic techniques for heart disease has necessitated that the clinician understand the functioning of three-dimensional architecture of the heart and the changes in this architecture which take place with heart disease. A method is described for studying at necropsy the three-dimensional structure of the heart. The clinical findings in 60 selected normal and abnormal hearts are presented.

In the normal heart, the left ventricle has a relatively horizontal position in the body with its mitral and aortic orifices facing the right side of the body. The aorta makes a nearly 90 degree angle with the direction of the outflow tract of the left ventricle before it emerges from the pericardium. The right ventricle lies altogether anteriorly to the left ventricle; and the septum, which is parallel with the frontal plane of the body, is intrinsically a part of the left ventricle rather than an independent muscular partition between the two ventricles.

The sequences of change in the course of development of right ventricular hypertrophy and dilatation are described. An anatomic explanation is
offered for the nearly invariable occurrence of right ventricular hypertrophy whenever left ventricular hypertrophy is marked.

An aspect of the pathology of mitral stenosis which has not been widely appreciated is the shortening of the posterior wall of the left ventricle. The implications of this shortening for the development of mitral insufficiency are discussed, and a striking example is presented in detail. The shortening of the posterior wall is believed to represent atrophy of this region of the left ventricle due to the immobilizing effect of the rigid mitral valve elements. It is pointed out that the shortening of the chordae tendineae of mitral stenosis is more apparent than real.

The architectural changes in left ventricular hypertrophy are described. It was found that the hypertrophy tends to be circumferentially symmetric, with the septum participating equally with other regions in the hypertrophy. When the hypertrophy is marked the distal part of the outflow tract of the left ventricle is converted into a narrow conus aorticus, and evidence is offered that occasionally this narrowing may produce turbulence and obstruction to outflow from the left ventricle. The pathologic basis for the Bernheim syndrome is examined and it is shown that the method of dissection used by Bernheim and his followers was inadequate for demonstrating obstruction of the right ventricular outflow tract. No instance of right ventricular outflow obstruction due to left ventricular hypertrophy was encountered among the hearts examined, and the existence of this syndrome is questioned. The three-dimensional changes which take place with left ventricular dilatation are described, and the role of elongation of the mitral valve elements in left ventricular hypertrophy and in dilatation is discussed.

Rinzler

PHARMACOLOGY


In pilot studies to determine the effect of penicillin on the carrier state, it was observed that an oral dose of one million units twice daily for 10 days was almost always effective in eliminating the carrier state. Half of this dose for the same period was probably also effective. A dose of one million units orally, twice daily for only five days, failed to eradicate the carrier state in 45 per cent of the carriers. A dose of only 250,000 units once daily for 10 days failed in many instances. A single intra-muscular dose of 600,000 units of procaine penicillin in oil failed to eradicate Group A streptococci, but this same dose given every other day for a total of four doses was almost always effective. The carrier state was eliminated in all of 10 men who were given a total of 1,800,000 units of benzathcin (dibenzylethlenediamine penicillin G) in two simultaneous injections. A single dose of 600,000 units was effective in 90 per cent of the carriers studied. All strains of Streptococci isolated were sensitive to 0.05 units or less of penicillin and no increased resistance was found in the strains isolated after administration of the drug. It was observed that the failures encountered, especially with the more successful regimes, tended to occur in the nasal carriers.

A large-scale prophylactic study was carried out on entire squadrons of men with administration of one million units of penicillin orally twice daily for either five or ten days. The streptococcal disease rates and carrier rates were definitely reduced in those men who received penicillin. Three weeks after the drug was discontinued the streptococcal disease rate was the same in the treated group as in those who had served as controls.

The incidence of reactions was low. One per cent of the treated group had definite skin reactions, and another group of similar size had possible reactions. Of a sample group of 169 men, 60 per cent had loose stools during the period of drug administration. The only serious reaction was a single instance of moderate laryngeal edema.

Rosenbaum


Metrazol was given orally for 180 days to 35 patients (14 female and 21 male) with a diagnosis of psychosis with cerebral arteriosclerosis. The average age was 77 years. The length of illness varied from six months to nineteen years. During the first week 0.1 Gm. was given four times daily. During the second week this was increased to 0.2 Gms. four times daily and was there maintained in the majority of patients. A few patients needed 0.3 Gm. four times daily. At this dose level, some developed mild nausea and vomiting.

