ABSTRACTS

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BLOOD COAGULATION AND THROMBOEMBOLISM


The authors point out the failure of the Quick test to predict hemorrhage and thrombosis in some patients under long-term anticoagulant therapy with coumarin-type derivatives. The response of 5 patients given warfarin intravenously indicated that the Quick test measures mostly proconvertin and is influenced very little by the circulating levels of prothrombin, Stuart factor, and plasma thromboplastin component. The prothrombin concentrations and Quick times of 84 patients on phenindione over the course of 18 months were determined. In half the patients the 2 tests varied so that the Quick time could not be relied upon to derive an estimate of prothrombin. In this series there were 23 bleeding episodes and 10 possible thrombotic episodes. These episodes correlated quite well with the prothrombin concentration but poorly with the Quick time. These findings indicate that both the Quick time and the prothrombin concentration should be measured in the management of patients under prolonged anticoagulant treatment. The therapeutic range is considered to lie at a prothrombin concentration of 12 to 25 per cent when the Quick time is under 40 seconds.

SAGALL


Data are presented concerning 89 patients with hemopericardium found in 1,229 autopsies of a total of 1,303 patients who died of myocardial infarction at the Ullevål Hospital in Oslo, Norway, during the period of January 1, 1945 to July 1, 1956. Of this group 81 had myocardial rupture, 3 had rupture of the aorta, and 5 showed hemopericardium without demonstrable local cause. These 5 cases occurred among the 33 patients receiving anticoagulant therapy. Observations in this series indicated that anticoagulant therapy increased the risk of hemopericardium, with or without cardiac rupture, largely because of an overdose of anticoagulants.

SAGALL


In an autopsy study of fatal cardiac infarction, 69 patients receiving effective anticoagulant therapy were compared with a group of 72 control patients of corresponding age and sex in regard to the incidence of hemopericardium. The in-
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Eidence of hemopericardium (1 patient) or myocardial rupture (14 patients) in the treated group was about twice as large (15 patients out of 69) as in the control group (8 patients out of 72).

SAGALL


A brief experience with phenprocoumon therapy of acute thromboembolic conditions in 160 hospitalized patients is described. The agent was given in daily oral doses aimed at prolonging the Quick one stage prothrombin time to 20 to 35 seconds. No thromboembolic breakthrough was detected during therapy. There were 4 minor and 2 major hemorrhages associated with the prothrombinopenia, and the latter regularly responded to vitamin K or $K_1$, administration. It was concluded that phenprocoumon is a satisfactory drug for short-term anticoagulation.

ROGENS


Pharmacologically, dextran sulfate resembles heparin in its action but has a more prolonged anticoagulant and greater cumulative effect. The commonest toxic effect of dextran is transient alopecia, which appears several weeks after treatment is stopped. The authors observed severe alopecia in 8 of 15 patients who were followed for at least 3 months after receiving 90,000 or more units of dextran sulfate. In 3 of these patients, alopecia was not apparent until 2 months after the end of treatment. The incidence of alopecia is much less with smaller doses of dextran and, in fact, in this study it occurred in only 2 of 12 patients who received less than 40,000 units of dextran sulfate along with a coumadin anticoagulant. Of 60 patients treated with heparin and a coumadin anticoagulant, 3 reported mild or moderate loss of hair following therapy. Diarrhea and depression of the platelet count were also noted in a few patients who received a large total dose of dextran sulfate. The mechanism by which dextran sulfate produces its effect on hair growth is unknown. It is suggested that heparin possibly interferes with the metabolism of the naturally occurring sulfated polysaccharides or the sulfur containing amino-acids. The toxic effects of dextran, namely: alopecia, diarrhea, thrombocytopenia and anorexia are similar to the effects produced by whole-body irradiation, nitrogen mustard, and other antimitotic substances. In this respect, both heparin and dextran are probably antimitotic too. Furthermore, a heparin-like substance may be present in the blood of man following therapeutic doses of nitrogen mustard and in the blood of animals after whole-body irradiation.

KRAUSE

CONGESTIVE HEART FAILURE


Results of administration to animals of diphenylmethane-4,4'-disulphonamide (Nirexon) a new carbonic anhydrase inhibitor are reported. In prehydrated rats oral administration of the drug in dosage of 30 mg. per Kg. of body weight increased diuresis by 40 per cent after 3 hours, 57 per cent after 6 hours, and 37 per cent after 22 hours when compared with the control values in the same animals. Maximal diuretic activity was obtained with a dose of 50 mg. per Kg. of body weight, when maximal blood levels of the drug were reached in 3 or 4 hours. No unpleasant or harmful side effects were observed in acute and chronic experiments with the drug in dogs, cats, rabbits, and rats.

SAGALL

ENDOCARDITIS, MYOCARDITIS, AND PERICARDITIS


Bacterial endocarditis has a definite predilection for the left side of the heart. The incidence of isolated right sided bacterial endocarditis is about 5 per cent. Twenty-three patients with bacterial endocarditis or endarteritis in which the vegetations were predominantly or exclusively on the right side of the heart or in the pulmonary artery are reviewed. A clinical diagnosis was made in only 26 of these patients, and in only 3 was the location of the vegetations correctly determined. The absence of a significant cardiac murmur in 15 of the 23 patients was the greatest single diagnostic obstacle. In no patient without a murmur was the disease correctly diagnosed. The relative incidence of various symptoms and signs in the patients without a murmur was as follows: fever 93 per cent, leukocytosis 92 per cent, pulmonary symptoms 87 per cent, anemia 79 per cent, positive blood cultures 73 per cent,
hematuria 70 per cent, and splenomegaly 7 per cent. From this data it is apparent that signs of infection, evidence of pulmonary infarction without disease in the peripheral or pelvic veins, anemia, positive blood cultures, and microhematuria should always suggest the diagnosis of right-sided bacterial endocarditis, despite the absence of a significant cardiac murmur. Extensive pulmonary infarction with generalized sepsis was by far the most common cause of death in this series (74 per cent).


