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CORONARY ARTERY DISEASE,
MYOCARDIAL INFARCTION

Littmann, D.: The Prevention of Thromboembolism
in Acute Coronary-Artery Disease. New England

The observations in this report are based upon
the study of 156 patients who survived acute
myocardial infarction for more than 48 hours. Of
this total 112 patients were treated without anticoagu-
lants. They were encouraged to move about freely
in bed, exercise the legs, feed, wash and shave them-
selves, and use the toilet. Early ambulation, usually
between two and three weeks, was the rule. The
mortality in this group was 4.2 per cent, including
three patients in whom anticoagulants were omitted
for reasons other than the usual rules of selection
employed. Pulmonary infarction occurred in two
patients and cerebrovascular accidents occurred in
patients in this untreated series.

Anticoagulants were used in 44 patients who were
classed as poorer risks because of congestive failure,
prolonged shock, intractable pain, high fever or
anticipation of prolonged confinement to bed. The
author feels that no more than 25 per cent of average
hospital patients with acute coronary artery disease
fall into this category. In this group there was a
mortality of 15.9 per cent. Pulmonary infarction
occurred in four and cerebrovascular accidents
occurred in five patients in this group. None of five
patients who were examined postmortem showed
evidence of thromboembolism.

The author’s observation is that considerable
movement in bed, mild activity and early ambula-
tion have no deleterious effects on convalescents
from myocardial infarction. Furthermore the belief
is expressed that anticoagulant drugs do not influence
in any degree the development of mural thrombi
over the sites of myocardial infarction or the sys-
temic emboli which may ensue. The author concurs
in the opinion that good-risk patients with myo-
cardial infarction normally have a mortality which
is so low that the risk of hemorrhagic complications
from anticoagulants may be in excess of the pre-
ventable mortality.

ROSENBAUM

Zeiman, S., and Nice, G. W.: Recurrent Left
Laryngeal Nerve Paralysis in Arteriosclerotic

Hoarseness associated with cardiac disease and
due to recurrent left laryngeal nerve paralysis is
most commonly seen in severe mitral stenosis and
less commonly in congenital heart disease. Due to its
rareness in arteriosclerotic heart disease with con-
gestive heart failure the authors report a case and
discuss the pathogenesis. It is suggested that an
unsually low transverse aorta encroaching on the
aortic window was partially responsible for the nerve
compression in the case reported.

KITCHELL

Oblath, R. W., Levinson, D. C., and Griffith, G. C.:
Factors Influencing Rupture of the Heart After
2), 1952.

Eighty patients who died of perforation of the
myocardium with hemopericardium and cardiac
tamponade make up the basis of this article. There
were 47 women and 33 men. Eighty per cent of the
patients entered the hospital within the first 72
hours of the infarction. It was interesting to note
that in four cases the rupture occurred in the first
24 hours, on the other hand rupture occurred after
19 days in six of the patients. There was no evidence
that digitalis administration was related to myocardial rupture. Multiple unipolar lead electrocardiograms may give evidence of impending rupture of the heart by showing a full thickness infarct pattern in anterior infarction. The interventricular septum was involved in a greater number of these patients than could be expected in a random sampling of recent infarcts found at autopsy. In general, the amount of postinfarction activity these patients underwent did not appear significant. With this exception the results of the clinical survey did not differ considerably from the results of previous investigations and reports on cardiac rupture.

**Kitchell**

**ELECTROCARDIOGRAPHY**


The authors compare their two systems of recording the vectorcardiogram with that of the equilateral tetrahedron proposed by Wilson. Their own two systems show good correspondence, but they correspond poorly with the Wilson system.

This discrepancy may be due to (1) the tissue surrounding the heart if the electrical activity of the heart can be regarded as a single dipole, or (2) the possibility that the electrical activity of the heart cannot be regarded as a single dipole.

**Soloff**


The electrocardiograms were analyzed of 55 children with acute anterior poliomyelitis. Six of seven children with and 7 of 48 without respiratory paralysis had abnormal electrocardiograms. The abnormal findings were nonspecific and usually transient. They consisted of Q-wave abnormalities in two, ST and T-wave changes in five, T-wave changes in two, prolonged P-R in four and prolonged Q-Tc in six.