Improvements which occurred in sixteen patients, consisted of a decrease in anxiety, agitation, emotional liability, fatigability and irritability, together with better sleep habits and appetites.

Five patients died during the study. In none was Metrazol a contributing factor.

Rinzler


The levels of penicillin in the blood plasma were determined in the same 12 subjects after administration of single doses of 200,000 units of tablets of
buffered and unbuffered potassium penicillin G and as benzethacil ("Bicillin") in three types of tablets having different disintegration times, before and after breakfast.

The most uniformly absorbed among these preparations was the tablet of potassium penicillin buffered with sodium citrate. This preparation yielded the highest peak levels, and its absorption was not significantly affected by the meal. The unbuffered tablet of potassium penicillin G yielded lower average levels of penicillin in the plasma, and these were further reduced and somewhat irregular when the dose was given after breakfast. Bicillin in the "hard" tablet was slow to disintegrate and was absorbed very erratically. Bicillin was slow to appear in the plasma and the levels rose irregularly, but higher peaks were reached in some subjects when the tablet was given after breakfast. Benzethacil tablets which disintegrated more quickly yielded higher peak concentrations of penicillin, and these were achieved more rapidly and were sustained if given after the meal. The levels obtained with this preparation were intermediate between those resulting from potassium G and those following the ingestion of the hard tablet of bicillin.

There were no cumulative effects on the penicillin levels in the plasma following seven daily doses of either the buffered penicillin G or the benzethacil, each given after breakfast.

The most reliable and most desirable of the preparations tested from the viewpoint of absorption were the buffered tablets of potassium penicillin G.

MINTZ


Two carboxylic acid exchange resins, Amberlite XE-112 and Amberlite XE-103, were found to have two to three times the sodium binding capacity of Amberlite XE-64 (the standard material), in vivo experiments in rats.

None of the sulfonic cation exchange resins tested had the ability to bind sodium in vivo as effectively as did the carboxylic acid resin XE-112 and XE-103. In fact none of the sulfonic acid resins tested was any more efficient in binding sodium than was Amberlite XE-64. Unless other sulfonic acid resins can be developed with higher in vivo capacities for binding sodium, it is not necessary to submit patients to the greater acidity of the sulfonic acid type resin in order to obtain maximum sodium binding.

Two phosphonic acid cation exchange resins were less than one-half as efficient as Amberlite XE-64, in binding sodium in the gastrointestinal tract of the rat. The addition of anion to the cation exchange resin fed rats did not enhance the sodium binding ability of the cation resin. Liquid resins are impractical for clinical use because of the great bulk of liquid which would have to be ingested in order to remove any appreciable amount of sodium.

The higher the dietary intake of sodium, the greater was the amount of sodium bound per gram of resin, but the lower was the percentage of ingested resin that was excreted in the feces. This finding emphasizes the necessity of keeping the sodium intake low, if there is a desire to decrease the absorption of sodium from the gastrointestinal tract.

MINTZ


Forty-three cases diagnosed as uncomplicated syphilitic aortitis which met rigid diagnostic criteria are presented. All patients were asymptomatic. They were treated with various doses of penicillin and followed from six months to five years. No untoward reactions were observed during treatment or in subsequent follow-up. To discuss its effectiveness, a longer follow-up will be necessary, but thus far no progression or regression of the disease has been noted. Histopathologic reports should reveal the ultimate result of penicillin treatment as well as the amount of treatment needed to heal the syphilitic process in the aorta.

BERNSTEIN


Of 178 untreated patients with complicated aortitis, only one had a negative serologic test for syphilis. Eleven patients having syphilitic aortic aneurysm had normal blood pressures. Thirty per cent of patients with complicated aortitis also had neurosyphilis.

Sixty-three per cent of symptomatic penicillin-treated patients with syphilitic aortic insufficiency noted subjective improvement. The death rate, during the observation period, in patients with complicated syphilitic aortitis was greater among symptomatic patients (21 per cent) than among asymptomatic patients (5 per cent). The death rate of penicillin-treated patients with complicated syphilitic aortitis is high, but no suitable control group is available for determining the significance of this observation. Once severe anatomic and resultant functional changes have occurred, no dramatic decrease in death rate can be expected. The lower death rate among asymptomatic cases may be an argument for administration of treatment as early as possible, provided it can be shown that treatment prevents progression to the symptomatic phase.