A group of 16 subjects with chronic constrictive pericarditis, including 12 operated upon by pericardiectomy, were studied by analytic roentgenkymography. The results of this method of study of the left ventricular border were compared with those of electrokymography. In 9 patients the tracings on the left ventricular border showed absence of any cyclic phenomena with a straight line, due to standstill of the ventricular border. In 7 cases the cycles were clearly evident but their contour was greatly deformed, showing a “trapezoid” pattern corresponding to the diastolic “flat top and V” pattern described in the electrokymogram. These tracings exhibited a steep lateral movement during rapid filling, and standstill during slow filling. The steepness of the slope of the systolic descending limb was equal to that of the ascending limb of rapid filling resulting in a trapezoid form to the pattern. On the basis of the kymoanalytic results it is suggested that the nonuniform findings obtained by electrokymography in chronic constrictive pericarditis may be explained by the facts that the trapezoid is not a constant finding in these cases but is only statistically prevalent and that even in those cases with a trapezoid type of left ventricular movement, the electrokymogram may be deformed by variations in the density of the paracardiac shadows.


Highly active corticoids, such as 2α-methyl-9α-chlorocortisol (Me-Cl-COL) + plus sodium phosphates (Na$_2$HPO$_4$, Na$_2$H$_2$PO$_4$), invariably produce infarctoid lesions in the myocardium of the rat. The author used these chemicals in conjunction with animal, plant, and mineral oil. The degree of myocardial necrosis and nephrocalcinosis normally produced by the combined treatment with Me-Cl-COL and Na$_2$HPO$_4$ was considerably increased by the administration of plant and animal fats, but uninfluenced by the mineral oil.


Cardiac failure with marked eosinophilia, in a patient known to have filariasis, is reported. The favorable effect of treatment with corticoids is described; specific treatment was introduced only after prolonged use of the corticoids. The regression of the electrocardiographic signs of subendocardial involvement is illustrated. The early dip and plateau of the right ventricular pressure curve and the M contour of the right atrial tracing, typical of the constrictive syndrome, persisted however after compensation. It was suggested that the constriction was not the most important factor of failure. A delay between electrical and mechanical systole was observed in this patient and was found also in other published reports of the constrictive syndrome of endocardial origin. This delay was not found in constrictive pericarditis. The patient was described as an example of fibroplastic parietal endocarditis due to an allergic reaction caused by filariasis.

**HYPERTENSION**


Spirally cut strips of aorta from hypertensive rats did not show hypertussiveness to norepinephrine, compared to the aorta from normotensive rats. There were 2 distinct factors that might cause an apparent hyperresponsiveness of hypertensive subjects to pressor agents in the absence of an actually greater shortening of circular smooth muscle fibers. First, waterlogging and hypertrophy, by increasing the wall thickness of arterioles, could produce apparent hyperresponsiveness. Second, a slight decrease in cross sectional areas of the arterial lumen as a result of possible preexisting smooth muscle contraction could also create a situation of apparent hyperresponsiveness.

In 14 patients with acute glomerulonephritis who were observed for many years it was noted that the urinary signs of nephritis regressed completely, while arterial hypertension—indistinguishable from essential hypertension—became progressively more prominent. The urinary concentration tests were normal in all patients and there was no retention of urea. Paraminohippuric acid and inulin clearances were normal in 7 cases and abnormal in 7. In this latter group the abnormality in the clearance tests was considered to represent a residual defect after healing of the nephritis. The persistent hypertension in these patients with its independent course after healing of the renal lesion is termed "post-nephritic hypertension" by the authors. This term is meant to highlight the point of practical importance that persistent hypertension may occur after acute glomerulonephritis in the absence of clinical signs of an inflammatory renal lesion. A hypothesis is also suggested for the pathogenesis of hypertension in the course of chronic glomerulonephritis.


The authors compared blood pressure values obtained with the cuff method and by intraarterial puncture in 40 persons 19 to 80 years old including individuals with normal cardiovascular findings as well as patients with hypertension and arteriosclerosis of varying degrees. The pressures were recorded simultaneously with a commercial mercury manometer (Erka) with a cuff of 13-cm. width on 1 arm and with a stiff polyethylene catheter connected to a strain gage electromanometer (Elema) in the other arm. Further details of the technic and of precautions are outlined. The results were as follows: in normotensive individuals systolic figures obtained by the cuff method proved approximately correct. In hypertensive patients values of the systolic cuff pressure were too low in proportion to the degree of pressure elevation. Almost without exception, diastolic pressures determined by the cuff method were higher than those of intraarterial measurements. The magnitude of errors varied in individual persons with alterations in their circulatory dynamics.


Patients were selected on the basis of clinical evidence for the diagnosis of pre-eclampsia or hypertensive disease complicating pregnancy: there were 15 thought to have pre-eclampsia and 16 with uncomplicated hypertension. Numerous tests were done, including the following, in order to differentiate between these 2 entities: cold pressor test, response to vasopressin, response to intravenous tetraethyl ammonium chloride (TEAC), sodium tolerance test, and renal clearance of urate. The blood pressure responses to the cold pressor test and to intravenous TEAC were not significantly different in the 2 groups and were of no differential diagnostic value. In pre-eclampsia the mean rise in blood pressure after subcutaneous injection of vasopressin was greater than in hypertensive women. The mean renal clearance of urate was depressed in pre-eclampsia as was the mean urinary concentration of sodium after sodium loading compared to the mean values of pregnant hypertensive women. Although the average values differed in the last 3 tests, there was considerable overlapping of the responses from group to group. None of the tests was considered specific for definite diagnosis. The situation was not improved by using the 3 latter tests in conjunction, for any 1 test may disagree with the other 2.


