ABSTRACTS
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Abstracts

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PATHOLOGIC PHYSIOLOGY


The authors summarize current ideas concerning the relationship between oxygen and carbon dioxide content of the pulmonary arterial blood (or of the alveoli) and pulmonary vascular resistance. According to the most reliable studies, a decrease of vascular resistance (vasodilatation) can be due to: (a) diminution of oxygen or increase of carbon dioxide in the blood of the pulmonary artery; or (b) increase of oxygen in the alveoli. On the contrary, an increase of vascular resistance (vaso-constriction) can be due to: (a) increase of oxygen or decrease of carbon dioxide in the blood of the pulmonary artery; or (b) decrease of oxygen in the alveoli.

Following this conception, left-to-right shunts should increase the oxygen content of the pulmonary artery and should present evidence of vasoconstriction. A review of 105 cases from the literature showed increase of pulmonary systolic pressure in 78, of diastolic pressure in 48. As a conclusion, it was noted that no close relationship could be ascertained.

The authors perform animal experiments by creating a carotid-jugular fistula, or a carotid-jugular transfusion between two animals. Changes of pulmonary arterial pressure seemed related to the mechanical increase of venous return, not to the oxygen content of the blood. On the other hand, the changes of pulmonary pressure were extremely variable, and this was accepted as evidence of a pulmonary vascular reaction superimposed on, or counteracting, the mechanical response.

Van Bogaert


The effect of intravenous hexamethonium bromide was investigated in 12 normotensive human subjects in the steady state. Changes in cardiac output were variable, and the heart rate was generally increased. There were borderline significant percentile decreases in brachial and pulmonary artery pressure, pulmonary and total peripheral resistances, and left ventricular work. There was marked individual variation in dose response. The data indicate that hexamethonium lowers arterial pressure in normotensive man primarily by diminishing total peripheral resistance rather than cardiac output.

MAXWELL


Myocardial metabolism of Nembutalized intact dogs was studied by means of the coronary sinus catheterization technic.

Oxygen, glucose, lactate and pyruvate were extracted by the heart in direct relation to the arterial level of each substance and independently of the others. Total myocardial utilization of each metabolite was the product of two independent variables: (a) coronary blood flow, and (b) coronary A-V differences. Under ordinary conditions, glucose
extraction was sufficient to provide the major potential source of fuel for myocardial oxidative energy. Pyruvate and lactate showed a high myocardial extraction coefficient, but the low arterial levels at rest prevent these metabolites from accounting for more than 50 per cent of the total myocardial energy requirements. During starvation, the heart probably derived its energy from fat, as indicated by a myocardial respiratory quotient near 0.70 and a low myocardial carbohydrate extraction.

MAXWELL


The use of controlled hypotension in surgery has gained rapid momentum during the past five years in Britain and on the European continent. This followed the work of earlier authors who reduced the blood pressure by blockade of the sympathetic nervous system with high spinal anesthesia. The use of ganglionic blocking agents to obtain a similar degree of hypotension has further increased the applicability of the method because of its simplicity. Since there has been a paucity of reported studies regarding the altered vascular dynamics, particularly in such critical vascular beds as the brain and kidney, the current investigation is concerned primarily with measurements of cerebral blood flow and cerebral oxygen consumption in a group of surgical patients with marked hypotension induced by hexamethonium.

Hexamethonium chloride was administered as a continuous infusion (500 mg. of hexamethonium per 1000 cc. 5 per cent glucose in water) to the unanesthetized, horizontally supine patient. The patients were not anesthetized in order that the disturbances in renal function could be immediately recognized, thus increasing the safety factor in these initial studies. Continuous mean blood pressure recordings were made from a mercury manometer connected to a needle inserted in the femoral artery.

The following conclusions were arrived at and indicated a significant decrease in cerebral blood flow following marked depression in the mean blood pressure in spite of a decrease in cerebral vascular resistance. Cerebral oxygen consumption was only slightly decreased due to a more complete extraction of oxygen from the blood flowing through the brain. Initially, glomerular filtration rate and renal plasma flow were both depressed. However, after two to three hours of maintained hypotension, renal plasma flow returned to control levels, whereas glomerular filtration rate remained depressed. Hexamethonium-induced hypotension decreased urine formation.

Blood volume studies were done employing 5 cc. of radioactive iodinated human serum albumin (10 microcuries per cc.) and the increases in these findings were due predominantly to an increase in plasma volume. The authors conclude that there appears to be little danger of cerebral or renal anoxia in a supine patient with a mean blood pressure as low as 55 mm. Hg when employing hexamethonium-induced controlled hypotension.

DENNISON


Patients with Laennec’s cirrhosis often have a short circulation time, and warm extremities, wide pulse pressure, and capillary pulsations in the nail beds. These findings suggest an elevated cardiac output and an increased peripheral blood flow.

Observations are reported on 22 patients with apparent cirrhosis of the liver as determined from the history of alcoholic intake and laboratory evidence of chronic disease of the liver. Patients were selected who had no evidence of coexisting heart disease. Eight of the group had either ascites or peripheral edema, or both. Eleven had Laennec’s cirrhosis without fluid retention. All had abnormally high Bromsulphalein retention. The findings indicate that the resting cardiac output was elevated in one-third of the patients and was associated with normal blood pressure, low peripheral vascular resistance, and a large stroke volume. The elevated cardiac output in this group of patients was out of proportion to the oxygen consumption. This finding indicates a decreased arteriovenous oxygen difference. The patients had all received thiamine in ample amounts and it does not seem likely that beriberi was present.

Evidence is presented for the suggestion that the increased blood flow is due to dilatation of the peripheral vascular bed.

Eight patients had a prolonged Q-T interval. Four of these eight had a high cardiac output. The other electrocardiograms were normal.

WAIFE


Despite clinical and pathologic investigations in many patients with pericardial effusion, few such patients have been studied by cardiac catheterization. It is the purpose of this manuscript to present clinical and hemodynamic observations on a patient with massive pericardial effusion. Cardiac output, intravascular and intrapericardial pressures, blood gas analysis, and other related clinical and laboratory findings are described before and after pericardial aspiration and six months following pericardiectomy. Hemodynamic studies were done
during the first pericardial aspiration, before and immediately after the second pericardial aspiration, and six months after pericardietomy. These studies reveal improvement in the altered patterns basically recorded. The initially altered right atrial and superior vena caval pressures were lowered. There was an improvement in the stroke index and stroke volume. In addition, there was a decrease in the heart rate. Little or no improvement in the cardiac output resulted. Finally, the elevated pulmonary artery and "capillary" pressures observed during the postoperative cardiac catheterization reflect some impairment of the blood through the left side of the heart. It is quite likely that some interference with diastolic filling of the left ventricle existed, perhaps due to residual pericardial and/or myocardial scarring.

Dennison


Forty-three patients with a variety of malignant diseases and leukemia were studied by a radioisotope clearance technic using 131I. The clearance rates of the isotope through the marrow were found to be approximately the same as in resting muscle in 17 nonleukemic patients studied. The marrow clearance rates were increased in five cases of acute leukemia. However, in five of seven subjects with chronic myelocytic leukemia and in two instances of monocytic leukemia, the marrow clearance rates were within the normal range. Six of 10 patients with chronic lymphocytic leukemia had elevated clearance rates as did three out of four with multiple myeloma. The findings appear to demonstrate a selective increase in blood flow in the bone marrow in acute leukemia, in some cases of chronic leukemias and multiple myeloma, thereby suggesting a fundamental difference in the vascular bed of the marrow in the presence of this disease. There was no relationship between the clearance rate and the hemoglobin level, nor could a correlation be established between the bone marrow cytology or peripheral blood picture with the clearance rates.

Waife


In an attempt to determine experimentally the cause of pulmonary hypertension in congenital and acquired lesions shunting arterial blood into the venous circulation, the authors produced in dogs an end to end anastomosis between a carotid artery and a jugular vein. In a number of experiments pulmonary hypertension developed acutely in association with the augmentation of right ventricular output caused by the operation. Theoretically this would not be expected to occur because the pulmonary circulation can accommodate considerable amounts of shunted blood by reduction of resistance in its arterioles. Increase of the O2 content of the pulmonary blood has by itself a feeble vasoconstrictive action which, however, is insufficient to oppose the vasoconstriction caused by the increase in blood flow. The authors conclude that some other, so far unknown mechanism, must be in operation which influences the reaction of the pulmonary vascular tree to a sudden overload in such a way, that pressure elevation results.

Pick


Graft implantations were made into aortas and the potentials in recipient vessels were studied. When trauma was slight the intima became more negative with respect to adventitia. Severe trauma produced a positive intimal potential which was proportional to the extent and duration of the trauma. Fresh grafts had positive potentials. These are living tissues but show an injury potential. Freeze-dried grafts are not bioelectrically living tissues. When reconstituted they will serve as a satisfactory prosthesis but have no electrical potential. The intima can not be demonstrated and thrombosis does not take place.

Oppenheimer

PATHOLOGY


A case is presented in which a patient with diagnosed hemochromatosis and no previous cardiac symptoms developed congestive heart failure and died within nine days of his initial cardiac complaints. At autopsy, the heart showed siderosis throughout with fatty infiltration of the right ventricle. It is suggested that the reason for the absence of previous symptoms was equal damage to both sides of the heart, with the result that there was no imbalance between the systemic and pulmonary circulations.

Maxwell

Corsi, V., Sciaccia, A., Sangiorgi, M., and Farulla, A.: Histologic Studies in Serial Sections of the Bundle of Paladino-His in a Case of Rare Type of Bundle Branch Block Present in a Syphilitic Subject. Acta cardiol. 8: 509 (Fasc. 5), 1953.

Serial histologic sections of the conduction system are presented from a case with a typical electrocardiogram of right bundle-branch block. Alterations of degenerative type were seen with partial
invasion of the two bundle branches by connective tissue. The common bundle showed destruction of its right half above its bifurcation, while its left half was intact. The anatomic findings confirm, in the opinion of the authors, a hypothesis advanced previously by Condorelli. According to his views the fibers of the common A-V bundle are anatomically and functionally divided into two portions, each of which eventually forms after its bifurcation the right and left bundle respectively. It is therefore possible that a partial interruption of the common bundle may result in the pattern of bundle-branch block, without an actual lesion present in one of the bundle branches.

**PHARMACOLOGY**


The role of the carotid reflexes in the depressor response to Veriloid was investigated in dogs. Combined section of the vagi and of the carotid sinus nerves abolished the usual decrease in blood pressure and heart rate following the administration of Veriloid; either of these procedures alone, however, was ineffective. Following vagotomy, denervation of the carotid pressoreceptors without destruction of the chemoreceptors completely prevented the depressor response to the drug. Since Veriloid did not potentiate the depressor effect of submaximal electrical stimulation of the carotid nerves, it was concluded that the drug causes hypotension by sensitization of the stretch receptors, rather than by facilitation of central components of the reflex arc.