BERNSTEIN
ABSTRACTS


Because of erroneous impressions of coronary vasodilator action gained through pharmacologic tests on animals, from performance in uncontrolled studies in human disease, and from carefully controlled analyses of the subjective sensation of pain in patients with angina pectoris, the authors have used a new method of evaluation of such drugs. They used a group of carefully selected persons who had reproducible electrocardiographic responses to standard exercise tests (Master two-step test). Fifty-two such patients qualified in a screening of 3,000 patients with coronary artery disease. The following conclusions were reached by tests: (1) Glycerol trinitrate (nitroglycerin) in therapeutic doses exerts a strikingly favorable effect on the response to exercise as recorded electrocardiographically. (2) Papaverine in the dosage of 1 to 2 grams (0.065 to 0.12 Gm.) intravenously or 3 to 8 grams (0.194 to 0.518 Gm.) orally is effective in some patients. Benefit was not, however, observed with the usual therapeutic doses of the drug. (3) Of all the agents tested, pentaerythritol (Peritrate) tetrinitrate appears to be the most effective drug currently available for prolonged prophylactic therapy in angina pectoris. (4) Aminophylline, Roniacol, Priscoline, tetraethyl ammonium chloride, octyl nitrate, dioxylane phosphate, visamin, heparin, andbishydroxycoumarin appeared unimpressive when evaluated according to this method. (5) Ethyl alcohol consistently failed to influence the electrocardiographic response to exercise although it prevented or reduced the severity of anginal pain. Alcohol should be recognized as a rapidly acting sedative and should no longer be regarded as a coronary vasodilator drug. Morphine is identical to alcohol in its effect. (6) Of the drugs tested only glyceryl trinitrate, papaverine, and pentaerythritol tetrinitrate appear worthy of continued clinical use as vasodilators in the management of angina pectoris.

Kitchell


A "double-blind" experiment was performed using Ethaverine to avoid the common errors of physician enthusiasm, new drug psychologic effect on the patient, and the spontaneous variations in angina pectoris. In a group of 22 patients under therapy with Ethaverine alternating with placebo over periods of 12 weeks, this drug was found to be no more effective in reducing either the severity or frequency of angina pectoris than similar amounts of lactose given under the "double-blind" conditions.

Kitchell


A 15 year old boy was admitted to the hospital because of recurrent purpura, three weeks' persistent fever, weight loss, and pain in the upper arms, thighs, and calves. Laboratory studies revealed anemia, elevated sedimentation rate, albuminuria, and hematuria. Pathologic examination of a biopsy specimen obtained from tender subcutaneous nodules which appeared during the first week after admission revealed findings characteristic of the acute arteritis and periarteritis of polyarteritis nodosa. Treatment with corticotropin (ACTH) was instituted. The initial dose was 15 mg. every six hours for three weeks. This was reduced to 15 mg. every 12 hours for an additional three months and then to 15 mg. daily for one week following which it was omitted. The patient showed immediate subjective improvement, disappearance of the subcutaneous nodules, and a weight gain. Fever subsided in three weeks. Hematuria, sedimentation rate and blood pressure gradually diminished to normal. During the sixteen month follow-up period since discharge from the hospital there has been complete remission of the disease process.

Sagall


A group of 13 patients developed the shock syndrome following an acute myocardial infarction proven by electrocardiogram. Each of them received Levophed in the management of cardiogenic shock. The solution was prepared in the conventional fashion by adding 4.0 mg. of Levophed to 1000 cc. of 5 per cent dextrose in water. The rate of administration was determined by the pressor response obtained. Of the 13 patients, 2 experienced a significant pressor response, however, only four of them survived. The authors concluded that the mortality rate of shock accompanying myocardial infarction was not significantly reduced by the use of this drug.