Blood pressure was measured in 1,100 diabetic patients. Hypertension was defined as a diastolic blood pressure of 100 mm. Hg or more after an arm circumference allowance had been applied. The incidence of hypertension increased with age to a maximum of 92 per cent of female and 81 per cent of male diabetic subjects at 70 to 79 years. The clinical impression of an increased incidence of hypertension among diabetic persons was shown to be due to the abnormal age and sex distribution of the diabetic population. From 10 to 69 years of age there was no significant difference in the incidence of hypertension in the diabetic as compared with a nondiabetic population. Only at ages 70 to 79 years was an increased incidence of hypertension found in the diabetic group. Severe hypertension was rare in diabetes. Nephropathy was diagnosed in 27.5 per cent of hypertensive diabetic patients.

The concentration of serum cholesterol was measured in 21 patients with advanced hypertensive disease in control periods and during administration of reserpine, hydralazine, and ganglionic-blocking agents. Reserpine, in the unusually large doses used produced no consistent significant fall in serum cholesterol but hydralazine, chlorisondamine, and mecamylamine resulted in a significant sustained fall. The rice diet may produce a similar change. It is suggested that there may be a direct relation between blood pressure and cholesterol level.

Kurland


The basal sodium excretion and the response to a challenge with hypertonic sodium chloride were studied in 22 hypertensive subjects and 13 normotensive individuals free of cardiovascular disease. Sodium and solute excretion in response to a challenging infusion were significantly greater in hypertensive than in normotensive patients although there was no difference in basal sodium excretion. A natriuretic response similar to that of hypertensive patients could be induced in normotensive patients by prolonging the infusion of hypertonic saline to 2 hours. Nine of 16 hypertensive patients also excreted increased sodium following hypertonic infusion of inulin and parainohippuric acid. Low sodium excretion in hypertensive patients during salt deprivation and abolition of the exaggerated natriuresis during salt deprivation indicated that the renal tubule in the hypertensive kidney could conserve salt effectively.

Kurland


It has long been a popular belief that there is an association between cardiovascular disease and strain of executive responsibility. Few articles contain objective factual data to substantiate this thesis. A comparison was made between 1,711 male executives and 1,203 nonexecutives (of whom 563 were female) observed over periods averaging 5 years in respect to evidence of arteriosclerosis and hypertension. This study revealed no increase in incidence of either hypertensive or arteriosclerotic disease in the executive class. Hypertension appeared more frequently in subjects at lower levels of business duties. Arteriosclerotic disease as a whole occurred at a significantly lower rate among executives than in persons in other work groups of comparable age and employed in the same office building. Three factors that might be concerned in the etiology are: success in career attainment often goes hand in hand with good health, the possibility that with greater financial income the individual is able to afford a higher standard of living and more complete medical care, with executive education and insight, these individuals may realize the value of "escape valves" and develop outside avenues of expression, such as hobbies. It appears that at least part of the recent emphasis on the dangers of executive life with reference to the vascular system may be based more on knowledge of the exceptions rather than of the rule.

Kitchell

METABOLIC EFFECTS ON CIRCULATION


Mephentermine sulfate was administered in 4 types of canine preparations (intact animal, open chest animal, and exchange maintained isolated heart) to ascertain its effect on myocardial contractility, peripheral vascular resistance, myocardial oxygen consumption, and myocardial efficiency. Mephentermine produced a positive inotropic and chronotropic cardiac effect. In contrast to metaramine, it had little effect on total peripheral resistance. It produced a striking elevation of ventricular function curves and consistently lowered atrial pressures. It increased myocardial oxygen consumption and decreased external efficiency when it was administered at a filling pressure of 12.3 cm. of water but decreased myocardial oxygen consumption and increased efficiency at a filling pressure of 41.4 cm.

Kurland


A bioassay method was employed to determine the plasma antidiuretic hormone (ADH) activity in patients with toxemia of pregnancy. The urinary output of albino rats was determined after
hydration, following which the animals were rehydrated and injected with 2.5 cm. of test plasma and the urinary output was compared to that of the control period. Nonpregnant hydrated females were employed to provide data thought to represent the irreducible minimum of ADH activity in human subjects as revealed by this method. Standard curves were obtained by dilutions of known amounts of Pitressin made with plasma from the hydrated nonpregnant female as the diluent. The normal-term pregnant patient exhibits very little antidiuretic activity. Mild pre-eclampsia revealed a slight difference from the normal. In severe pre-eclampsia the highest level of ADH activity was encountered. Patients with eclampsia revealed a high level of ADH activity, slightly less than those with pre-eclampsia. Hydration therapy for eclampsia sharply depressed ADH activity in 6 of the patients to levels indistinguishable from those of the normal-term pregnant patient.


Urinary aldosterone excretion was studied in human arterial hypertension of varied etiology. Increased aldosterone excretion was found in approximately 55 per cent of the patients studied. In particular, a very significant difference between the mean aldosterone excretion of patients with essential, renal, or malignant hypertension as compared with normal subjects was demonstrated. Two patients with early asymptomatic hypertension had much greater fluctuations in serial daily aldosterone determinations when compared with normal subjects. No correlation could be demonstrated between aldosterone excretion and sodium intake. However, many hypertensives had a higher aldosterone output on a lower potassium intake than normal subjects. The authors suggest that their data supply additional evidence for an adrenal cortical disturbance in cardiovascular disease.