**MAXWELL**


The following treatment schedule was used for the treatment of nonconvulsive toxemia of pregnancy: (1) Give intramuscularly the purified veratum product mixed with 1 per cent cocaine. (2) Record blood pressure and pulse every half hour. (3) Repeat the injection of Veratum every hour, if necessary, whenever the blood pressure is over 140/90. (4) A gradual increase of dosage is recommended if no hypotensive effect is observed. (5) If nausea and vomiting occur, give 50 mg. of phenobarbital sodium intravenously. In 308 such cases, the intramuscular administration of purified Veratum gave excellent results in 241 (78 per cent), and good results in 50 (17 per cent); there were no maternal deaths and five fetal deaths. Severe pre-eclampsia was treated alternately with veratum and pentobarbital-magnesium sulfate in 100 patients. In the veratum group, the average blood pressure decrease was 23.1 mm. Hg, in the pentobarbital group, the average blood pressure increased by 4.1 mm. Hg. Also, in the treatment of severe eclampsia, Veratum was found to be superior to other methods of treatment.

**SHUMAN**


Drugs that dilate the coronary vessels are useful. It is essential to ascertain that such drugs do not divert blood from the coronary circuit by a disproportionate dilator action on the systemic circuits. Drugs that increase coronary flow should not at the same time increase the metabolism or work of the heart. The term coronary insufficiency, as an expression of inadequate nourishment of the heart by its circulation, serves a useful purpose. However, the concept that coronary insufficiency is measured by angina pectoris is fallacious because of the fact that pain is analyzed in terms of the physiology of sensation, which is quite apart from factors having to do with coronary flow. Often, discrepancies in results between clinical evaluation of coronary dilators and animal experimentation are noted. In some cases experiments are to blame; sometimes the blame concerns the object of the study; in other cases the investigator. In studies of so highly a subjective ailment as angina, the need for repeated substitution with the so-called “double blindfold method” is apparent because many patients react readily to this “ceremony of therapy.” These patients often show improvement regardless of what drug is used, even with placebos. The major source of error in clinical studies is bias, either conscious or unconscious on the part of the investigator. There may be little correlation between the ability of a drug to prevent electrocardiographic changes under stress and to prevent anginal pain. The authors do not believe papaverine, visammin, dioxyline phosphate, or pentaerythritol tetrannitate are of any use in the treatment of angina. They are currently working on the effects of estrogens on the anginal syndrome but have no report to make on this drug.

**KITCHELL**


Twenty adult patients with organic heart disease due to various causes were treated with 2 Gm. of chlorotetracycline (Aureomycin) daily in four divided doses on the day before, the day of, and the day after surgery. The last preoperative dose of 0.5 Gm. of chlorotetracycline was given two hours prior to surgery to assure high blood levels at the time of
possible bacteremia immediately following extraction. Blood cultures taken before onset of therapy, immediately before and after surgery, half an hour later, 24 hours later, and four weeks later were sterile. The results obtained in this study give additional support to previously reported findings on 25 patients without heart disease, that chlorotetracycline used prophylactically is successful in greatly reducing bacteremia following oral surgery. The fact that blood cultures of all patients with cardiac disease four weeks after surgery were negative and that none of these patients showed any signs of subacute bacterial endocarditis after careful history and physical examination strongly suggests the value of chlorotetracycline in preventing detectable bacteremia, and in presumably preventing subacute bacterial endocarditis following oral surgery and most likely surgery in any contaminated area of patients with cardiac disease.

Bernstein


Diamox, a carbonic anhydrase inhibitor producing loss of bicarbonate, sodium, potassium and water, was used in 13 patients with congestive failure who were previously treated with digitalis, low-salt diet and mercurial injections. Eleven patients were kept free of edema on doses of Diamox of 0.5 Gm. daily together with the low-salt diet and digitalis. Eight patients were able to dispense with mercurial injections completely. The periods of observation ranged from one week to six months. Toxic effects of the drug consisted of paresthesias of the face and extremities and moderate to extreme drowsiness. These symptoms were encountered when the daily dose was 1 Gm. or more and became minimal when the dose was reduced to 0.5 Gm. daily. No evidences of hematopoietic or renal toxicity were encountered.

Rosenbaum


The authors studied the frequency and severity of vagal cardiovascular reactions (brachycardia and arterial hypotension) in 202 patients before, during and after surgery (194 chest operations and 8 abdominal operations) and in 88 nonsurgical patients undergoing medical treatment. All of the surgical patients received morphine, scopolamine and Seconal preoperatively. These patients were divided into four groups depending on subsequent medication: Group I (79 patients) received no additional medication; group II (55 patients) were given digitoxin, 0.8 or 1.2 mg. orally, 12 hours before operation; group III (27 patients) received methantheline bromide (Banthine), 50 to 100 mg. orally, one to two hours before operation; and group IV (41 patients) were given both digitoxin and methantheline bromide prior to surgery in the doses described. Anesthesia consisted of pentothal and curare for intubation and ether and oxygen or nitrous oxide and oxygen for maintenance. Operations for hiatus hernia and carcinoma of the esophagus caused a higher percentage of vagal cardiovascular reactions than found in any other types of surgical procedures in this series. The time of occurrence of the vagal reaction averaged 32 minutes after intubation and was associated most commonly with incision of the chest wall, rather than with intubation or hilar traction. The patients who received both methantheline bromide and digitalis (group IV) showed the lowest frequency of vagal cardiovascular reaction, while the highest incidence of such reactions was found in group I patients who did not receive either of the medications. The administration of either digitalis or methantheline bromide prophylactically prior to operation (groups II and III) reduced the frequency of these reactions. The medical patients studied consisted of patients with hypertension and peripheral vascular disease. These patients were given methantheline bromide, 50 to 150 mg. orally, or 5 to 8 mg. intravenously. Studies of the effect of methantheline bromide on the sympathetic nervous system revealed that the drug did not produce postural hypotension, did not block the normal pressor reaction to blowing, did not abolish the cold pressor reaction, but did inhibit somewhat the vasoconstrictor reflexes induced by digitalis. Studies on patients with increased vagal tone due to digitalis intoxication indicated that methantheline bromide is a powerful antagonist to the vagotonic effects of digitalis. The authors suggest that combinations of digitalis and methantheline bromide preoperatively should make it possible to obtain the advantages of digitalis preoperatively in certain patients without increasing the danger of severe or fatal vagal cardiovascular reactions which have in the past been a contraindication to the preoperative use of digitalis.

Sagall


Dioxyline phosphate is a synthetic papaverine-like compound. The clinical effects of this drug were observed in 127 patients suffering from a variety of peripheral vascular disorders: arterial embolism or thrombosis; arteriosclerosis; thromboangiitis obliterans; arteritis; arteriovenous fistula; glomus tumor; Raynaud's phenomena; "postvisualization" spasm; varicose veins; and phlebitic states. The majority of patients received 200 to 400 mg. by mouth four times daily. In a few instances, 100 mg. doses were injected intraarterially. No toxicity to
the drug has been noted in patients receiving 0.6 to 1.8 Gm. of drug orally for periods of time as long as 18 months. Side effects have been very rare and mild.

Although it was difficult to be certain how much of the clinical improvement was due to diocynine phosphate or to other concurrent therapeutic measures, the best results were observed in the postphlebitic syndrome. Benefit was also noted in patients with arterial embolism or thrombosis, Raynaud's phenomena, and early thromboangiitis obliterans or arteriosclerosis.

WESSLER


Both L-epinephrine and L-norepinephrine first lower then increase the diastolic thresholds to electrical stimulation. The lowered threshold is associated with an increased serum potassium in the case of epinephrine. Hepatocentomy abolishes the change in potassium and decreases the epinephrine effect on threshold but has little or no influence on norepinephrine action on the thresholds. Both agents produce tachycardia in vagotomized dogs. Epinephrine has more effect on conduction velocity than norepinephrine. Each produces a similar slight shortening of relative and absolute refractory periods in atrial and ventricular musculature.

Oppenheimer


In an effort to obviate the need for frequent injections of methonium compounds, the authors investigated the use of a single daily subcutaneous injection of a solution of 20 per cent hexamethonium bromide in Polyvinylpyrrolidone, a plasma substitute, in five patients with severe hypertension. This combination seemed to have an effective hypotensive action which persisted for from 6 to 12 hours, and in some cases throughout the 24 hours. There was a slight tendency to be cumulative. Because of its irregular action, however, with unpredictability in the development of hypotension, it was felt to be more inconvenient that multiple injections of simple aqueous solutions of hexamethonium.

MAXWELL


The treatment of five cases of anuria or severe oliguria complicated by hyperkalemia with a sodium sulphonate ion-exchange resin is reported. It was administered both by mouth (15 Gm. three to four times daily) and by retention enema (15 Gm. daily) while the patients were treated with a high calorie electrolyte-free diet or daily intravenous infusions of hypertonic (40 per cent) glucose into the superior vena cava through a polythene tube.

The serum potassium level was satisfactorily reduced in four of the patients, the fifth patient dying from hyperkalemia before the resin could exert any significant effect. Appropriate faecal analyses at necropsy revealed that the potassium uptake continued throughout the gastrointestinal tract. The effect is therefore delayed after the first dose and prolonged after the last one. The resin was more effective when given by mouth than when given by retention enema, in the former instance exchanging 0.5 to 1.2 mEq. of potassium per gram, corresponding to a total of 20 to 75 mEq. a day at the dosage used. It was suggested that resin treatment be started as soon as the serum potassium level rises above 6 mEq. per liter, and be discontinued when it falls below 5 mEq. per liter. A scheme of routine treatment with ion-exchange resins is given for anuria and severe oliguria.

MAXWELL


Procaine amide used parenterally is capable of suppressing all forms of auricular arrhythmias. Experimental auricular fibrillation produced in the dog by aceetylcholine could invariably be converted to normal rhythm by intravenous application of non-toxic doses of the drug. In man the results were less consistent. Paroxysmal auricular fibrillation of recent origin is readily reversible, while in chronic forms procainamide proved practically inactive. In other forms of auricular tachycardias and in auricular premature beats the results were variable. In general, larger doses are necessary than for suppression of ventricular arrhythmias. With doses not exceeding 1000 mg., no inconvenience was caused by intravenous injection of procaine amide. Oral application had, in the experience of the authors, only little effect on auricular arrhythmias. It is concluded that procaine amide cannot replace quinidine in the treatment of disorders of auricular rhythm, but it does constitute a valuable additional therapeutic agent.