**Soloff**


The clinical and electrocardiographic records of 12 patients who had sustained two myocardial infarctions—first an anterior type, followed later by a posterior type—were studied with reference to the electrocardiographic changes resulting from the second infarction. A posterior infarction engrafted on a previous anterior infarction presents typical electrocardiographic changes in the serial tracings similar to those conventionally recorded. The residual pattern of the anterior infarction is substantially obliterated from the electrocardiographic records by the acute changes of the posterior infarction. Months or years after the second infarction the electrocardiographic pattern may be that of the posterior infarct, a mixture of defects that are the residue of both infarctions, or a nearly normal pattern.

**Kitchell**


Changes of the 12 lead electrocardiogram produced by right and left lateral position were studied in 80 persons. Thirty had normal tracings and the rest various abnormalities like left or right ventricular strain, combined heart strain, anterior wall infarction, and left bundle branch block.

In general, dextroposition of the patient produced in the precordial electrocardiogram a shift of the transition zone to the right, and levoposition a shift to the left. This was accompanied by more or less marked variations of the electrical axis in the standard leads, and of the "electrical position" in the AV limb leads. In normals the axis shift never exceeded 0 or +90 degrees. Marked alterations of the electrical position were seen especially in cases with left bundle branch block and with left heart strain. The authors conclude that the position of the heart has a definite influence on the location of the transitional zone and thus on the pattern of the precordial electrocardiogram.

**Pick**


The work presented indicates a correlation between the height of P, R and T in the electrocardiogram and the rate of ion transfer of sodium and potassium into and out of heart muscle cells. These investigations support the thesis that the rate of ion transfer is controlled by the metabolism of acetylcholine. The suggestion is made that the production of the electrocardiogram may depend in part on the rate of production and breakdown of acetylcholine.

**Oppenheimer**


The effects of intravenous administration of tetraethylammonium bromide in 19 cats under dial anesthesia was observed. In doses up to 10 mg. per kilogram a transient fall in arterial pressure occurred, whereas larger doses had a transient pressor effect.
Electrocardiographic changes were recorded only occasionally when the doses did not exceed 10 mg. per kilogram but doses of tetraethylammonium bromide greater than that produced electrocardiographic changes in the majority of the experiments. The electrocardiographic changes observed were principally alterations in the T wave, ventricular fibrillation, ventricular extrasystoles, heart block and nodal rhythm. These changes occurred independently of alterations in the blood pressure. On several occasions records made at the peak of a marked pressor effect showed transient normalization of previously inverted T waves. The electrocardiographic effects of tetraethylammonium bromide were unaltered by atropinization, vagotomy and removal of the suprarenals. These authors believe that most of the electrocardiographic changes observed are the result of a direct action of tetraethylammonium bromide upon the heart muscle. Transient normalization of an inverted T wave at the height of a marked pressor effect could be due to transient improvement in the coronary circulation owing to coronary vasodilatation produced by noradrenaline liberated by the large doses of tetraethylammonium bromide.

Rosenbaum


The authors describe changes in the contour of T waves occurring in patients with heart disease under the effect of carotid sinus pressure. Two types of alterations were observed. Pre-existent inversion of the T wave became more marked, or, less frequently, an inverted T wave became upright. The degree of this alteration was usually most marked in beats which terminated longer ventricular intervals effected by carotid sinus pressure. Some patients who had no signs of heart disease and a normal electrocardiogram responded with inversion of upright T waves; the same T inversion was then seen to develop spontaneously and permanently in follow up tracings. Thus, in about four per cent of the examined cases, T inversion upon carotid sinus stimulation appeared to be the only manifestation of latent heart disease.

The mechanisms underlying these alterations of the T wave are not well understood. It seems that the carotid sinus reflex exerts some influence on the speed of repolarization, mainly in the subendocardial layers of the ventricular myocardium. This view is supported by the fact, that an attack of angina pectoris and the associated electrocardiographic alterations can sometimes be abolished by pressure on the carotid sinus.

Pick

Holzmann, M.: A Particular Type of Trigeminal Rhythm in Auricular Fibrillation. Cardiologia 20: 359 (Fasc. 6), 1952.

The author reports electrocardiograms showing an unusual type of allorrhythmic heart action during auricular fibrillation. Groups of three short ventricular intervals were separated by a long ventricular interval. The groups consisted of two complexes of supraventricular contour which included a bizarre and widened QRS-T complex. The coupling of the latter to the preceding complex of normal contour was almost constant, while the distance to the succeeding normal beat showed more marked variations.