A study is presented of the oxygen consumption of heart muscle slices prepared from normal and from hypoxic albino rats and incubated in a modified Krebs-Herzeleit solution, with and without added different substrates. Hypoxia was produced by placing the animals in closed vessels containing 5 per cent sodium hydroxide to absorb carbon dioxide. The substrates used were glucose, sodium pyruvate, sodium fumarate, sodium succinate, sodium lactate, sodium acetate, and sodium citrate. Only succinate and fumarate increase the oxygen uptake of the slices obtained from normal hearts; all the added substrates proved effective when slices obtained from hypoxic animals were used. It is suggested that hypoxia decreases the oxygen consumption of the heart because it produces depletion of stores of the substrates used in these experiments.


Experiments are reported on the effect of hypoxia and of hypothermia on the content of phosphoerine, adenylpolypdhosphates, and glycogen of the heart of albino rats. The effect of drugs used to eliminate shivering during induction of hypothermia was also investigated. The hearts of animals anesthetized with urethan and rapidly cooled in ice-cold water showed little difference from controls in high energy phosphate and glycogen content. Evipan and Relaxil (Myanesin), in doses well tolerated by the uncooled controls, proved to be toxic for the animals in hypothermia. It is suggested that this is due to the slow elimination of these drugs in the hypothermic state; their effect may instead be lower rather than higher if the drugs are administered after cooling, due to their slow absorption. Smaller doses, added to urethan, prevented shivering during induction of hypothermia; these combinations produced a decrease in the phosphoerine level even in uncooled rats; the depletion was still higher in hypothermia. Hypothermia, induced without premedication by exposing the animals to hypoxia (method of Giaja), produced a considerable decrease in the high-energy phosphate and glycogen stores. Hypoxia, obtained by exposing the animals to reduced barometric pressure, also caused depletion of high-energy phosphates and glycogen; preliminary cooling markedly decreased this effect of hypoxia.
The effect of epinephrine on oxygen consumption, anaerobic glycolysis, and high-energy phosphate content of slices of heart of normal and hypoxic rats was studied. Methods used in these investigations have been reported in previous articles. Epinephrine at 10^{-6} M concentration stimulated myocardial metabolism; higher concentration produced no significant increase in oxygen uptake. Glucose uptake was also increased; glycolysis was depressed; high-energy phosphate content was decreased. These effects were more marked when slices from hypoxic animals were used. Also on the basis of data from others, it appeared that epinephrine decreased the efficiency of the heart muscle. As oxygen uptake was increased and high-energy phosphates was decreased, the question was proposed, but not solved, that epinephrine may act as an uncoupling agent. It is pointed out that the increased effect of epinephrine in hypoxia may be a factor in the pathogenesis of angina pectoris.

CALABRESE


The influence of thyrotoxicosis on the circulation was studied in 32 patients by means of cardiac catheterization. After treatment with antithyroid drugs 15 patients were recatheterized. The results confirm the findings of previous investigators that the increase in cardiac output in hyperthyroidism is due primarily to an increased heart rate with changes in stroke volume and arteriovenous oxygen difference playing no significant role in most cases. However, in those patients with a very high cardiac output, a decrease in stroke volume may be seen after treatment. The increased cardiac output in hyperthyroidism is accompanied by an elevation of systolic pressure in the right ventricle and pulmonary artery pulse pressure. Effective treatment leads to a reduction in cardiac output together with a decrease in the systolic pressure and the pulse pressure in the pulmonary and systemic circulations.

SAGALL


Calcification of the myocardium of intact female mice was consistently produced by the administration of hydrocortisone at daily dose levels above 0.25 mg. The preferential site for the calcification to occur was the intraventricular septum, and as the calcification became more extensive, the right ventricle was also affected but the left ventricle was rarely involved. The concurrent administration of testosterone to the female aggravated the condition; however, ovariectomy afforded no protection to the heart. In the hypophysectomized mouse neither hydrocortisone nor ACTH was effective in inducing the deposition of calcium in the myocardium. The administration of growth hormone with hydrocortisone or ACTH aggravated the condition. Leptogenic hormone, DOCA, and Estradiol had no effect.

KRAUSE


In 24 dogs intravenous injections of epinephrine or norepinephrine caused a temporary increase of blood flow in the hepatic vein, measured with a thermocatheter, sometimes followed or preceded by a slight decrease. This decrease was partly counteracted by the elevation of systemic arterial blood pressure. The increase in blood flow seemed to result from reflex vagal vasodilatation; it was inhibited by vagotomy but not by denervation of the carotid sinus. The increase in right atrial pressure, which often accompanied the increase in hepatic blood flow, was attributed to smooth muscle contraction in the hepatic sheath. Norepinephrine usually elevated the portal venous pressure less than epinephrine.

LEPESCHKIN


Isolated rabbit hearts were perfused with various modifications of Ringer's solution in order to study the ease of electric induction and duration of ventricular fibrillation. Fibrillation was favored by a reduction in potassium concentration (e.g., below 5.6 mEq. per Liter), by the addition of sodium azide, sodium monoiodoacetate, or sodium fluoride, and by prolonged omission of glucose from the perfusate. This effect was reversed by adding glucose, mannose, or sodium pyruvate but not by sodium L (-) lactate; by a temperature of 37 C. as contrasted with one of 32 C.; and by the addition of epinephrine. Fibrillation could not be induced in the absence of
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oxygen or of calcium or in the presence of twice-normal concentrations of potassium. Rogers

PHYSICAL SIGNS


One hundred healthy babies were examined in the early hours of life. A characteristic murmur that lasted for a short time was audible in 37 patients. Babies who had shown signs of asphyxiation during delivery had ductus murmurs at the first examinations more commonly than those who cried and breathed normally within 3 minutes. The murmur that was heard resembled that of the patent ductus in quality, conductivity, and phonocardiographic properties and hence was attributed to flow from the aorta to the pulmonary arteries through a patent ductus. The authors draw an analogy between the newborn lamb, where the ductus is partly contracted and a continuous murmur is heard. They conclude that in the babies examined, mild asphyxia at birth was responsible for the majority of the murmurs and only a minority of the murmurs were related to a body temperature above normal.