Pick


After briefly reviewing the history of intra-arterial transfusion, the author presents his clinical impressions based on the use of this technic in 185 cases, largely consisting of neurosurgical patients in whom retrograde intra-arterial injection was used to replace blood withdrawn for preoperative essanguina-
ABSTRACTS


The explanation of the mechanism of the action of hydrazinophthalazine is not entirely clear. It is effective in reducing the hypertension of pregnancy toxemia and in acute nephritis. In this investigation the hemodynamic effects of intravenous injection of this substance were studied in 12 nonpregnant, normotensive, healthy women, 12 pregnant but normotensive women, 33 women with toxemia of pregnancy, and 18 women who were pregnant and had essential hypertension. Hydrazinophthalazine was given by rapid single intravenous injection in doses ranging from 20 to 40 mg. Some of the findings in this study were as follows: in the normotensive patient there was a slight fall in blood pressure, but in the toxemic group there was a significant and prolonged hypotensive response. A moderate blood pressure fall was noted in the patients with essential hypertension.

Furthermore, there was a significant increase in cardiac output and a reduction in the peripheral resistance at the height of the hypotensive effect, with no change in blood volume.

The temperature in the upper extremities rose considerably in contrast to the slight change in the lower extremities. These findings differ from those following ganglionic blockade in which the reverse effect is produced, and point to differences in mechanisms controlling blood flow to various segments of the body. The drug did not block the vasopressor response to cold, or the Valsalva maneuver in the pregnant women.

Waife


During 1952, the authors treated with atabrine 60 patients who had lupus erythematosus. Fifty-five of these patients had the chronic discoid form of the disease, and five had moderate systemic manifestations of lupus erythematosus. Of the 55 patients with chronic discoid lupus erythematosus, 52 have been followed either directly or by correspondence. The results obtained are as follows: 11 patients were 0 to 25 per cent improved (one of these reported that he became worse); 9 were 25 to 75 per cent improved; 15 were more than 75 per cent improved but the disease was not arrested; and 17 had complete arrest of the disease. Twenty-one of the patients had stopped taking atabrine. Subsequently, 10 of these had had recurrences while 11 had not, in observation periods extending to more than six months. Several of the patients who had been receiving low maintenance doses of 50 to 100 mg. of atabrine daily noted that after exposure to the sun during the spring, some of the lesions of lupus erythematosus again became active after several months of inactivity.

It is necessary to remember the potential serious sequelae of therapy with atabrine. Reactions are similar to those of gold, arsenic, and, to a lesser degree, bismuth. The incidence of reactions from atabrine is less frequent than from the heavy metals. The skin participates with the greatest frequency in these undesirable reactions by an eruption which simulates one of the following: lichen planus, pityriasis rosea, seborrheic dermatitis or dishidrosis. The incubation period of the lichenoid reaction is long. In a series of patients studied previously, it varied from six weeks to nine months; the greatest number of reactions appeared three to six months after treatment with atabrine was begun. Untoward reactions may involve the hematopoietic system, in the form of an aplastic anemia, the central nervous system, the gastrointestinal system or the liver.

Simon

Maxwell

tion or lost accidentally when large vessels were torn during the removal of vascular tumors. In addition to direct blood pressure measurements from the radial artery in all instances, plethysmographic records were obtained from the lower extremities of 10 consecutive cases in an effort to delineate the hemodynamic alterations which took place.

Retrograde intra-arterial administration of blood consistently proved superior to the intravenous route in combating hypotension and restoring circulatory dynamics. This was especially evident in those patients in whom hypotension had been severe and prolonged. In this latter group, intravenous therapy produced only temporary improvement whereas intra-arterial transfusion, even in small amounts, usually resulted in permanent resuscitation.

Interpretation of the combined blood-pressure recordings and plethysmograms suggest that there is an immediate decrease in peripheral vasoconstriction after the initiation of arterial transfusion. Vascular tone returns to the control level with the termination of the transfusion, followed in a few minutes by a further decrease in vasoconstriction and, in the presence of an unaltered blood pressure an increase in cardiac output. A rise of blood pressure only occurred several minutes after the first change in peripheral blood flow had become apparent.

It is concluded that intra-arterial transfusion is of advantage in the treatment of patients who have become exsanguinated to critical levels, or are in severe circulatory failure for other reasons. Emphasis is placed on the danger of gangrene incident to arterial infusion of plasma, saline or other non-oxygen-bearing fluids.

Ventricular flutter and fibrillation induced by standard doses of calcium chloride in rats were prevented by sympatholytic and autonomic blocking drugs (tetraethylammonium chloride, hexamethonium bromide, Hydergine), by encephalic and/or upper spinal destruction and by medullospinal section. Bilateral vagotomy, bilateral adrenalectomy, and lower spinal cord destruction did not prevent these arrhythmias.

These results suggest the neurogenic origin of induced arrhythmias, with probable centers within the brain stem; impulse conduction occurs through the upper spinal cord and then to the heart via sympathetic pathways. Direct arrhythmic effects of higher concentrations of calcium chloride upon the myocardium were also noted. The pathogenic and pharmacologic similarities with other ectopic rhythms, experimentally produced in different species or spontaneously arising in man, were discussed.

MAXWELL


Calcium chloride produces ventricular flutter and fibrillation in rats. This may be prevented by tetraethylammonium chloride (TEAC) or hexamethonium bromide. Protection does not depend on hypotension since a low blood pressure due to hemorrhage does not protect. These blocking agents still protected although pressure was elevated by transfusions. The authors are of the opinion that calcium chloride induces ventricular flutter and fibrillation by neurogenic mechanisms. These pathways may be blocked by the two agents studied.

OPPENHEIMER

PHYSICAL SIGNS


In 1866 and 1867, Foster described a loud murmur of aortic regurgitation, a mitral systolic murmur well transmitted to the axilla and a peculiar prolongation of the second sound, "sometimes almost a murmur" in a patient with rupture of the "left semi-lunar segment of the aortic valve." Later he reported two cases of aortic-valvular cusp rupture in which there was a diastolic murmur of aortic insufficiency well transmitted to the ensiform cartilage but not to the heart's apex; in each case the cusp which ruptured had a coronary artery arising from its adjacent sinus of Valsalva. In 1874, Foster stated his rule that "incompetency of the left leaflet is associated with transmission of the diastolic murmur to the apex and that insufficiency of either the posterior or right leaflets results in transmission of the murmur to the ensiform." In another publication, Foster changed his nomenclature of the aortic valves referring to the noncoronary leaflet as a posterior segment and changed his rule accordingly. In 14 cases reported by these observers, the following was observed: (1) when the noncoronary cusp was involved, the transmission of the murmur was to the apex in four cases, to the ensiform in three cases and to both areas in two cases; (2) when the left coronary-artery segment was involved, the transmission was to the apex in two cases and to the ensiform in three cases. An Austin-Flint murmur was present with involvement of a noncoronary cusp in three cases, and in association with a coronary cusp in two cases.

The Foster murmur is considered ambiguously described and has been variously interpreted. It is felt that the Foster rule has not been confirmed by previous reports nor by an analysis of further cases. It is felt, further, that the prediction of which cusp of the aortic valve is incompetent, either from the transmission of the aortic diastolic murmur or on the basis of an Austin-Flint murmur, is hazardous.


The authors point out the importance of simple but careful examination of the hand, and discuss a number of conditions in which examination of the hand yields important clinical information regarding the cardiovascular system of the patient. The size of the fist may give a rough estimate of the size of the heart, since under normal conditions a small fist usually indicates a small heart. Anxiety states, such as neurocirculatory asthenia, may be indicated by cold, flabby, wet hands; increased palmar sweating; tremor; restless and fidgety hands; cyanosis and mottling; or tobacco stained fingers. In congenital heart disease clubbing of the fingers is generally proportional to the degree of cyanosis and appears only after cyanosis has developed. Congenital anomalies such as sydactyly, polydactyly, and arachnodactyly may be associated with congenital heart disease. Small, slowly growing para-unungual fibromas have been reported in tuberous sclerosis of the brain, a condition in which rhabdomyoma of the heart has been described. In mongolism the incidence of congenital heart disease is almost 25 per cent. The hand in mongolism is often distinctive, being fat and flabby with short cone-shaped fingers and a rudimentary second phalanx of the little finger. In subacute bacterial endocarditis a number of important clinical findings often can be detected in the examination of the hand, e.g., Osler's nodes, the Janeway lesion, trophic disturbances, petechial
hemorrhages, “splinter hemorrhages,” embolic phenomena, clubbing of the fingers, and pallor. Clues to endocrine disturbances which may be associated with or complicate cardiovascular disorder may often be found in the hand—the warm, moist hand of hyperthyroidism; the rough, dry, cold hand of myxedema; the broad, pale, large hand of acromegaly; the underdeveloped hand of cretinism; etc. Myocardial infarction may be complicated by the shoulder-hand syndrome with resultant changes in the hand. In metabolic diseases such as xanthomatosis, or gout, the lesions may be confined to the hand. Disturbances of liver function may be suggested by the findings of erythema of the palms or spider angiomas. Deficiency conditions developing in patients with long standing cardiovascular disorders may be recognized at times by changes in the hands. Raynaud’s syndrome and erythromelalgia involving the hands and fingers may be secondary manifestations of a variety of conditions. In the diffuse collagen diseases the hands are frequently involved. The hands disclose evidences of changes of the peripheral circulation. Changes in the color and temperature of the skin of the hands may be the first indication of impending peripheral vascular collapse. Thus, simple observation and palpation of the hand is of great value in cardiovascular problems.

**SAGALL**

**PHYSIOLOGY**


The isolated heart of the mollusc, Venus mercenaria, was used to evaluate serotonin activity. Serotonin was detected in brain (dog, rat, rabbit) and in dog and human urine. Intravenous injection of serotonin increases urinary excretion. Serotonin activity was not detected in citrated blood from heparinized dogs although there were detectable amounts in the serum. These latter facts were unchanged by infusion of large quantities of serotonin.

**OPPENHEIMER**


Radioactive chromic chloride is rapidly bound by plasma proteins, to the extent that 98 per cent or more is bound immediately upon intravenous injection. Apparently the chromic chloride can leave the circulation only at the rate at which proteins leave it; hence it would appear to be useful for the determination of the plasma volume. Determinations in 21 normal adult males, using the isotope dilution principle, gave results which are said to be accurate to within 3 per cent as verified by hemorrhage and transfusion experiments with measured volumes of plasma. The mean circulating plasma volume in the adult male group studied was 2,894 ml. ± 306. The mean plasma volume per kilogram was 39.3 ml. ± 4.9; and the mean plasma volume per square meter of body surface area was found to be 1515 ml. ± 157.

The half-life of radioactive chromic chloride is 26.5 days. There did not seem to be significant accumulation of Cr³⁶ in the spleen, however, the accumulation may be greater in patients with rapid hemolysis.