In order to explain this unusual type of trigeminal rhythm the author considers two possibilities, namely a re-entry phenomenon or supernormal phase of A-V conduction; either of them initiated by retrograde conduction of a ventricular premature contraction. Supernormal phase is, in the author's opinion, the more likely explanation.

Pick


The author reports the case of a 34 year old woman who developed seizures of Stokes-Adams type, in one of which she died. Histologic examination revealed no pathologic findings apart from areas of recent fibrosis, some in proximity to the conduction system.

Every attack was preceded by multiple premature contractions. Electrocardiograms were recorded at the onset and during the course of the last fatal attack. At first, there were ventricular premature beats occurring so early that they were superimposed on the ascending limb of the T wave of the preceding normal beat. Later, ventricular tachycardia with regular and rapid rate developed, terminating in the electrocardiographic pattern of ventricular fibrillation. The finding of ectopic ventricular beats of such extreme prematurity is rare in human pathology, and the subsequent terminal events are similar to observations made in animals. The author feels that spontaneous ventricular extrasystoles with extreme prematurity have prognostic significance and may indicate impending ventricular fibrillation.

Pick

ENDOCRINE EFFECTS ON CIRCULATION


By paper chromatography extracts of adrenal venous blood from a monkey and a dog were shown to contain appreciable quantities of a substance
reasonably described as a mineralocorticoid from its effect on the urinary Na⁺/K⁺ ratio of adrenalec- tomed rats. It is suggested by the authors that this demonstration lends support to Selye's comprehensive theory of "diseases of adaptation" which depends at least in part on the postulate that the adrenal cortex secretes a mineralocorticoid distinct from and antagonistic in action to the glucocorticoids.

McKusick

HYPERTENSION


Cation-exchange resin therapy was considered in the treatment of hypertension because restriction of sodium intake lowers the blood pressure in many patients. The resins absorb sodium from ingested food and from the intestinal tract and make possible a restricted sodium intake difficult to attain in the home or to maintain over any long period. Thirty-eight ambulatory patients were studied for from 4 to 10 months while receiving a dietary sodium intake ranging from 1 to 3 Gm. and an ammonium and potassium carboxylic cation-exchange resin (Resodec). Each patient had a diastolic pressure of at least 100 mm. Hg and at least moderately good renal function.

Thirty-nine per cent of the patients had a sustained mean reduction in the diastolic pressure of 20 mm. or more. A good response was observed only in those cases in which the urinary sodium excretion for 24 hours was no greater than 0.5 Gm. It was found in this study that such urinary sodium excretions were more easily achieved with the use of cation-exchange resins but that sodium restriction in the diet cannot be abolished even though they are used. Additions of salt to the diet resulted in increase in the blood pressure, increase in body weight and a return of such symptoms as headache and nervousness. Favorable changes in the ocular fundi, electrocardiograms, ballistocardiograms and cardiac size were recorded in some of the patients on this regime.

Constipation, anorexia and abdominal fullness were common complaints on resin therapy while some patients complained of the unpalatability of the resin. Disturbances of serum calcium and potassium and hyperchloremic acidosis occurred rarely but were minimized after introduction of supplements of calcium lactate and potassium citrate. The authors express the belief that hypopotassemia is probably due to three factors: urinary excretion of potassium with the excess chloride ions, the tendency of low-sodium diets to be low in potassium, and potassium absorption by the resin. Cation-exchange resin therapy may prove more practicable and effective when used intermittently. It seemed particularly effective in a small group of patients whose hypertension had not responded adequately to sympathetomy.

Rosenbaum


The authors studied the effects of high and normal renal vein pressures on discrete renal function in a patient subjected to a splenorenal vein anastomosis. Prior to salt-loading, the kidney subjected to increased renal venous pressure presented significant relative depressions of insulin clearance, urine flow, and sodium and chloride excretion. The depressed urine and salt excretion during this period could be explained entirely on the basis of reduced glomerular activity. During early salt-loading, hyperemia and increased glomerular activity occurred in the normal kidney. The filtration fractions of both kidneys were significantly elevated and became more so during salt-loading. No significant differences in potassium excretion by the separate kidneys occurred before and during salt-loading.