Shuman


Fifteen ambulatory patients with severe congestive heart failure were treated with an oral mercurial diuretic, Neohydrin, for periods of 6 weeks to 18 months. The initial dose for most patients was three tablets every morning, and this amount was gradually increased until an effective level was reached. The diuretic was given in a single dose shortly after
breakfast for six days of each week. Additional treatment consisted of digitalis, low salt diets, and ammonium chloride. In 13 cases the results as measured by improvement of symptoms and physical signs were considered good. Only four patients had toxic manifestations, and no patient showed the clinical syndrome associated with excessive diuresis. In most cases Neohydrin replaced parenteral administration of mercurial diuretics. In several cases cardiac compensation was obtained with Neohydrin in patients who had been decompensated despite the use of cation exchange resins and frequent injections of mercurial diuretics. Nine patients in this group had been on another oral mercurial diuretic, (Salyrgan-theophylline Oral) previously. In most cases Neohydrin, although it contains less mercury than this preparation, was superior to Salyrgan-theophylline Oral in its diuretic action, both in the completeness of relief of congestion and in the maintenance of compensation.

SAGALL


A case of unusual pain in a patient with Kimmelstiel-Wilson syndrome associated with potassium intoxication is reported. The patient intermittently complained of a cramping, knowing ache in his calves that spread to his upper extremities, hands and jaws as it became severer. A rise in the level of serum potassium and electrocardiographic T-wave changes consistent with hyperkalemia were observed during the interval of severe pain. This was controlled by administration of glucose and insulin and was easily reproduced by administration of excess potassium. The report illustrates the possible danger of treating a diabetic patient who has renal disease (for example, Kimmelstiel-Wilson syndrome) with fluids that are rich in potassium, such as orange juice and broth.

KITCHELL

PHYSICAL SIGNS


The aortic valve may rupture after some unusual stress or strain, or it may rupture when the valve is disorganized by bacterial endocarditis. Because of the notorious variability of murmurs the diagnosis is difficult where vegetations distort or dilate the valves. The authors report a case of rupture of the aortic valve diagnosed before death in the course of subacute bacterial endocarditis. They point out the abrupt decline and disappearance of the diastolic arterial blood pressure, the sudden pain, the advent or increase in congestive failure, and the appearance or change in aortic diastolic murmur as important diagnostic signs in the rupture of a diseased aortic valve.

KITCHELL


The author describes a vascular murmur, synchronous with the pulse which has been found in 11 instances of splenomegaly. The murmur was recorded phonocardiographically in eight cases. The murmur is heard over greatly enlarged spleens with the lower pole reaching at least to the umbilical level. The murmur is very soft and of rather long duration. In phonocardiographic tracings the first and second heart sounds are also frequently registered, but these are believed to be transmitted from the heart. The murmur is believed to arise in the spleen rather than propagated from the heart because: (1) it may be heard over the spleen in patients who have no cardiac murmur at all, (2) if there is a cardiac murmur the splenic murmur is longer in duration and higher in pitch, (3) in one case there was a thrill over the spleen, synchronous with the murmur, and (4) phonographic records show the murmur beginning before the conducted first sound appears. It is postulated that the murmur results from the summation of numerous inaudible murmurs generated as the blood pours from narrowed afferent sheathed capillaries into greatly dilated splenic sinuses. It is felt that the appearance of a murmur may be related to the number of dilated sinuses in the enlarged spleen and as such may serve as a bedside evidence of hypersplenism.

ROSENBRAUM


The author studied 75 cases of congenital heart disease by means of the phonocardiograph. The diagnosis was confirmed by catheterization, angiocardiography, or surgery.

In patent ductus arteriosus (eight cases), the well-known continuous systolic-diastolic murmur was confirmed.

In atrial septal defect (six cases), a diamond-shaped pulmonic murmur was found in all; one of the cases also had a faint early-diastolic murmur; two other cases, either a presystolic or a diastolic rumble. The second sound was split in four cases.

In ventricular septal defect (eight cases), a diamond-shaped systolic murmur was recorded over the third left intercostal space; in two cases, a presystolic murmur was also recorded. The second sound was split in three cases. A third sound was present in all.

In Eisenmenger complex (three cases), a faint systolic pulmonic murmur, a loud pulmonic second sound, and a high-pitched, early-diastolic, pulmonic murmur, were recorded.

In pulmonic stenosis (five cases), a loud, diamond-
shaped pulmonic murmur and a faint second pulmonic sound were recorded. Similar data were obtained at the right of the sternum in aortic stenosis.

Less typical data were found in the trilogy and tetralogy of Fallot and in tricuspid atresia.

These data are considered as obtained on a too limited group of patients for having diagnostic importance. However, they represent an interesting contribution to the study of congenital heart diseases.