**WAIFE**


Because of the selective affinity of red cells for hexavalent anionic chromium⁶⁺, and of the plasma proteins for trivalent cationic Cr³⁺, both forms of the isotope were used for the simultaneous determination of red cell mass and plasma volumes by the isotope dilution principle. It was found that the mean values for red cell mass and plasma volume obtained by the combined method agreed favorably with those obtained when chronic chloride and sodium chromate were used separately. This is because the affinity of chronic chloride for the plasma proteins is such that less than 2 per cent of the injected material is lost to the red cells while the bond of sodium chromate to erythrocytes is sufficiently strong so that there is no significant loss of radioactivity to the plasma.

**WAIFE**

**RHEUMATIC FEVER**


The authors used a standardized procedure for raising cantharides blisters in the skin of the abdominal wall, removing the blister fluid, and studying its volume, cytology, and protein content. The method was found to be painless and trouble free. Thirty children with rheumatic fever, five children with other illnesses, and six normal children were studied.

The volume of blister fluid was found to be consistently lower in the acute rheumatic fever patients than in the others. With treatment of rheumatic fever, the only significant change occurred in the patients receiving corticotropin. These patients, despite suppression of clinical activity, showed still further diminution in volume of blister fluid. White cell counts did not vary substantially in any of the groups, and eosinophil counts were too variable to have statistical correlation. The protein content of blister fluid was generally related to that of the
subjects plasma, and the ratios of blister-plasma albumin were the same in all groups. However blister-plasma globulin ratios were higher in acute rheumatic fever, and fell during treatment.

The appearance of the blisters differed in that those in acute rheumatic fever were covered by thick, edematous skin; those of normal or convalescent subjects had a covering about one-fifth as thick; and those of corticotropin treated cases had an extremely thin covering. These differences in appearance of the blisters and their blister-plasma globulin ratios between cases of untreated rheumatic fever and corticotropin cases suggest that the mechanisms differ. In the latter cases, it is probable that less fluid is exuding from capillaries. In the untreated cases, the effect of cantharidines on capillary permeability is probably as great as in normal persons, but the fluid may be excessively diffused through the tissues instead of remaining localized in the blister. This may be adduced as additional evidence of a generalized involvement of connective tissue in acute rheumatic fever.

Maxwell


Electrophoretic patterns of the proteins of 205 plasma or serum samples from 77 children with definite rheumatic fever and five patients with chorea alone were analyzed in relation to the course of the disease.

In the acute state, the percentage composition of albumin is significantly decreased, whereas fibrinogen and the globulins (alpha1, alpha2, gamma1 and gamma2) are increased. The return to normal values as the disease regresses is gradual for albumin, fibrinogen, alpha2 and gamma globulins; alpha1 and gamma2 globulins are elevated generally only in the acute stage. The beta globulin component seems to be unaltered by the disease. The mean values for total proteins are slightly elevated for all subgroups of uncomplicated rheumatic fever and significantly elevated in the late-subacute stage. Serum protein fractions for the group of inactive rheumatic patients indicate that the rheumatic fever patients as a group are capable of normal protein metabolism. The patterns of alteration are discussed in relation to some of the known acute-phase reactions, tests and antibody production.

Maxwell


The Q-T interval was measured in 30 electrocardiograms of children during the active stage of rheumatic carditis. Ten normal children were studied as controls. All the measurements were taken from lead II, employing a Siemens' string electrocardiographic machine. Taking Goldberger's figure of 1.08 as the upper limit of normal, one-third of the children with active rheumatic carditis showed a prolonged Q-T interval; none of the controls showed such prolongation. It appeared that a prolonged Q-T interval may be found during the active stage of the disease, but a normal measurement does not invalidate the diagnosis of active carditis.

Maxwell


The authors have studied a group of patients with mitral stenosis who have the following signs and symptoms: (1) a history of pronounced respiratory symptoms; (2) an extreme degree of dyspnea; (3) electrocardiographic and roentgenographic evidence of marked right ventricular hypertrophy; (4) the early appearance of congestive heart failure; and (5) marked alterations in circulatory dynamics with extremely high pressures in the pulmonary circulation. The name of "mitral stenosis and cor pulmonale" has been given to this group. The importance of identifying this type of case lies in the present ability to operate upon the stenosed mitral valve. The pulmonary changes which characterize these cases may be reversible when arrested at the initial stages of their development but are most probably unchangeable when far advanced.

Rinzler


In a group of nine cases of mitral stenosis studied before and after commissurotomy, it was found that several showed an increase in the effective shunting of blood through the poorly aerated lung, in some instances with arterial unsaturation. This abnormality was largely corrected by commissurotomy. Prolonged rest in the supine position increases pulmonary congestion. Resting hyperventilation frequently disappeared after operation, suggesting that the engorged pulmonary bed serves as a reflex stimulus to ventilation.

Waife


Kymographic and phonocardiographic findings in mitral disease and their postural variations, are reported. According to the authors, a marked proto-
diastolic movement in ventral direction of the left atrial border (in the right anterior oblique diameter) suggests that a stenosis of the mitral orifice is not of significant degree. The slighter the stenosis, the more pronounced is the protodiastolic portion of the left atrial kymogram which may even assume a plateau like contour. The finding of a dorsal movement of the atrial border in the protodiastolic phase suggests the presence of mitral insufficiency. All these alterations become more pronounced with the patient in supine, head low, position. Registration of the apical phonocardiogram in various positions permits an estimation of the degree of mitral stenosis by comparing the intensity of diastolic and presystolic murmurs in erect and in lying positions. The authors believe, that the combined use of these two methods represents "an advance in the assessment of inflow and outflow to and from the left atrium."

ROENTGENOLOGY

Comstock, S. W.: Mortality of Persons with Photofluorograms Suggestive of Cardiovascular Disease. New England J. Med. 346: 1045 (June 18), 1953. This report is concerned with results of the photofluorographic survey of 43,429 persons in Muscogee County, Georgia. Of these, 739 or 1.70 per cent, had chest photofluorograms considered indicative of cardiovascular abnormalities. Anomalies were more frequent in males and in negroes and increased markedly with advancing age. Hypertensive and cardiovascular syphilitic disease was more common in negroes. Of the 739 cases discovered in this survey, 116 (15.7 per cent) were known to have died in the three and one-half year period following the survey. The mortality increased from 6 per cent for the group from 15 to 34 years of age to nearly 20 per cent for the persons over 55 years of age. In the survey population considered negative for cardiovascular disease, the mortality was 1.15 per cent in whites and 2.09 per cent in negroes. The selected group, less than 2 per cent of the surveyed population, yielded nearly a fourth of the cardiovascular deaths which occurred among this population in the three and one-half years after the survey. It is felt that a survey such as this can identify among the total surveyed population a relatively small group of persons whose subsequent mortality experience shows that they are in need of further remedial or preventive measures. It is felt that the yield of significant cardiac disease can be considerably increased if the survey films are reviewed by physicians with specialized training.

ROSENBAUM


On angiocardiography the authors noted marked right atrial enlargement, dilatation of the superior vena cava, and occasionally irregularities in right atrial filling near the tricuspid orifice where non-opacified blood from the regurgitant jet could be suspected. Right atrial pressure curves indicated systolic filling causing a plateau like wave, with peak pressures up to 31 mm. Hg.

SCHWEDEL

Amundsen, P.: Planigraphy in Muller and Valsalva Experiments. Acta Radiol. 40: 387 (Oct.), 1953. Planigrams taken at specified depths indicate alterations in width of venous and arterial channels during inspiration at pressures of minus 30 to 60 cm. of water, and expiration at pressures of 40 to 60 cm. The vena azygos, superior vena cava, and the veins and arteries to and from an arteriovenous aneurysm (hemangioma) show alterations in size, increasing during inspiration, diminishing in expiration. Nonvascular tumors and glands, on the other hand, show no such change in size.

SCHWEDEL

SURGERY IN HEART AND VASCULAR SYSTEM

Björk, V. O., and Crafoord, C.: The Surgical Closure of Interventricular Septal Defects. J. Thoracac Surg. 26: 300 (Sept.), 1953. The authors review the various technics for closure of interventricular septal defects and present a new approach to the problem. The blind methods consist of either compressing the anterior wall to the posterior wall of the auricles by means of sutures through the heart, invaginating auricular appendages into the septal defect, or using a clamp to approximate the auricular walls against the septum. One of the closed intracardiac tactile methods involves the attachment of the lateral right auricular wall to the septum at the periphery of the defect, and using a finger, inserted through the auricular appendage, to guide the placement of sutures. Another utilizes a cone-shaped rubber bag attached to the wall of the auricle so that this chamber can be opened and blood allowed to rise up into the rubber well.

The new method described by the authors consists of dissection between the superior vena cava and pulmonary vein until a considerable groove is produced. Then a finger is inserted into the right auricle through its appendage and a needle is guided subendocardially in the septal plane. The needle follows the aorta down and through the upper portion of the interventricular septum and comes out through the left auricular wall behind the inferior vena cava, close to the annulus fibrosus. The two ends of the silk suture thus drawn through are tied in the dissected groove between the superior vena cava and the pulmonary veins. The method appears to be applicable even in the case of a very large
interauricular septal defect without a septal rim. It has been utilized successfully in one patient.

**ABRAMSON**


Homologous vascular grafts preserved in a blood vessel bank are of value in the surgical treatment of a number of conditions. The criteria for their implantation may be present in the following cardiovascular lesions: infantile type of coarctation of the aorta in an adult patient, adult type of coarctation of the aorta, congenital lesions requiring shunting procedures, aneurysms, trauma to a major vessel, segmental obliterator arterial disease, cancer or tumor invasion of a major blood vessel, and a smaller number of unusual conditions. The results of 12 cases in which arterial grafts were employed are tabulated. Two cases in whom the need of an arterial graft was not predicted pre-operatively but in whom their use made a hopeless situation operable are reported.

**SAGALL**


The author presented the results obtained with surgical treatment of 22 patients with coarctation of the aorta. Of this number, death occurred in two. In one of these, the junction of the aortic arch and subclavian artery was found to be necrotic, while in the other death was due to numerous infarcts in vital organs. In 19 of the successful cases, the systolic pressure, which was previously elevated in the upper extremities, returned to normal postoperatively.

It was the opinion of the author that when coarctation of the aorta is associated with another cardiac anomaly or disease, the additive effect of the two may be such that failure of the circulation is likely to occur. Therefore, under such circumstances, surgical intervention is indicated. This approach is also advisable in order to prevent the occurrence of accidents or infection in the region of the coarctation. The influence of age likewise plays a role in determining the type of therapeutic program to adopt. In the very young the operation is mandatory if adequate circulation cannot be maintained and development is retarded. When the patient is 5 to 10 years of age, the technical advantages of performing the operation at this time outweighs the advantages of waiting longer to permit further growth at the anastomotic site. In individuals above the age of 30 years, the operation becomes most hazardous and hence its indications must be clear cut and unequivocal.