Harris


The minute vascular bed of the nail fold is sensitive to circulating epinephrine and norepinephrine. In this study it was found that the arterial segments of terminal capillary loops in the nail fold of patients with essential hypertension are hyper-reactive to circulating epinephrine, and even more so to norepinephrine. Under the conditions of this study the blood volume, cardiac output, peripheral blood flow, circulation time, and skin temperatures did not differ significantly from normal in individuals with essential hypertension. Vasomotion in the capillary bed is intensified in patients with hypertensive vascular disease. The increased reactivity of the capillaries to circulating epinephrine, or norepinephrine, in hypertension may be a reflection of this fundamental increase in vasomotor activity.

Waffe


The smoking habits of 551 white men with coronary disease and 328 men with hypertension but without coronary disease were compared with the smoking habits of two matched control groups. No correlation was found between smoking and
hypertension. In comparison to the control group, the group with coronary disease had a relatively high percentage of heavy cigarette and cigar smokers.

WESSLER


The elevation of blood pressure in essential hypertension is the resultant of multiple etiologic factors, among which is a constant interaction of various neurogenic and humoral pressor mechanisms. Thiocyanate probably regulates the humoral factor. This concept is supported by observations that patients whose high levels of blood pressure were not controlled by thiocyanate therapy or sympathectomy separately, became susceptible to thiocyanate control following the sympathectomy. The exact mode of action of thiocyanate is unknown but experimental work indicates that the drug acts on the thyroid, pituitary and adrenal glands. It is these humoral effects which may be responsible for its benefits.

Wenkos


The authors report a study of 100 patients with benign essential hypertension followed for 10 to 34 years (average 17 plus years). Seventy-one per cent are still alive, and only five of these are in poor condition. Of these individuals 67 were women and 33 were men. The age distribution at the time of discovery of hypertension ranged from 21 to 68 years with an average of 45 years. This report indicates that essential hypertension may be compatible with a relatively long and effective life. One must give this fact serious consideration in making prognosis and planning therapy, to avoid creating “blood pressure neurotics” and subjecting patients to difficult, expensive, prolonged, and often ineffective treatment.

Kitchell


In a large series of rats, 20 mg. pellets of desoxycorticosterone acetate produced self-sustaining hypertensive cardiovascular disease after approximately three months. Pathologic manifestations included renal hypertrophy, progressive cardiac enlargement and a generalized thickening of arterioles chiefly in the muscular coat. The average mean blood pressure was 180 to 220 mm. Hg. Exchange of water and sodium was normal. The hypertension involves a nervous final path but does not require adrenal, thyroid, parathyroid, or gonads. The pituitary is probably an intermediary. The kidney is essential. Sodium and potassium restriction do not lower the elevated blood pressure. It is concluded that the type of hypertension produced in these experiments resembles the kind of human hypertension in which the maintenance of the elevated blood pressure does not demand the presence of the adrenals.

OPPENHEIMER

PATHOLOGIC PHYSIOLOGY


The Hamilton dye method was used to study the cardiac output, mean circulation time and intrathoracic blood volume in 16 patients with mitral stenosis and in nine normal individuals used as controls. The patients with mitral stenosis could be separated into three groups.

Group I: Individuals with normal sinus rhythm, slight, if any, cardiac enlargement and no previous or present failure. The resting cardiac output and mean circulation time were normal and exercise raised the cardiac output to normal levels. Group II: Individuals with auricular fibrillation, cardiac enlargement and a recent history of cardiac failure. The resting cardiac output and mean circulation time were normal. Exercise increased the intrathoracic blood volume, the mean circulation time, and the cardiac output. Group III: Severely incapacitated individuals. The resting cardiac output was low and the mean circulation time prolonged. Exercise produces little increase in cardiac output and a fall in stroke output. The intrathoracic blood volume increased and the circulation time decreased or remained unchanged.

SOLOFF


Hemorrhagic shock was produced in dogs. The best response was produced by intravenous physiologic saline to the extent of 8 to 12 per cent of body weight. Although larger amounts of saline permitted a greater bleeding volume index the presence of edema indicated that the quantity used was excessive. Following a period of hypotension, saline was less effective than in mild shock. Saline by mouth was not significantly better than no treatment because of circulatory failure following hemorrhage. Glucose did not prove as good as saline in mild shock. At the end of three hours intravenous saline and water or saline by mouth produce an effect equal to that of two to three volumes of saline by vein. It is pointed out that absorption of oral fluids is erratic and that aspira-
tion is a danger. Either of these would contraindicate large quantities of oral fluids.

OFFENHEIMER


Previous investigators had found that there was a significant reduction in the plasma volume of the pre-eclamptic patient. These determinations had been made using vital red dye and T-1824 dye methods.