Krause


The mechanism of the hepatojugular reflex was investigated by measuring changes in the central venous and intrathoracic pressure to assess the value of the test as an early sign of cardiac failure. The filling pressure (intrathoracic plus central venous pressure) rose in all subjects, being highest in those with cardiac failure. The effect on central venous pressure was largely determined by the simultaneous change in intrathoracic pressure. This was unpredictable, and it was therefore concluded that the observation of jugular venous pressure while applying abdominal pressure was unreliable as an early sign of cardiac failure. In emphysema, the intrathoracic pressure response was more predictable but here the reflex was regarded more as an indication that the emphysema was severe than that there was cardiac failure.

Kurland

PULMONARY DISEASES


The surgical removal of a large pulmonary embolus was attempted first in 1908 by Trendelenburg. Subsequently, 12 such patients have been reported to survive satisfactorily. However, owing to the brief amount of time available preoperatively and considering the high mortality and morbidity rates, the procedure has lost vogue, particularly since the advent of anticoagulants 15 years ago. The authors, after 14 failures, describe the first successful American experience with the operation. Two 10 em. long emboli were removed from the right pulmonary artery of a 64 year old woman within 55 minutes after onset of syncope and shock. Although complications occurred including ventricular fibrillation and later acidosis, myoedermal infarction, and hemiparesis, she recovered with minimal sequelae. The operation is recommended for the infrequent patient in whom the diagnosis is reasonably clear, who has no major complicating disorder and who has not reached an agonal state.

Rogers


By use of a technic for producing localized pulmonary emboli by means of plastic spheres of varying sizes introduced through a balloon cardiac catheter placed into the pulmonary artery, the authors found that in the dog the pulmonary hypertension, peripheral hypertension, hyperpnea, and bradycardia associated with pulmonary embolism were reflex in nature. This reflex was initiated only in vessels no larger than 25 to 100 μ in diameter. It was mediated through the sympathetic nervous system. The hyperpnea observed after pulmonary embolism appeared to be mediated through the vagus nerve, since it was not produced following vagotomy. The fact that similar physiologic phenomena were also produced by massive emboli with large particles indicated that such emboli must induce a widespread mechanical blockage of the pulmonary tree.

Sagall

ROENTGENOLOGY


Dye injection into the lower abdominal aorta was made best through a lateral approach toward the body of the third lumbar vertebra, by means of the Denke cannula, which has a lateral opening and thus avoids accidental direct injection into the renal arteries. Injection of procaine previously to aortography prevented vascular spasm.
General anesthesia with barbiturates was preferable as it led to muscle relaxation, which permitted better feeling of the progress of the cannula and as it allowed repetition of the aortography even after accidental para-aortic injection. Of 30 aortographies none resulted in serious complications. In 1 patient with occluded aorta the inferior vena cava was filled with dye, without causing any untoward effects.

LEPESCHKIN


The results of lymphangiography in 140 patients were reported; the technic used has been described by Kinmonth and also by the authors. In most cases only the lymphatic vessels of the lower limbs were studied. Possible pitfalls of the method used were pointed out. Primary changes of the lymphatic vessels were classified as hypoplastic and lymphoectatic; these were conveniently subdivided into lymphedema congenitum, precox, and tardum; Milroy’s disease, of which no case was observed in this study, is a separate entity. Secondary changes may be post-thrombophlebitic, post-traumatic, resulting from roentgen irradiation, or from pelvic inflammation. These changes were described in detail. It was pointed out that the lymphatic post-thrombophlebitic changes appeared only if there was edema of the leg; this was interpreted as due to occlusion of the deep lymphatic vessels and increased flow and possibly also inflammation of the superficial lymphatics. With reference to previous reports on lymphadenography, it was found that the lymph nodes in patients with lymphatic leukemia were enlarged and showed a marked enlargement of the “empty centers.” In Hodgkin’s disease the afferent lymph vessels were enlarged and the nodes had lost their characteristic structure. In lymphosarcoma, reticulosarcoma, melanoma, or metastatic carcinoma the dye collected in small peripheral lakes and the efferent vessels were not injected. After radiation or infiltration therapy the lymphatic nodes were not injected. Although these changes were quite typical, more extensive experience is necessary before diagnostic criteria are established.

CALABRESI


Twenty cases of complete transposition of the pulmonary veins were reported. The finding of similar oxygen content in blood samples from the right atrium and from a peripheral artery was evidence of complete admixture. The diagnosis of localization of the malformation, and of accompanying defects may be difficult. Cardiac catheterization and angiography were employed; measurement of oxygen content of multiple blood samples and selective angiography may add valuable information toward a precise topographic diagnosis. Only in cases of persistent left superior vena cava draining the pulmonary veins were the findings always characteristic.

CALABRESI


Enlargement and aneurysmatic dilatation of the pulmonary artery and its main branches may occur in congenital malformations with increased pulmonary blood flow, in chronic pulmonary parenchymal diseases causing pulmonary arterial hypertension, rarely in specific arteritic diseases, or finally in pulmonary arteriosclerosis. The importance of a correct diagnosis, in view of the serious prognosis of the aneurysm, was stressed; as other signs were lacking or nonspecific, the diagnosis was essentially based on radiologic findings. In most patients routine radiography, and fluoroscopic and tomographic studies were characteristic; roentgenkymographic findings were briefly reported. The differentiation from hilar enlargement due to tumors may prove difficult. Four cases, 1 of hilar tumor and 3 of aneurysmatic dilatation were presented.