**ABRAMSON**


When blood vessels are deprived of their sympathetic nerve supply, there is an increased sensitivity to epinephrine. There seem to be two phases to this reaction. During intravenous epinephrine infusion, marked vasodilatation of the forearm occurred early, both in normal and sympathectomized limbs. Following this, there is a second phase of moderate dilatation in normal, but not in sympathectomized limbs. Because of its absence in chronically sympathectomized areas, this secondary vasodilatation was thought to be an indirect effect mediated by the sympathetic nerves. In this study it was found that the initial vasodilatation in the forearm and calf during the intravenous infusion of 10 μg. of epinephrine per minute was greater in the sympathectomized than in the normally innervated limbs. The observations reported here suggest that the sustained moderate vasodilatation in normally innervated forearms and calves during the second phase was due to some nonlocal effect of epinephrine. This is believed to be due to hypersensitivity of the vessels.

**WAIFE**


Mitrval commissurotomy is indicated for patients who have mitral stenosis predominately and only minimal degree of mitral insufficiency, and who are experiencing progressive disability. Auricular fibrillation, cardiac enlargement, minimal aortic lesions, age, and congestive heart failure are not contraindications. Presently accepted contraindications consist of bacterial endocarditis, active rheumatic fever, severe mitral regurgitation, or severe involvement of other valves. The anesthesia should be light and combined with a high oxygen intake. The authors approach the heart through resection of the left fourth rib. Valvuloplasty in most cases can be performed by finger fracture. In a few cases a valvulotomy is necessary. The object is to create a valve area of from 4 to 6 cm. in diameter with minimal regurgitation. Over the past eight months 33 patients have been operated upon at the New York Hospital-Cornell Medical Center. Two deaths occurred with the first eight patients and none with the last 25. Eighteen of the first 20 operated patients are alive, and 11 are markedly improved. Three have shown slight improvement and four no improvement. The remaining 13 patients were operated upon in the past six months, and although it is too early to make any conclusion the results appear more promising than in the original 20.

**SAGALL**

Seven cases of abdominal aneurysm were treated by resection of the involved portion and restoration of continuity of the vessel using aortic homografts. In each instance the lesion was located below the origin of the renal arteries. In all but one it was of arteriosclerotic origin. Aortography was employed as a diagnostic procedure in five patients. There was one death in the series, this occurring on the thirteenth day postoperatively as a result of progressive uremia and secondary hemorrhage. The remaining patients demonstrated excellent results.

It was concluded that resection of the aneurysm and involved segment of aorta, with restoration of normal flow by means of an aortic homograft, was the procedure of choice in the treatment of this condition.

Abramson


Prior to operation the patient should be in the best possible physical condition. In the author's cases morphine and atropine were given subcutaneously one and one-half hour prior to induction of anesthesia. The anesthetic technic has been a closed circle carbon dioxide absorption endotracheal method with an inflated cuff to maintain a completely closed system. Pentothal sodium (21/2 per cent) was the anesthetic agent used initially. Anesthesia was then induced with ether-oxygen, using 50 per cent oxygen and 50 per cent nitrous oxide to accomplish the Pentothal-ether sequence. Intubation was performed in the first plane of the third stage of anesthesia using a local spray of topical 2 per cent xylocaine. When the chest is opened assisted respiration is employed cautiously, but controlled respiration should not be utilized. The operating cardioscope was of great value in following cardiac rate and rhythm. The greatest number of irregularities occurred during manipulation of the heart valve and are related to movement of the finger. Blood should be given only as necessary to replace the amount lost, for circulatory overload occurs easily in these patients. Blocking the upper thoracic nerves in the paravertebral region with 2 cc. of xylocaine greatly reduces the incidence of severe postoperative pain in this region.

Sagall


The authors present in detail the case of a mitral commissurotomy performed on a 50 year old woman with mitral stenosis and insufficiency, pulmonary insufficiency, auricular fibrillation and cardiac decompensation. During the 25 years prior to operation she had frequent, severe substernal and precordial pain, precipitated by exercise and relieved by nitroglycerine. These attacks soon became refractory to nitroglycerine and frequent administration of narcotics was required for relief and for 15 years the patient had been incapacitated by daily attacks of pain. At operation a tight mitral valve was successfully opened. Postoperatively there was immediate relief from the precordial pain. During a 10-month follow-up period the patient has been entirely free of pain except when cardiac decompensation becomes manifest. With control of decompensation by diuretics the pain disappears. This patient substantiates the validity of pulmonary hypertensive pain as an entity which can simulate the pain of angina pectoris and coronary artery disease and affords evidence that the pain is related to increased pressure in the pulmonary circuit.

Sagall


The authors studied the effect of experimentally produced gunshot wounds of the abdominal and thoracic aorta of dogs. It was found that when normotensive aortas that were exposed to air were shot with .177 caliber missiles, the defects were much larger than in the case of hypotensive vessels. Covering the normotensive aorta with a shallow layer of saline solution before it was traumatized produced much smaller defects.

It was concluded that the destruction of an artery by a gunshot was due to two factors: (1) the hole made by the simple passage of the missile through the wall; and (2) the "bursting" component due to displacement and overstretching of the arterial wall by the pressure changes adjacent to the missile, and the temporary cavity which followed. It was also found that the gross intimal damage usually exceeded the gross external damage. Because of such changes, it was suggested that the optimal method of debridement and repair was the use of segmental resection of the injured vessel at least 3 mm. beyond the gross defect, followed by axial anastomosis.

Abramson

Fraser, R. S., and Chapman, C. B.: The Cardiovascular Effects of Cervicothoracic Vagotomy in

The authors report the results of cardiovascular studies in a 40 year old farmer four months after a bilateral vagectomy had been performed for removal of neurofibromata of both vagi. The vagectomy was complete on the left side and nearly complete on the right and probably resulted in the severance of most of the vagal efferent pathways to the heart. The cardiac output increased from the resting level of 5.33 liters per minute to 10.21 liters per minute after exercise, and the circulation time decreased from 19.7 seconds to 14.6 seconds. These values were within normal limits. Blood pressure changes during exercise likewise were the same as in normal subjects. The pulse rate remained persistently high after operation and was not changed after a subcutaneous injection of atropine. In response to exercise the pulse increased somewhat less than normal. These observations suggest that marked reduction in vagal influence on the heart by parasympathetic denervation in the human being results in a permanent increase in the resting heart rate but does not alter the normal circulatory adjustments to moderately heavy exercise. Thus, in the human, these adjustments are probably carried on by important nonvagal mechanisms.

SAGALL


A sound technic for intracardiac surgery requires direct-vision access to the entire interior of the heart for prolonged periods plus adequate protection for the brain and other vital organs during cardiac isolation or failure. This cannot easily be provided at normal temperatures because of the technical difficulties presently inherent in large capacity extracorporeal pump-oxygenators. The protective action of reduced metabolism provided by hypothermia is but a partial solution to the problem. Combined with a low capacity pump-oxygenator, however, hypothermia provides safety during lengthy cardiac isolation or failure. Direct cooling or warming of the blood is much simpler than external heat exchange, and in addition provides a saving in time and total caloric transfer, the heart and presumably other vital organs being cooled much more rapidly than the animal as a whole.

Experiments in large dogs using a low capacity pump-oxygenator incorporating a heat exchanger are described. With flows of about 300 cc. per minute, the heart was cooled to 20 C. in an average of 21 minutes. Caloric exchange was only 34 per cent of that calculated to cool the entire dog. Ventricular fibrillation was well tolerated and reversible. Warming was practicable to 32 C. by direct heating of the blood.

The authors point out that this is a preliminary animal study on dogs and that the details of temperature, blood flow, and oxygenation, in brain, kidney, liver and other vital organs remain to be studied before this method can be considered suitable for use in humans.

DENNISON


Fifteen patients have undergone cardiac operations while they were in a state of hypothermia with body temperatures ranging from 21.5 to 26 C. In 13 of these patients, circulation was stopped for periods varying from two to eight and one-half minutes, and the operation was performed in the open heart under direct vision. There was only one operative death in this group. All the others did well, except one, upon whom no therapeutic procedure could be performed. Hypothermia was induced during anesthesia by immersing the patient in a tub full of ice water; conversely, warming the patient was achieved in a tube filled with warm water. Prevention of shivering and hyperventilation were important aspects of the cooling technique and potassium appeared to be a valuable agent for combating ventricular fibrillation in the cold patient. Coronary artery embolism was prevented by a combination of maneuvers of which one of the most important was complete immersion of the heart in salt solution at the time of closure of the cardiomyotomy. It is felt that direct vision intracardiac surgery could be further explored and expanded in scope since cessation of circulation in the presence of hypothermia allows an essentially bloodless field with reasonable safety for periods up to at least 8 minutes. It is surprising how much can be deliberately accomplished in this period of time.

KITCHELL


The afferent pathway for anginal pain is composed of sympathetic fibers passing through the inferior cervical ganglion (which is usually fused with the first thoracic ganglion to form the stellate ganglion), and direct fibers from the cardiac plexus which pass through the first, second, third and fourth thoracic ganglia. From there the impulses are conducted through the white rami to the spinal cord. Fourteen patients with angina pectoris and hypertension were treated with combined thoracolumbar sympathectomy including removal of all or part of the anginal pathway. In two patients without hypertension the anginal pathway alone was resected. The follow-up for the total series of cases was six months to three
years. Complete relief of angina with the exception of a residual sensation of constriction in the throat was obtained in nine patients. Partial but satisfactory relief of pain occurred in four patients. The best results were obtained in those patients in whom bilateral complete resection of the aortic pathway was performed. An increased postoperative exercise tolerance level was found in a number of patients. This suggests the possibility that coronary artery dilatation occurs after sympathectomy and that excessive anginal pain such as angina decubitus or angina of emotion, may be caused by reflex sympathetic dystrophy. Horner's syndrome, postural hypertension, severe sweating in the groins and swollen nasal mucous membranes are possible complications of sympathectomy. The authors recommend that this operation be limited to hypertensive patients with severe angina and to normotensive patients without a recent coronary infarction who have an "over-alarm" anginal syndrome (excessive anginal pain far out of proportion to any necessity of protecting the heart from overexertion).

SAGALL


Arterial homografts of various lengths and preserved for different periods of time prior to implantation, were grafted into the thoracic aortas of nine weanling pigs. The grafted segments and aortas were examined 35 to 225 days after the operative procedure. All nine homografts were patent and apparently served as satisfactory conduits of blood. No abnormal or newly formed collateral vessels were detected in the region of any graft at the time of its removal. There was moderate fibrosis around each graft and eight of the grafts showed various degrees of calcific degeneration which was sharply limited to the graft and did not involve the host aorta. Early deposition of the calcium material apparently occurred upon the persisting densely grouped elastic fibers of the homografts. The authors suggest that the degenerative changes observed in aortic homografts may be more directly related to the nature of the antibody-antigen responses of the host than to such factors as graft length, or duration or method of graft preservation.