Luisada

PHYSIOLOGY


Hearts which have been stopped recover through a "staircase." The author considers this to mean that each contraction creates a more favorable environment for the next but that this degenerates. Loss of 127 mEq. of potassium per liter of fiber water characterizes this "favorable condition." This potassium re-enters during rest. The height of tension is determined by the equilibrium between these two processes since they determine the internal ion content. When 3 mEq. of potassium are lost from 106.8 mEq. of internal sodium and potassium, the tension is increased from 0 to 100 per cent. A similar effect on tension is produced by loss of internal sodium. Water lost with potassium does not change the internal ion concentration. When loss or gain in water occurs by itself and thus produces a change in internal ion concentration there is no effect on tension. Contractile protein is affected by total internal ion, not by concentration. Digitalis blocks by preventing re-entry of potassium. In this manner, the internal ion content is decreased. Excessive loss in internal ion causes contracture. Changes in membrane potential depending on external potassium influence the speed of appearance of contracture. Decreases in external potassium delay it and vice versa. The more internal ion content decreases the higher is the membrane potential required to prevent contracture. The resting potential promotes the dissociated contracted form of actomyosin in a situation where the associated or contracted form is favored. That the resting potential does this by maintaining a decreased intracellular pH is supported by the data at hand.

Oppenheimer


The changes produced by general hypothermia were studied in three human subjects and in a series of dogs. In the case of the former group, the investigation was carried out while pulmonary valvulotomy was being done under direct vision, with cessation of blood flow for from three and one-half to seven and one-half minutes. In the case of the dogs, body temperature was dropped using ice water between 20 C. and 25 C.

With regard to alterations in blood chemistry, a fall in serum potassium was consistently noted during the period of hypothermia, while serum sodium levels remained constant. In the series of dogs ventricular fibrillation was found to occur either during cooling below 26 C., during cardiac manipulation, particularly ventricular incision, or immediately following restoration of circulation after occlusion. The administration of a potassium solution was believed to be useful in defibrillating the cold heart.

Abramson

RHEUMATIC FEVER


The report is concerned with the use of Aureomycin as a prophylactic agent in 35 rheumatic patients. Twenty-three patients were given Aureomycin containing the methyl and propyl esters of para-aminobenzoic acid (paraben), and the remaining 12 patients received a placebo as a control group. The average ages of the two groups were 17 years and 16 years respectively. The two groups of patients were comparable in all major respects. Doses of 250 mg. of Aureomycin were given 30 to 60 minutes before breakfast and again two hours after the evening meal. Five recurrences of rheumatic fever occurred in the course of this study in which the period of observation ranged from 2 to 20 months; four of them occurred in the control group and one occurred in the aureomycin series. Side effects of Aureomycin included nausea, vomiting, diarrhea, constipation, increased flatulence, pruritus ani and pruritus vulvae. It was necessary to discontinue the drug because of toxicity in only a single instance. The possible development of resistance by streptococci to Aureomycin was studied in this series and by the same authors in a group of 400 geriatric patients observed over a period of 15 to 21 months. The conclusion was that long-term administration of 500 mg. of Aureomycin daily does not result in the development of significant resistance by Group A beta-hemolytic streptococci. A reduction in respiratory infections of approximately 50 per cent was observed in the patients receiving Aureomycin. The conclusion of these observers is that Aureomycin is a promising prophylactic agent for rheumatic fever. The expense of this antibiotic is felt to represent its greatest disadvantage.

Rosenbaum

In order to quantitate some aspects of the changes in body water and electrolyte metabolism during induced adrenal cortical hyperfunction, four patients with rheumatic diseases were treated with corticotropin (ACTH) for periods ranging from 19 to 43 days. Two patients retained water intracellularly during the first week. Simultaneously, there was a shift of extracellular water into the cells. Further treatment restored the decrease in extracellular fluid volume. In two other patients there was a decrease in intracellular water during the period of therapy. Sodium retention was induced in three patients and was shown by a rise in total body sodium. Most, if not all, of this retained sodium was in the nonextracellular phase. In two of three patients there was retention of chloride chiefly as nonextracellular chloride. From this and other observations the authors conclude that under the conditions of this experiment markedly different patterns of response to corticotropin may be observed.