CALABRESI


Tomograms (right and left atrial oblique projections at 20°) uncovered 24 calcified mitral valves in 68 consecutive unselected cases of rheumatic heart disease. Calcification was more common in those with stenosis than in those with regurgitation. It was not related to age although it was not seen below 30 years or within the first 10 years after rheumatic fever. Because such calcification implied degenerative changes in larger areas which may interfere with successful surgery and increase mortality, tomographic examination was necessary for a reliable preoperative evaluation.

SOLOFF
ABSTRACTS

SURGERY AND CARDIOVASCULAR DISEASE


The authors report a 7-year experience with resection of thoracic aortic aneurysms in 179 patients. Of these there were 73 aneurysms of the descending aorta, 50 involving the arch, 22 thoraco-abdominal aneurysms, and 34 dissecting aneurysms. Descending thoracic aortic aneurysms were due more often to arteriosclerosis than to syphilis (47 per cent and 32 per cent respectively). The most important feature of excisional therapy was the need for temporary occlusion of circulation through the affected segment, with the attendant risks of the effects of increased vascular resistance on the heart and ischemic damage to the spinal cord. Hypothermia was used for this purpose, but in the last 36 patients a pump bypass method was employed. This helped reduce the mortality rate from 27 per cent to 19 per cent. Other factors influencing mortality are discussed. The graft material currently employed is made of crimped, knitted Dacron. The aortic arch aneurysms (mostly syphilitic) were obviously the most serious ones, and presented a very difficult problem with regard to temporary arrest of the aortic circulation. However, this has been eased somewhat with the development of the crimped Dacron tube for use as a temporary or permanent shunt along with an extracorporeal bypass pump. The total mortality in this group was 56 per cent. Thoraco-abdominal aneurysms present the additional problem of involvement of the principal vascular supply of important abdominal organs, with danger of fatal ischemic damage to the kidneys, liver, and gastrointestinal tract during the period of resection and graft replacement. Efforts to overcome this complication have included the use of hypothermia, extracorporeal circulation, and temporary shunts. Recently the crimped, knitted Dacron tube has been employed for the purpose of converting the temporary shunt to the permanent graft. In this series of 22 cases there were 8 operative deaths. Dissecting aneurysms presented difficult problems because of the wide extent of the dissection and the poor general condition of most patients. Contrary to prevailing belief, the aortic arch was involved in only 4 of the 34 cases. In the others, the dissecting process arose in the proximal segment of the descending aorta. The greater frequency of lesions of the ascending aorta in necropsy studies is probably explained by the greater likelihood of fatality in these cases, whereas the dissections that start in the descending aorta are more apt to have a subacute course. The ascending aortic dissections were repaired by creation of a re-entry passage above with obliteration of the false passage below. Lesions arising in the descending aorta were treated by excision of the involved segment and graft replacement, sometimes also with obliteration by suture of the false passage below. There were 8 deaths in the 30 cases in this series.


This report deals with the incidence and management of cardiac arrhythmias occurring after mitral valvotomy in 492 patients who had a sinus rhythm at the time of surgery. Atrial fibrillation was, by far, the most common arrhythmia, occurring in 91 patients. There were single instances of nodal rhythm, complete atrioventricular dissociation, atrial tachycardia, and ventricular tachycardia, the latter 2 arrhythmias occurring in the same patient. Two patients developed interference dissociation. In the arrhythmias other than atrial fibrillation digitalis appeared to be a definite factor in their production. In these patients, withdrawal of digitalis and administration of potassium chloride orally resulted in a return to sinus rhythm in all but 1 patient. This single failure to return to sinus rhythm occurred in a patient with complete atrioventricular dissociation who died suddenly 7½ hours after the initial onset of the arrhythmia. There was a higher incidence of arrhythmia in the patients with large hearts and in the older age groups. Pulmonary infarction appeared to precipitate 1 instance of atrial fibrillation. In previously undigitalized patients, atrial fibrillation was treated with digoxin. Generally no attempt at conversion of the atrial fibrillation to sinus rhythm was made within 14 days of operation. During this period spontaneous return to sinus rhythm occurred in 13 patients. Conversion to sinus rhythm with the use of both quinidine and Pronestyl was attempted in 71 patients. Sinus rhythm was restored in 57. Sixty-one patients were treated with quinidine, 45 initially and 16 after failure with Pronestyl; 47 of these were successfully reverted to sinus rhythm. Twenty-seven patients were treated with Pronestyl, 23 initially and 4 after failure with quinidine, with success in 10 instances. There were no instances of systemic embolization.

BROTHERS

The combined use of an artificial pacemaker and a myocardial wire electrode has been demonstrated to be an effective method of controlling the heart rate when complete heart block is present. The cardiac output and mean aortic pressure of dogs have been restored to preblock levels through the application of repetitive stimuli to the ventricular myocardium. The heart rates of 18 patients with complete heart block following closure of septal defects have been controlled successfully.

AVIANO


The results of surgery performed on the large arteries, ranging from the aorta to the common femorals, are presented. Thirty patients were studied; 26 came to operation because of thrombotic disease of the aortic bifurcation or 1 or both common or external iliac arteries; 4 had an aneurysm of the aorta. Three different types of surgery were used: replacement with stored homograft, replacement with plastic prostheses, and endarterectomy of the occluded segments. The hospital mortality was 7 per cent and delayed mortality (due directly or indirectly to the operative procedure) added another 7 per cent mortality. Such procedures are recommended to any patient under the age of 60 who has a major arterial occlusion and desires relief from symptoms. If the lesion is localized with reasonably good arteries on either side, direct removal of the thrombus is safe and indicated. If the arterial disease is more widespread, a better long-term result will be obtained by radical resection of the entire aortic bifurcation and bypassing the disease segments on each side with stored homograft. In patients over the age of 60 the likelihood of the coexistence of other atherosclerotic lesions, such as in the coronary blood vessels, makes the procedure less desirable. However, even in these patients who have intense pain or impending gangrene, the benefits of this type of surgery outweigh the risks. When using homograft, it is important to perform an end-to-side, large, lumen type of anastomosis. Furthermore, the authors stress the beneficial effect of repairing the upper one arterial block in the same limb. In aortic aneurysm when there is steadily increasing pain, surgery is urgently required, since this is the prelude to rupture of the aneurysm.