WESSLER


The authors describe a comprehensive program for the treatment of the various types of venous insufficiency that occur in the lower extremities. The indications for the use of sclerosing solutions, vein ligation, vein stripping and lumbar sympathectomy are described. Ascending erect phlebography with 35 per cent diodrast injected into a foot vein is of help in evaluating problem cases.


The authors discussed the problem of aortic stenosis and a surgical approach for its treatment. They pointed out that the highly calcified valve was, for the most part, not amenable to corrective surgery, while in the case of minimal or no calcification, commissurotomy was able to part the fused commissures and allow the valve cusps to function as a hinge again. The authors described an instrument which they considered satisfactory in producing separation of the commissures. This consisted of an apparatus with three parallel dilating or separating bars on a swivel mechanism, which could automatically adjust to the remnants of the fused commissures.

A beaded guidewire was first inserted through an incision in the left ventricle made in the center of a purse-string suture. The incision was then enlarged to permit the triradiate dilator head of the instrument to pass along the guidewire into the ventricle and upward into the orifice of the aortic valve. After being properly engaged, the blades of the head were extended, pushed forward and pulled back to produce the commissurotomy. After this step the instrument was withdrawn from the heart.

The authors presented the results of commissurotomy in 42 cases of aortic stenosis, with and without other valvular disease. There were seven deaths, a mortality of 16.6 per cent.

ABRAMSON


The results are reported of a trial of the vaso-depressor agent, Arfonad [d-3,4-(1',3'-dibenzyl-2'-ketomidazolido)-1,2-trimethylene thiophanium d-camphor sulphonate], in induced hypotension during 52 major craniotomies, with three illustrative case reports. Arfonad proved to be a safe and adequate drug for this purpose. It was superior to the meconium compounds by virtue of its shorter action, which permitted greater control of blood pressure with satisfactory reduction of hemorrhage and intracranial pressure. Operative and postoperative hemorrhage and mortality were low. In none of the four postoperative deaths was there reason to believe that induced hypotension played any part in
Six case histories are presented of paradoxical embolization proven by autopsy. Only such cases were included in the study in which the embolus was caught "in flagrante," i.e. wedged into an open foramen ovale or a ductus arteriosus. In all cases the crossing over of the clot from the venous into the systemic circulation occurred in the course of repeated embolization. Usually it is preceded by a massive pulmonary embolus creating pressure elevation in the right heart and thus conditions favorable for transfer of a thrombus from right to left. Although paradoxical embolization is compatible with survival of the patient, such an outcome is extremely rare once clinical signs have developed. Only in one instance among the six described cases did a paradoxical embolus to the brain occur several days before a fatal second embolization of the lungs.

VASCULAR DISEASE


The authors present a case of spontaneous perforation of a syphilitic aneurysm of the descending aorta into the esophagus with hematemesis and melena. This case illustrates that the diagnosis of aortooesophageal fistula should be considered in a patient with gastrointestinal hemorrhage when an aneurysm of the thoracic aorta is also present.

Kitchell


There have not been many reports of successful direct surgical attack on aneurysms of the abdominal aorta. At times, the pain of this condition may be so severe as to be intolerable, and then the neurosurgeon may be confronted with the problem. A band of cellophane was passed around the aorta proximal to the aneurysmal sac and drawn tight. This band was sutured anterior to the aorta with the possibility in mind that the cellophane would produce slow fibrosis and occlusion of the aorta proximal to the aneurysm. A lumbar sympathectomy was attempted but could not be done for technical reasons. There was considerable relief of previously intractable pain postoperatively and the patient began to resume a more normal life.

Although the aortic aneurysm in this case was not cured by the operation performed, the intervention spared the patient much suffering that he otherwise undoubtedly would have experienced. He survived nine and one half months after surgery and finally died of rupture of the aneurysm which had almost completely disappeared.

Simon

THROMBOEMBOLIC PHENOMENA

ABSTRACTS


Four categories of patients are included in this study: 12 patients in whom a segmental zone of arteriosclerotic narrowing was the sole demonstrable cause for the presenting of complaints of arterial insufficiency; six patients in whom asymptomatic arterial stenosis was an incidental arteriographic finding; six patients whose original stenotic lesion progressed to complete thrombosis; and three patients who were found to have a significant stenotic lesion apart from a separate zone of arterial thrombosis.

In all patients, the pathologic changes involved a portion of the major arterial tree between the upper abdominal aorta and the level of bifurcation of the popliteal arteries. Resection of the diseased intima was performed in 12 patients. The authors further described their modification of the technic of aortography. Resection of the diseased intima was successful in restoring a normal arterial lumen and relieving the symptoms of ischemia in ten patients. The authors postulate that arteriographic stenosis of sufficient degree to produce ischemic symptoms represents an almost complete arterial occlusion and is a frequent intermediary stage in the development of arterial thrombosis.

Dennison


The author reported on 18 cases of arteriovenous malformations of the head, of which seven were treated by surgical excision or by ventriculocisternostomy. Of the latter number, five survived. X-ray films of the skull, ventriculography and carotid and vertebral angiography were considered valuable aids in the diagnosis of this condition. Only in a minority of cases were bruises heard through the intact skull. However, when the lesion presented on the surface of the scalp or when there were large arteriovenous communications within the intracranial malformation, this sign was present. The bruise was usually intermittent, being audible only when blood flow was maximal.

Patients with arteriovenous malformations are more commonly men, between the age of 20 and 30 years. Attacks of epilepsy are frequent and they may take the form of a jacksonian type. There may also be evidence of intraventricular or intracerebral hemorrhage or both. A few patients may complain of unilateral headaches suggestive of migraine.

The lesion is a congenital malformation of the primitive vascular plexus of the head, giving rise to a conglomeration of smaller or larger abnormal arteries and veins which communicate through arteriovenous fistulas. The malformation may involve not only cerebral arteries and veins, but occasionally, also, the meningeal vessels of the dura. The lesions may be quite small or they may be enormous.

Abramson


The first case described by the authors was that of a woman, 24 years old at death, who had typical skeletal and ocular changes of Marfan's syndrome. Progressive aneurysmal dilatation of the ascending aorta with aortic regurgitation began in her teens. Histologically the involved portion of the aorta showed marked disruption of the elastic lamellae.

The second case was that of a woman, 55 years old at death, who did not have eye abnormality, and although the digits were long the limbs were thought to be normally proportioned. Grossly and histologically the aneurysm of ascending aorta was quite identical to that in the first case. The authors suggest that "the nonspecific medial degeneration of senescence" may produce aneurysms indistinguishable from those of Marfan's syndrome. No investigation of the family, often helpful in the elucidation of these doubtful cases, is described.

McKusick


Cerebral vascular accidents are usually thought of as thrombosis, hemorrhage and embolism. However, subarachnoid hemorrhage and subdural hematoma are also vascular accidents. Neoplasms come in for differential diagnosis in many cases. The author reports the employment of stellate ganglion block during the preliminary phase of thrombosis. This preliminary phase is manifested by parasthesias or mild weakness, or, perhaps by visual disturbances. In addition, the intravenous infusion of 500 mg. of procaine in 500 cc. of normal saline over a two hour period is also recommended.

The old concept of a massive hemorrhage from sudden blowing-out of the large vessels is not common. More often, hemorrhage is by diapedesis, and in a number of cases this may give focal neurologic signs as though the lesion were a neoplasm. This type is favorable for surgical drainage. If the lesion is left it becomes a foreign body and may easily cause epilepsy. The massive cerebral hemorrhage is so serious a condition, accompanied as it usually is by coma, that there is little to be done.

The hemiplegia due to subdural hematoma differs from that due to intracerebral hemorrhage or thrombosis by being spastic initially and remaining so. The author points out that the classic syndrome of subdural hematoma embodies a history of trauma and immediate loss of consciousness, but with apparent recovery; subsequently there occurs the development of headache, progressive stupor, ipsilaterally dilated and poorly reacted pupil, hemi-
plegia and signs of increased intracranial pressure. This classic picture may not always be encountered and indeed the intensity of the head trauma may actually be forgotten or be minimal.

Congenital aneurysms of the Circle of Willis tend to give symptoms before rupture and a different syndrome after leakage or frank rupture. The anomalies also called malformations, give symptoms which depend on the anatomic location, and no one syndrome can profitably be described. On the other hand, the common saccular aneurysms of the Circle of Willis tend to cause headaches diagnosed as migraine. For this reason, persistent, recurrent migraine syndromes which remain fairly fixed anatomically (i.e., headaches always in the same area or headache associated with extraocular palsies) should arouse suspicion of aneurysms. Angiography is then justifiable.

Dennison


Two cases of polyarteritis nodosa are described in which the major symptoms and anatomic changes were confined to the respiratory tract and kidneys. The first patient was a man aged 70 years who had fever, chills, pain in the chest, fatigue and dyspnea. Radiographic studies showed lesions in the lungs suggesting metastases. The patient died in uremia after an illness of two months. Postmortem examination disclosed numerous infarct-like necrotic foci in the lungs, necrotic islands in the spleen, and signs of nephritis. Vascular changes of the type seen in polyarteritis nodosa were present in the lungs, spleen and kidneys. The second patient was a woman, aged 41 years, who had a sinusitis initially followed by joint pain, fever, transient diabetes insipidus, corneal ulcers and scleritis. Crusting rhinitis, laryngitis, pulmonary parenchymal densities, purulent and necrotic papules of the skin were later manifestations. The patient died in uremia one year after the initial symptoms. Postmortem examination disclosed necrotic foci and vascular lesions with fibrinoid necrosis and perivasculare, inflammatory, cellular infiltration in the neighborhood of the foci in the lungs and kidneys. These cases are compared with other similar ones previously reported, particularly those of Wegener, and it is suggested that they be classed as a special type of polyarteritis nodosa.

Rosenbaum

Elkeles, A.: Peptic Ulcer in the Aged and Gastric Carcinoma in their Relationship to Arteriosclerosis. Am. J. Roentgenol. 70: 797 (Nov.), 1953.

In a series of 116 cases with gastric ulcer there was associated calcification of the abdominal aorta on roentgenograms in 64 to 100 per cent, rising with each decade level. In patients with duodenal ulcer of the same age levels the percentage of aortic calcification was 21 to 70 per cent. In gastric carcinoma the incidence was from 0 to 14 per cent.

From this data the author concludes that the frequent association of aortic calcification with gastric and duodenal ulcers may be useful in differentiating small or large benign lesions from similar appearing lesions in gastric carcinoma, where the incidence of aortic calcification was much less frequently found.

Schwedel


Two cases are reported which illustrate the association of thrombocytopenia with hypertrophic hemangioma in infants. It is probable that this association represents a real syndrome. Regression of the hemangioma coincided with the disappearance of thrombocytopenia. Splenectomy did not affect the thrombocytopenia in one case in which it was done.