In this study the blood volume and red cell volume were determined in eight women with pre-eclampsia with P32-labeled red blood cells by a modification of the method of Hervesy and Zerahn. These patients were all in the last trimester of pregnancy and were in the pre-eclamptic state.

Similar determinations on 47 women in the last trimester of pregnancy but in the absence of pre-eclampsia revealed that the average blood volume was 72.8 cc. per kilogram of body weight; the total red cell volume 24.7 cc. per kilogram, and the plasma volume 47.5 cc. per kilogram. The eight pre-eclamptic women showed an average reduction of 26 per cent in the total blood volume, 16 percent in the total red cell volume, and 31 per cent in the plasma volume.

Therefore in the pre-eclamptic state the general finding is an anemia and a low plasma volume.

PROBES


A description and analysis is presented of normal and abnormal curves of the capillary venous pulse in dogs and in man. Tracings obtained by occluding catheterization of a terminal branch of a pulmonary artery have the characteristics of a venous pulse. In a normal curve there are two summits of which the first consists of three small waves (a, b and c) and the second of a single wave, d. The a wave is primarily due to alterations of left auricular pressure while b and c reflect variations of its volume; the d wave records, under normal conditions, both volume and pressure variations and is produced by the pulsation of the pulmonary artery transmitted to the capillaries through the lung tissue.

The important part of the pulmonary venous capillary curve is the segment between its main summits corresponding to the presystolic phase of ventricular contraction. This segment, termed "vs," is influenced by two factors acting in opposite directions. Left auricular emptying tends to depress the curve while the onset of ventricular contraction tends to elevate it. Depending on the predominance of either of these two factors the vs segment forms a normal negative wave or an abnormal positive deflection, which often is superimposed on the following d wave. Such a positive vs wave can be found under various pathologic conditions associated with elevation of the end-diastolic pressure in the left atrium, one of which is mitral insufficiency.

PICK


A method is described to record left auricular pressures by puncturing the chamber through a bronchoscope introduced into the left main bronchus. With certain precautions the method proved, in the experience of the authors simple and safe. The technic used is described in detail.

The operation was performed on 10 patients with enlargement of the left auricle mostly due to mitral disease. The range of obtained values was between 280 and 530 mm. water which corresponds to the elevated values usually recorded during mitral surgery. In one case transbronchial pressure recording could be compared with values obtained by direct puncture of the auricle before commissurotomy and the two data were in close agreement (420 and 440 mm. water respectively). Elevation of left auricular pressure was also found in two cases with mitral insufficiency, who at x-ray examination showed only moderate enlargement of this chamber.

PICK


Positive pressure breathing was produced by means of mask or dome during which venous pressure measurements were made and compared with similar data accumulated during a period of negative pressure breathing in a tank respirator. The venous pressure responses under these two conditions were found to be similar and varied according to the mean pressure applied. In conditions of circulatory failure, using the tank respirator, an increase in ventilation may be produced by adding intra-tank positive expiratory pressure to the intrathoracic negative inspiratory pressure. In asthmatic states, the tank respirator affords a relief of dyspnea similar to that resulting from the use of positive pressure breathing by mask or dome.

SHUMAN

At thoracotomy the recordings of left auricular pressures were made by means of an electromanometer (Sanborn) in individuals with normal hearts and in those with mitral valve disease both before and after mitral valvulotomy. The normal pressure curves resembled those in the right auricle except for a greater pressure rise late in ventricular systole. In mitral valve disease with sinus rhythm the form of the pressure pulse resembled the normal but the absolute pressure levels were higher. Mitral regurgitation produced no change in the pressure pulse recording which was not observed in subjects considered to have mitral stenosis alone.

McKusick


As a result of experimental concussion in anesthetized and unanesthetized dogs corneal reflexes are lost, respiration is arrested, arterial blood pressure increases, blood flow through the common carotid artery increases and cardiac arrhythmias develop. All cardiovascular changes are short lasting (within 15 minutes). The opinion is expressed that "loss of consciousness" seen in clinical concussion is not due to a decreased cerebral blood flow.

Oppenheimer


This is a comparative study on anesthetized and unanesthetized animals using epinephrine and nor-epinephrine as constricting agents, and using 6-chloroethylamine and an ergot preparation (D.H.O. 180) as blocking agents. It was found that both of the latter compounds are effective in reducing the degree of constriction produced by the test compound in the anesthetized animal; however, trained unanesthetized animals showed little adrenergic blockade effect.