KRAUSE

VALVULAR HEART DISEASE

Bakulev, A. N.: Indications and Results of Surgical Treatment of Mitral Stenosis. Khirurgia, 32: 6, 1956. (Translation of this paper has been furnished by the National Institutes of Health, B. S. Public Health Service, as a part of their Scientific Translation Program.)

Mitral valvuloplasty was performed in 124 patients with mitral stenosis. Preoperative diagnosis was based not only on auscultation, cardiac catheterization and, recently, direct cardiac puncture but also on "cardiohaemodynamography." The latter is a technic that registers the mechanical aspects of cardiac activity—the heart beat, motion of the heart, and the blood mass—by converting mechanical events into an electric record. The result is a complex curve the analysis of which permits accurate measurement of the phases of the cardiac cycle and the efficiency of cardiac action. A number of characteristic signs were revealed that were described as pathognomonic for certain pathologic states. In mitral stenosis, this examination gave more useful information than ballistocardiography, rheocardiography, and electrokymography. Patients were divided into 5 groups on the basis of the severity of symptoms. Mortality was 7.3 per cent in stage II patients, 21 per cent in stage III, and 31.2 per cent in stage IV. Active rheumatic carditis was not regarded as a contraindication. In fact, deteriorating condition in a patient with mitral stenosis and active rheumatism was regarded as an indication for operation. Results in such patients were not different from the usual. Postoperative complications were atrial rupture, ventricular fibrillation, cerebral embolism, and the postcommisurotomy syndrome in which 3 patients died. Twenty-four of 28 patients in stages II and III had good results 1 to 3 years postoperatively but only 12 of 24 patients in stage IV had comparable results.

KURLAND


Clinical experience with 12 patients, age 23 to 52, with tricuspid stenosis, is presented with a detailed report of 5 patients to emphasize the variable manifestations of the lesion. Eleven had rheumatic heart disease with multivalvular involvement. Dyspnea on exertion was universal; orthopnea and fatigue were common; chronic edema occurred in every patient with atrial fibrillation; intraperitoneal fluid was present in half. On examination a low pitched coarse rumbling diastolic murmur was heard in the third to fifth left interspace early in patients with atrial fibrillation and presystolic in patients with sinus
rhythm. In contrast to mitral murmurs, these increased dramatically in intensity during inspiration and decreased during expiration. Pulmonary edema, hepatomegaly occasionally with presystolic pulsation and prominent presystolic pulsation of the external jugular veins were often noted. X-ray revealed enlargement of the right atrium which in 3 patients was gigantic. In sinus rhythm, sharply peaked tall and sometimes prolonged P waves were noted in leads II, V1, and V2. Estimation of the area of the tricuspid valve was validated by post mortem planimetry in 1 patient. In 2 patients, the tricuspid valve at necropsy was found less stenotic than the mitral. Although pulmonary pressures were lower when tricuspid stenosis accompanied mitral stenosis than when the latter was present alone, pulmonary congestive symptoms were frequent.

Kurland


Of 206 consecutive patients with mitral stenosis no diastolic murmur could be heard on any occasion in 12. All these patients had a very tight stenosis; in 8 patients the valve was calcified and immobile. The pulmonary arterial pressure was 45 to 90 mm., while the electrocardiogram showed marked right ventricular hypertrophy in 11 patients. Ten patients had refractory right ventricular failure. Only 12 patients showed a snapping first sound or reduplicated second sound; these did not show mitral calcifications. Ten patients had a holosystolic mesocardiac murmur, not propagated to the axilla. This murmur was not due to mitral regurgitation, as this was not felt in 5 operated cases, and stenosis was very tight in the rest. In 5 patients it was caused by tricuspid regurgitation, since systolic hepatic pulsation was present, while in others it could result from turbulence in the dilated pulmonary artery. Absence of the diastolic murmur was probably due to the small size of the mitral opening, and possibly also to elevated left ventricular diastolic pressure. Recognition of mitral stenosis, and avoidance of confusion with mitral regurgitation in these cases is of great clinical importance.

Lepeschkin


Forty-two patients with isolated aortic stenosis were the subjects of a long-term follow-up study undertaken to contribute further to the description of the natural history of aortic stenosis. This group of patients consisted of 31 men and 11 women with an average age of 52.9 years at the first observation made during the years 1933 to 1949. The follow-up study was done in 1955 and 1956 and the period of observation varied from 6 to 23 years. The clinical diagnosis was not limited to patients presenting the classical signs and symptoms but was also made on patients with a loud, rough, aortic systolic murmur combined with roentgenologic evidence of cardiac enlargement and isoelectric or negative T1 or left axis deviation. The classical combination of symptoms of aortic systolic murmur, thrill, faint or absent aortic second sound, and anaerotic pulse was found in only 3 of 18 patients (17 per cent) examined at autopsy. Fourteen patients (33 per cent) had a history of rheumatic fever. At the time of follow-up 39 patients had died at an average age of 55.5 years. Thirty seven of the deaths were directly connected with the aortic stenosis or its complications. Cardiac symptoms first occurred at an average age of 47.2 years and there was a mean survival time of 8.8 years after onset of symptoms. Angina pectoris occurred in 52 per cent at an average age of 50.7 years with an average survival time of 4.7 years. Syncope occurred in 22 per cent at an average age of 46.5 years and allowed an average survival of 3.2 years. Congestive heart failure occurred in 23 of 29 patients (79 per cent) followed closely to time of death. The average survival time after onset of congestive failure was less than 1 year. Atrial fibrillation appeared in 3 of 22 patients (14 per cent). Although arrhythmias were not frequent, they were associated with a shortened survival time in the instances in which they occurred. Likewise, definite roentgenologic evidence of cardiac enlargement was associated with a shorter survival time. Systemic arterial embolism did not occur in the series. This study confirms the fact that isolated aortic stenosis is a progressive disease with a grave prognosis and points up the need for a more effective form of therapy.