Bernstein


The classification and discussion presented here are based on a review of over 100 cases of aortic arch syndrome of which 35 are previously unreported. Syphilitic aortitis is undoubtably the most common
cause of this syndrome. The presence of aneurysm is by no means essential. In fact, saccular aneurysm was present in less than half of the cases with great vessel obstruction due to syphilitis of the aorta. In all cases of syphilitic origin, with and without aneurysm, intimal proliferation and cicatrization represent by far the most common mechanisms of obstruction. In only 3 of 44 cases, for instance, was antemortem thrombus (a phenomenon seen only in saccular aneurysm) responsible for the occlusion. Secondary atheromatosis of the syphilitic aorta is undoubtedly an important contributing factor in great vessel obstruction. Atheromatosis is surprisingly uncommon as a primary cause but may contribute in the traumatic and congenital cases, as it almost certainly does in those of syphilitic aortitis.

Attention is drawn to the unsolved and confused problem of arteritis of the larger vessels. In most cases of involvement of the aorta and its large arch branches, it is uncertain whether the process represents Buerger's disease, periarteritis nodosa, "giant cell arteritis," or some other disorder. The clinical manifestations result almost exclusively from the impediment to carotid artery blood flow (interference with vertebral blood flow by obstruction of the subclavian arteries is doubtful an additional factor of importance in some cases). Whereas cerebral, eye, ear, and face changes are outstanding features of the clinical picture in some cases, symptoms referable to the arms are conspicuous by their absence. Therapy can be directed at the etiologic factor, in the case of syphilis at least, and striking benefit has been observed in two patients. Surgical approaches to the treatment of all varieties of the aortic arch syndrome should be explored further.

Bernstein


The author compared the results of blood flow studies through muscle using the rate of local clearance of radioactive sodium with those obtained by means of the venous occlusion plethysmograph. The investigation was carried out in normal subjects and in patients with obliterative arterial vascular diseases.

It was the author's conclusion that the clearance rate of radioactive sodium injected into a normal muscle was not directly related to blood flow, but was related to the state of the capillary bed. However, marked differences were noted during exercise in the clearance of the material from the muscles of normal subjects compared with those suffering from intermittent claudication. Because of this, it was suggested that the test could be used in patients with occlusive arterial vascular disease for the evaluation of therapy, presumably affecting muscle circulation.

Abramson


When 15 per cent alcohol was given by intrapentoneal injection it could either prevent or alleviate vasoconstriction due to frostbite. In either case the effect was only temporary but was more sustained if given as premedication. Blood sludge, a uniform gel-like mass embracing almost all formed elements, was seen in direct frostbite and alcohol therapy.

Oppenheimer


The authors report an instance in a man 74 years old of a dissecting aneurysm of the aorta that ruptured and also produced hemorrhage in the region of the auricular ventricular node. The electrocardiogram that was recorded for 40 minutes after clinical death showed disturbances in conductivity involving successively the auricles, the A-V conduction and intraventricular conduction. Sinus slowing alternating with rapid phases of auricular activity were recorded as well as idiopathic ventricular activation. The first phase was regarded by the authors as due to the hemorrhage involving the A-V node.

The authors conclude that the ventricle is the last portion of the heart to function electrically.

Soloff


The author reports on a 27 year old housewife who is unique in the medical literature for association of migraine with dissecting aneurysm. Dissecting aneurysm of a cerebral artery has been reported in only three instances. Unlike dissection of the aorta, the dissection was subintimal. Compression occlusion of the artery resulted in infarction of the brain.

McKusick

OTHER SUBJECTS


Intrathoracic pressures of 300 mm. Hg were attained in some instances by continuous coughing. Consciousness was usually lost during the period of acute hypotension following cessation of coughing. The hypotension was clearly due to a fall in left ventricular output as a result of impeded venous...
return to the heart. Intermittent coughing and continuous coughing produced different physiologic effects: peripheral resistance fell and forearm blood flow rose with intermittent coughing, whereas converse changes occurred with continuous coughing. The author presents clinical considerations and states that he believes syncope after coughing is a much more common phenomenon than indicated in the literature inasmuch as he was able to collect 27 cases.

McKusick


Similarities and differences between a group of cardiac children, a mixed handicapped group, and a group of physically normal children in the area of fear and anxiety is presented by statistical analysis of responses to test sentences. A fear of their handicap significantly differentiated the cardiac group from their matched, physically normal controls. In the adjustments to parents and family and in evaluating their adjustment, however, the cardiac children were more similar to their control group than the total handicapped group was to its control group. The data did not indicate that the adjustment of the cardiac child was regressive or immature.

Maxwell


Mortality rates following tourniquet shock were not significantly influenced by 100 micrograms of Ferritin N/20 Gm. injected in mice. However, 1000 micrograms produced toxic phenomena. The relationship to shock is not clear.

Oppenheimer


Chromatographic procedures have been used to isolate from beef adrenal extract a crystalline substance with sodium-retaining properties which are qualitatively similar to but quantitatively much greater than those of desoxycorticosterone acetate (DOCA). This diacetate was hydrolyzed enzymatically to give the free substance which was about 100 times as active as DOCA in bio-assays. The hydrolytic procedure also produced another substance, considered to be a monoaetate, which was obtained in crystalline form and which was about 25 times as active as DOCA.

Assuming that the fundamental structure is similar to that of the adrenal hormones, the results of ultraviolet and infrared spectroscopic examination of these products and various chemical reactions suggest the tentative conclusion that the unacetylated sodium-retaining substance is an isomer of corticosterone.

Simon


The occurrence of a spontaneous antidiuresis in a water-loaded normal subject was associated with an extreme reduction in both glomerular filtration and in renal plasma flow, during the first 30 minutes of antidiuresis. Intense renal vasoconstriction is suggested as the mechanism. There was also an extreme reduction in excretion of sodium and chloride with little increase in concentrations; this was correlated with the fall in glomerular filtration rather than with the endogenous stimulation of antidiuretic hormone (ADH).

A second period of antidiuresis was followed by a 30-minute period of reestablished diuresis during which glomerular filtration and renal plasma flow rebounded to rates greater than twice normal. The electrolyte excretion similarly exceeded its initial values. These findings denoted a period of renal vasodilatation following the period of renal vasoconstriction. The urinary flow did not exceed the initial diuresis despite glomerular hyperfiltration; this was probably due to the higher percentage of tubular reabsorption of water than in the first 30-minute period.

Antidiuresis following pitressin lasted only two 15-minute periods. During the first 15-minute period there was a significant fall in glomerular filtration, renal plasma flow and excretion of electrolytes which was apparently due to renal vasoconstriction. The second 15-minute period of antidiuresis was unlike that which occurred spontaneously, in that it was independent of changes in glomerular filtration and renal plasma flow. These changes were normal as was sodium and chloride excretion. The higher percentage of tubular reabsorption of filtered water also suggested that the antidiuresis during this period was due to the antidiuretic factor present in the injected pitressin without concomitant alteration in blood flow. No such period was observed during the period of spontaneous antidiuresis.

The observation of spontaneous antidiuresis in association with renal vasoconstriction and reduction in electrolyte excretion as well as the subsequent renal hyperfunction suggests the importance of considering the possible occurrence of these effects when interpreting observations on diuresis, antidiuresis and on electrolyte excretion in man.

Mintz


Renal hypertension was produced in rats by the
application of a clip to one renal artery. Total body and tissue extracellular fluid were measured by a method using inulin. The total body extracellular fluid volume was found to be higher in experimental renal hypertension than in control animals, but this difference disappeared as the duration of the hypertension increased. An increase in extracellular fluid volume is therefore not essential for the established state of renal hypertension.

Accompanying the rise in extracellular fluid volume, was an increase in extracellular fluid in heart and skeletal muscle, accounting for the observed increased sodium and decreased potassium in heart muscle. There was no evidence of alteration of intracellular concentration of potassium in heart or skeletal muscle in renal hypertension. Nor was there a significant change in the normal ratio of intracellular fluid to total solids in cardiac or skeletal muscle. This is considered as evidence against the presence of cellular overhydration in experimental renal hypertension.

Ensélfberg


The lipid metabolism of 13 patients with myxedema was studied. The serum cholesterol, total lipids and phospholipids were increased in all patients. Electrophoretic analysis of the serum lipids showed marked elevation of the β-fraction much as had been recorded by the same observers in familial hypercholesterolemia and in some cases of myocardial infarction. The abnormalities in lipid metabolism were readily controlled by treatment with synthetic L-thyroxin or other suitable thyroid preparations. Analyses of serum lipids such as these have been found often to be more satisfactory methods of measuring thyroid function than determination of the basal metabolic rate.

Rosenbaum


The differences and possible advantages of this seemingly very accurate spectrophotometric method are: (1) that the standard laboratory models of spectrophotometer can be used rather than the more expensive Beckman type; and (2) that a single tube is used, obviating the necessity for matched tubes of special optical glass.

McKusick


This study seeks to evaluate the effect of decompression with adequate oxygen upon observations which are ordinarily attributed to anoxia at high altitudes. Rats became hypertensive when exposed to 30,000 feet for two hours per day for 10 weeks. Although observed for eight weeks more the hypertension had no effect on the development of the hypertension or its persistence. The authors express the opinion that the results are due to physical pressure reduction since the red cell count did not change during the decompression and anoxia could be considered not to play a role. In the lungs the alveoli were larger with narrow walls. The urinary tubules of the kidney were somewhat dilated.

Oppenheim


A case of epiphrenic diverticulum of the esophagus is presented, in which the patient had chest pain brought on not only by bending forward, lying down, and swallowing solids, but also by exercise and relieved by rest. The electrocardiogram showed T-Wave inversion in leads I and V1 which became upright on one occasion after evacuation of the diverticulum and again following resection of the diverticulum. It is postulated that coronary vasoconstriction probably resulted indirectly from distension of the diverticulum, possibly by means of a vagal reflex.

Maxwell


Three cases of acute pericarditis occurring in two young men and one young woman with infectious mononucleosis are reported. In each case there was clinical, hematologic and serologic evidence of infectious mononucleosis at some time during the illness. Electrocardiographic changes of considerable extent, in both RS-T segments and T waves appeared in all cases. Considerations of the pathogenesis of the acute pericarditis include: (1) extension of the infection from the hilar lymph nodes into the pericardial sac; (2) a virus infection of the pericardium; and (3) a response of the pericardium as a shock organ to an offending allergen in a sensitive person.

Rosenbaum


The pathogenesis of seven cases of constrictive pericardium which came to postmortem examination is discussed. Four of these cases had the classic clinical signs and symptoms of constrictive peri-
cardium. Three of them, however, lacked many of the signs and symptoms though they had many of the anatomic characters and unusually thick totally adherent pericardiums. These latter three cases are viewed by the author as potentially constrictive pericarditis, in other words as an earlier phase of the disease. Etiologically these cases are one of the late results of polyserositis whether from tuberculosis, rheumatic fever, or associated with an indeterminate endocarditis, possibly of the type described by Libman and Sacks. Only a postmortem examination is decisive in determining the precise cause.