The authors examined 40 rheumatic hearts obtained at necropsy comparing the incidence of Aschoff bodies as an indication of rheumatic activity in the left auricular appendage with other areas of the myocardium. The auricular appendage contained Aschoff bodies in nine instances, with active lesions being described in other myocardial areas in each case. In six of the hearts, the left auricular appendage revealed no signs of activity while other areas revealed active lesions. Therefore, the absence of lesions within the left auricular appendage obtained during cardiac surgery does not preclude the possibility of activity elsewhere in the heart. However, the presence of rheumatic activity in the auricular appendage would seem to indicate that lesions are likely to be present at other sites in the heart.


On the basis of studies of patients subjected to thoracic operations, the authors present certain views which are practical and helpful guides in making surgical decisions in the presence of respiratory problems. They point out that the lungs and thorax act as the pump which brings air to the pulmonary capillary bed for gaseous exchange. In the normal individual the factor limiting peak physical exertion is not the respiratory, but the cardiovascular system. The capacity of the respiratory apparatus to pump air is dependent upon the integrity of the thoracic parietes, the existence of unimpeded airways, and the presence of normal
distensibility of the lungs. The pulmonary capillary bed has the ability to augment its capacity markedly through an increase of cross-section area of the capillaries and perhaps by an opening of previously nonperfused vessels.

The authors believe that pulmonary function studies are valuable in the over-all assessment of an individual prior to thoracic surgery, and are necessary in borderline cases.

Abramson


The authors reviewed the various procedures utilized in the surgical treatment of interatrial septal defects and presented another method consisting of atrioseptopexy. This involved bridging the defect with a portion of the invaginated right auricular wall. The operation was performed on 14 patients. Besides the septal defect, 2 had co-existing mitral stenosis, while 5 demonstrated anomalous entrance of the pulmonary veins either into the right atrium, the superior vena cava, or both. Twelve patients survived surgery while two died on the operating table. Three succumbed subsequently. Of the remaining nine, postoperative catheterization was carried out in six instances and of this number, four revealed complete abolition of the shunt and correction of the defect and associated lesions. In the other two, signs of a small residual interatrial communication were still found. The clinical improvement was considered to be excellent in all the surviving patients.

Abramson


The authors reported the results of resection of the lower abdominal aorta, with replacement by an arterial bifurcation homograft, in five patients. Three of these suffered from arteriosclerotic obstruction of the bifurcation, while the remaining two had an aneurysm of the lower end of the abdominal aorta extending into both common iliac arteries. During the operation it was found advantageous to utilize medications to reduce blood pressure, so that trauma to the proximal portion of the aorta at the point of application of the clamp was minimized. Anticoagulants were not used.

Two of the grafts were successful in restoring pulsatile flow in both extremities, while in the other three this occurred on one side only. There were no deaths in the series.

Abramson


The authors investigated the cause of death from air injected into the arterial tree in a series of dogs. None of the animals succumbed immediately after 0.25 to 2.0 cc. of air per kilogram of body weight was injected into the left carotid artery. However, there was evidence of marked neurologic damage when doses of more than 0.25 cc. were given. Another series of animals received 0.75 cc. of air per kilogram into the left ventricle, and only one survived. The large mortality was due to the entrance of air into the coronary arteries. However, the change was not irreversible, since many of the hearts were completely resuscitated by obtaining a high enough pressure in the coronary arteries to force the air through to the venous side. This was accomplished by clamping the aorta and applying manual systole.

Abramson


The author described a new surgical approach to the closure of atrial septal defects. This involved fixing to an incision in the right atrium a pocket of autogenous pericardium which could be invaginated into the atrial cavity—one wall of which could be sutured directly to the margins of the defect. The operation was performed on two patients but the results were not satisfactory. In one, disintegration of the graft occurred, while in the other there was evidence suggestive of a persistent intra-arterial communication.

Abramson


The author presented the case of a 23 year old girl with a long coarctation of the lower portion of the thoracic aorta which was treated by excision and replacement by a preserved aortic homograft. Postoperatively a left hemithorax occurred, possibly due to a leak from an aortic fracture caused by the proximal aortic clamp. However, resolution of this process occurred and the end result was satisfactory. The blood flow in the lower extremities was normal after operation.

Because of the character and the site of the lesion, the author suggested that the patient may have had an acquired coarctation.

Abramson