Brothers

Other Subjects


Observing changes in blood pressure and heart rate alone may not be sufficient in the management of anesthesia in complicated and prolonged operations in "poor risk" patients. The important problems here are the prevention and treatment of circulatory derangements. Stroke-volume formulas are ideal for the investigation of flu-
tuations in blood pressure. The clinical anesthesiologist can estimate cardiac output and total peripheral resistance with ordinary clinical data. In doing this the author employs evaluation and interpretation of the pressor effect of 90-degree passive elevation of the lower extremities (the "L" position or maneuver). Although here formulated as a diagnostic test, the "L" position (or its equivalent in the counterpressure garment) is more valuable in prophylactic and therapeutic treatment than the "head-down" position in the prevention of venous pooling. The most significant finding of the 90-degree leg raising maneuver is a quick, early rise (fleeting or sustained) in systolic pressure (greater than 10 mm. Hg). This is unequivocal evidence of a rise in cardiac output and reveals venous pooling.

KITCHELL


A 12-lead electrocardiogram, a ballistocardiogram, a 1-breath ventilation test for vital capacity, and a 0.5-second expiratory capacity test were incorporated as part of a preanesthetic evaluation program for 482 geriatric patients. Two hundred and twelve of these were between 60 and 90 years of age and in this group the incidence of unfavorable test results as well as postoperative complications was higher than in the younger age group. There was an increase in the incidence of postoperative complications in patients having abnormal ballistocardiograms and ventilatory defects. There was little correlation between electrocardiography and the subsequent course of the individual patient, indicating that the usual method of evaluation of preoperative risk by clinical impression is of little value in geriatric patients. It is believed that evidence of degenerative cardiopulmonary disease may often be elicited in the older age groups and serves as a guide for anesthesia and postoperative therapy.

KITCHELL


A study of the pathologic changes in the left thumb of 29 control specimens and 10 specimens from individuals who had clubbing of the fingers is presented. In clubbed fingers the nailed volume was greater than in the control nailed (in thickness by about 2 mm.). This was produced by large primitive looking fibroblasts in a reticular network. Surrounding this were extravascular lymphocytes and eosinophils. In a few clubbed fingers there were increased coils of arteriovenous capillary type anastomoses. Edema and thickening of the periosteum were present and in a few cases there was the same type of loosely textured reticular network of primitive fibroblasts on the periosteal surface. In 1 case increased deposition of collagen accounted for the increased thickness. These changes, particularly in the periosteal lesions, are similar to the changes in the bones in hypertrophic osteoarthropathy. The author points this out as a similarity in pathogenesis and a factor for possible better understanding of the clubbing process.

Harvey


In 16 patients with funnel chest, pulmonary and cardiac studies showed that the hemodynamic consequences of funnel chest were similar to those of constrictive pericarditis. This finding may explain the cardiovascular features of funnel chest. Although in the advanced stages of this disease right heart failure is a prominent finding, there was no evidence of right ventricular or pulmonary hypertension in the studied cases of this report. Pulmonary functions were found to be within normal limits except for a slight increase in residual volume. The authors point out that severe functional impairment is to be expected only in cases of severe chest deformities and that in these patients surgical intervention may be indicated, if only from the cardiac viewpoint.

Sagall


The title refers specifically to our motorized non-exercising population. The author claims that there is statistical and experimental evidence that lack of physical exercise can contribute to the development of degeneration of the myocardium and possibly atherosclerosis. In the "inactive" heart he states that there is a pathologic adrenergic preponderance. This is probably due to an inactivity-induced deterioration of cholinergic counterregulatory mechanisms. If this be true, physical training programs would be one way that the over-civilized and pampered world could escape further myocardial degenerative disease.

Krause


A number of instances are reported of familial occurrence of coronary thrombosis or coronary
insufficiency, for instance, in parents and children, in siblings, and in twins. In such observations the author sees further evidence that an inherited predisposition must be present for the acquisition of extraneous cardiovascular diseases.


Errata

Various authors have requested that the following changes be made in their published papers:


On page 348, paragraph 3 under Method, should read “If D is the blood pressure (systolic or diastolic) in the standing posture during drug action . . .”


On page 575, table 5, Lead $V_6$ Group Range, 56.0 under LVII should be 36.0; table 5, Lead $V_1$, No. pts., — (INC) under RVH & IRBBB should be 1.

On page 576, table 6, Lead $V_5-V_6$, No. pts., 48 (N) and 17 (PRO) under Total should be 49 (N) and 16 (PRO).

On page 577, table 8, R/S Ratio in Lead $V_1$, No. pts., 37 (X) under Total should be 27.

On page 578, table 9, R Wave in $V_1$ + S Wave in $V_5-V_6$, No. pts., 18 (N) under Total should be 19.


On page 831, line 13, should read “. . . workers may expend energy at a higher rate off the job than on it.”
The online version of this article, along with updated information and services, is located on the World Wide Web at:

http://circ.ahajournals.org/content/19/2/300.citation

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