Kitchell


Potassium deficiency was induced in two normal men by the ingestion of a cation-exchange resin and a low potassium diet. During the potassium deficiency state the urinary excretion of citrate was diminished as compared to the control conditions. The citrate excretion remained low and returned to control values only when the potassium deficiency had been completely corrected. There was no fall in plasma citrate levels associated with the low urinary citrate excretion. Urinary excretion of citrate was also found to be diminished in a woman with renal acidosis and potassium deficiency.

Sagall


This report deals with a statistical study made of organic heart disease in consecutive new clinic and hospital patients in a Southern medical center from September 1915, through February 1953. This series includes 1,000 patients and is compared with two previous reports by the authors. The incidence of organic heart disease is still greater in the Negro than in the White, but much less so than 25 years ago. The incidence of hypertensive heart disease is approximately the same as before, but that of arteriosclerotic heart disease has increased. There has been a tenfold increase in the diagnosis of congenital heart disease. Syphilitic heart disease has decreased and is infrequent; rheumatic heart disease has shown little change in frequency, but there has been a slight decrease in bacterial endocarditis. Hypertension is still more common in the Negro than in the White, while arteriosclerosis is less frequent. However, the percentage incidence of hypertension occurs a decade later in each race than in the previous studies. There has been a striking increase in the diagnosis of angina pectoris.

Rinzler


Evidence collated from a clinical and psychologic study of several patients supports the belief that scleroderma, like Raynaud’s disease, is a manifestation and the result of a psychosomatic disturbance with a definite pattern. The patient’s sense of security always depends upon a commensalistic type of existence. When, by force of circumstances, this is destroyed, the inflexible nature of his personality does not permit readjustment. The dread fear initiates a generalized spasm of the minute vessels and the evolution of cutaneous and visceral scleroderma. While this life situation is operative, the process persists and is cumulative in its self-destruction. If and when security is re-established, by chance or design, the process is reversed and the complicating thrombotic manifestations become amenable to vasodilating therapy. To attempt such therapy without first re-establishing security is to court failure and disappointment which, in turn, aggravate the disease. Though the problem is presented from the medical viewpoint, the cooperative help of the psychiatrist, the surgeon, the psychologist and the social worker was required to gain this insight, which frequently prevented the evolution of simple vasospasm to scleroderma.

Wendkos


The author has extensively reviewed the recent literature pertaining to shock. So far as pathogenesis is concerned, it is pointed out that there is clear correlation between the severity of shock and the degree of reduction in the circulating blood volume. Shock of moderate or severe degree appears when the blood volume is reduced by about 35 to 40 per cent of its normal value. The blood is lost from and into the area of injury. “Wound shock” is due to whole-blood loss complicated by the other effects of the wound. Neurogenic and toxic factors are much less important in the production of shock except when there is overt sepsis.

Recent observations have reaffirmed the usefulness of the standard clinical observations in shock. The blood-volume deficiency is 30 per cent or more when the arterial pressure has dropped below 100, as a result of blood loss. When the hematocrit is high, elevation in peripheral resistance due to increased blood viscosity tends to sustain the arterial pressure as the cardiac output fails; the arterial pressure levels may lead to a false estimation of the circulatory state under these circumstances. It is mentioned that cerebral thrombosis and coronary thrombosis are not uncommon in older patients who have suffered shock, the latter when coronary blood flow falls below critical levels for myocardial viability or due to thrombosis precipitated with diseased coronary vessels. Liver function may be seriously
impairment in shock because a large part of the blood flow and oxygen supply of this organ is venous. Renal blood flow is sharply reduced in shock and urine formation ceases when the arterial pressure falls below 60 to 80. The major pathogenetic factors in the production of lower nephron nephrosis in injured men are believed to be renal ischemia due to shock and hemoglobinemia or myoglobinemia. The adrenal cortex response to shock is seen in the metabolic response, the fall in circulating eosinophils, the increased excretion of ketosteroids and corticoids in the urine, and histologic changes seen at death. Congestion and ulceration of the gastrointestinal mucosa also develop in shock.

In the therapy of wound shock, surgical treatment of the wound is a major feature. Replacement of the blood volume with whole blood is imperative. A urine formation of 1 cc. of urine per minute is considered an index of adequate peripheral blood flow. Resumption of urine flow is prompt if due to dehydration. Excessive fluid therapy should be avoided if anuria or oliguria persist. Plasma is useful for restoring smaller blood-volume deficits, and it has the advantage that it may be stored for long periods but the disadvantage of the risk of viral hepatitis. The author cites the view of Beecher that ether is the safest anesthetic agent for severely injured men. There is said to be no convincing evidence that adrenocortical therapy enhances resistance to shock. Intra-arterial transfusions are believed to have their chief usefulness as a resuscitative measure when the heart has stopped. Severe infection may produce shock in the absence of trauma, and shock of this type is not corrected by plasma or whole-blood replacement unless the sepsis is also controlled.

About 10 to 15 per cent of patients with myocardial infarction are said to manifest signs of shock, and the mortality rate in these patients is 80 to 90 per cent. This shock is associated with a nearly 50 per cent reduction in cardiac output and stroke volume, and a peripheral resistance and circulation time which is nearly doubled. Blood volume and central venous pressure are not reduced. The dilemma presented here is that therapy which will improve peripheral and coronary blood flow will also increase the work load of the heart.

Rosenbaum


A physiologic monitor is described which makes possible a continuous recording of the blood pressure, heart rate, respiratory rate and minute respiratory volume. The blood pressure is automatically measured by a modification of standard auscultatory methods. A microphone pickup is placed over the brachial artery and covered by a standard inflatable arm cuff which is slowly inflated by an air compressor. The first pulse beat detected by the microphone activates a diastolic blood-pressure indicator. Inflation of the cuff continues until the pressure reaches a point 10 mm. Hg above the last recorded pulse beat. The cuff pressure is then released automatically until the first pulse beat detected activates the systolic blood-pressure indicator. Pressure in the cuff is then released to 0. The pressures are recorded on a Speedomax chart which may be located at any distance from the patient. The measurement cycle is repeated every three minutes. An electric and a mechanical safety valve each prevent excessive inflation of the cuff. The heart rate is recorded continuously by an electronic circuit which measures the interval between R waves, using standard electrocardiographic leads and recording on the Speedomax chart.

Although designed primarily for use in the operating room, this monitor has been useful on the medical wards to study the effect of drugs as well as in routine medical and investigative efforts.

Rosenbaum


Unilateral nephrectomized rats were given a high salt diet and desoxycorticosterone acetate (DCA). When renin was added edema, kidney damage and death resulted. These findings bear some resemblance to toxemia of pregnancy. If 1-hydrizinophthalazine (Apresoline) were given with the renin, the rats did not die and most of the aspects of the syndrome were prevented. Under the condition of these experiments, both renin and DCA (in presence of Apresoline) caused such diuresis that daily urine volumes exceeded the body weight. Apresoline alone (in doses used here) decreased salt and water excretion in normal rats. Rats treated with Apresoline were more susceptible to water intoxication. If Apresoline were used in normal rats in doses which did not produce hypotension, there was no effect on water and salt excretion.

Oppenheimer


Hemorrhage was accomplished in 64 days by permitting the animals to bleed freely from an indwelling arterial needle into a suspended reservoir. The period of hypotension varied from 30 minutes to four hours. The following significant observations were made: (1) The hydraulic effect of intra-arterial
transfusion, in elevating arterial blood pressure is insignificant at rates of transfusion which are presently employed clinically. (2) Recovery of arterial pressure is a function, not of the route, but of the rate of transfusion. (3) Intra-arterial and intravenous transfusions are equally effective in restoring the low cardiac output typical of hemorrhagic shock. (4) The rapidity with which intra-arterially and intravenously transfused blood mix with the general circulation was determined by a method in which the plasma fraction of the transfused blood was tagged. No evidence of pooling of the infused blood was found with either intra-arterial or intravenous transfusion. (5) Central venous pressure was found to fall during hemorrhage and to rise to normal or slightly above during reinfusion of previously shed blood. (6) Simultaneous, paired, survival experiments in 26 animals failed to show a significant difference in survival rate between intra-arterial and intravenous transfusion. (7) Direct perfusion of the coronary arteries by arterially infused blood was demonstrated by radiographic technic to occur only when the output of the left ventricle has become negligible or nonexistent. (8) In resuscitation from asystole, intra-arterial transfusion has some theoretic advantages over intravenous transfusion. (9) Direct perfusion of the cerebral vessels with unsaturated blood given intra-arterially was shown by direct oximetry to reduce both cerebral-arterial and cerebral-venous oxygen saturation. (10) No evidence could be found that rapid intra-arterial transfusion is any more or less effective than rapid intravenous transfusion of blood.

DENNISON


A report is made on 58 patients with apoplexy who were treated to maximum benefit with stellate ganglion block in addition to usual routine management. Forty-three had conditions of less than one month duration and were therefore considered acute. The other 15 were first seen more than one month after the onset and were classified as chronic. Of the acute cases, 26 were improved, eight were not improved, and nine died. Of the chronic cases four were improved, and 11 were not improved. More than 60 per cent of the persons showed some improvement immediately after the appearance of Horner's syndrome. In almost 70 per cent of those showing improvement, the benefits were striking. Increase in muscle power and control has been observed to follow stellate ganglion block within minutes after the injection is given. The authors feel that on the basis of their experience and results, stellate ganglion block in experienced hands is innocuous and that, until some more definitive therapy is devised, patients suffering from stroke due to embolism, thrombosis, or spasm should not be denied the possible benefits of this therapeutic measure.

KITTLE


Two cases are reported of bishydroxycoumarin (Dicumarol) poisoning, in which the predominant early clinical findings were those of an acute abdominal condition. In one instance either the clinician failed to impress the patient with the importance of returning at regular intervals for prothrombin determinations or else the patient's low mentality should have warned against such reliance being placed upon her. In cases of suspected hemoperitoneum due to bishydroxycoumarin intoxication, immediate prothrombin levels should, of course, be ascertained. In addition, cul-de-sac aspiration offers a simple method of corroborating the diagnosis.

BERNSTEIN


The mean serum-cholesterol levels in elderly men and women living at home were significantly higher than in control groups of younger people. For both the young and the old, the mean serum-cholesterol levels in the women were significantly higher than in the men. There was a significant correlation between the dietary intake of fat and the serum-cholesterol level in women but not in men. Lifelong teetotalers had a higher level than had heavy drinkers. No relation could be established between, on the one hand, the serum-cholesterol level and, on the other hand, intermittent claudication, angina, cerebral thrombosis, aortic calcification, depressed crossing of the retinal blood vessels, arcus senilis, senile atrophy of the retina, senile cataract, or the height of the blood pressure.

MAXWELL
ABSTRACTS

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