Waife


The small pulmonary arteries, arterioles, venules and small veins were studied histologically in 105 instances of mitral stenosis and in 70 controls to determine the changes, if any, produced by mitral stenosis. Forty per cent of those with mitral stenosis showed muscularization of the pulmonary arterioles which was more frequent in those dying under 41 years of age. Fibrous thickening, on the other hand, was found equally in the younger and older individuals with mitral stenosis and in the older control group. Intimal thickening of the small arteries was likewise seen equally in the mitral stenotic and control group. Internal thickening of the small veins was seen in both groups but more strikingly and more frequently in the mitral group.

The author believes that the increased muscularity may help maintain pulmonary hypertension and that the resistance to muscularization probably disappears after valvulotomy.

Soloff


The role of partial or total adrenalectomy was studied in canine renal hypertension produced by spraying the aplastic, butyl methacrylate polymer, over each capsule. Partial adrenalectomy (87–97 per cent) did not significantly reduce the hypertension. Complete adrenalectomy permitted maintenance of normal pressures up to 44 days when cortisone and desoxycorticosterone acetate were used.

Oppenheimer


Because respiratory depression followed by delirium and coma may develop in patients with chronic pulmonary emphysema while they are receiving oxygen therapy, the author studied three normal subjects and four patients with chronic lung disease in an effort to determine the mechanism of the production of this phenomenon. During the study, the subject lay on his left side with an indwelling needle in the brachial artery. A lumbar puncture needle was inserted so that spinal fluid pressures could be recorded every 30 seconds throughout the procedures. The patient breathed through a rubber mouth piece attached to a three-way valve by which connection could be made either to 100 per cent oxygen or to room air. A kymograph recorded the respiratory excursions. At appropriate intervals arterial blood samples were drawn with care so that oxygen was excluded and was stored in ice until analyzed for oxygen and carbon dioxide in the Van Slyke manometric apparatus. It was found that the inhalation of carbon dioxide by normal subjects increases the spinal fluid pressure through cerebral vasodilatation. In two of the patients with pulmonary emphysema, oxygen inhalation resulted in respiratory depression, carbon dioxide retention and increased intracranial pressure. The possible mechanisms for the produc-
tion of this sequence of events and the mental changes in these patients are discussed. It appears that occasional periods of hyperventilation during oxygen therapy will prevent the development of these undesirable effects.

**PATHOLOGY**


The author describes a technic for dividing the heart into the free right ventricular wall, the free left ventricular wall and the septum. He gives the range of weights for these portions of 202 normal hearts. Because in acquired heart disease, the septum is not greatly increased except in the presence of left ventricular hypertrophy, he considers the free wall of the left ventricle and the septum together.

The heart may be classed as normal if (a) the total ventricular weight is less than 250 Gm. (b) the free wall of the right ventricle weighs less than 65 Gm. (c) the left ventricle and septum together weigh less than 190 Gm., and (d) the ratio L + S/R lies between 2.3:1 and 3.3:1.

**PHARMACOLOGY**


As the result of these studies the authors conclude that elimination of carotid sinus buffer nerve reflexes when tetraethylammonium chloride is injected produces an increased sympathetic outflow. This in turn produces hypertension and modifies vascular reactivity. Responses to Augcotonin are increased and tetraethylammonium chloride has a pressor action. The mechanism of sensitization is unknown. Elimination of vagal cardio-inhibitory reflexes and neurogenic vasomotor tone play only minor roles.

**OPPENHEIMER**


No patient who has asthma should smoke. Smoke of any type is irritating, not soothing, to mucous membranes. Smoking induces cough, bronchitis and bronchospasm, which are nature's warning to avoid or to expel the irritating effects of smoke. Likewise, any temporary benefit that patients derive from smoking so-called asthma cigarettes or burning powders which contain stramonium or nitrates, is nullified by the deleterious effect of the smoke itself, which aggravates the patients' bronchitis. All patients with asthma have some degree of bronchitis. Most asthmatic persons have considerable bronchitis, as evidenced by inflamed, red swollen mucous membranes, covered with protecting mucus, and associated with some degree of bronchospasm. Such inflamed membranes are extremely sensitive to such irritants as dust, smoke, fumes, cold air, and strong odors.

Some patients who have asthma are advised to continue smoking because cutaneous tests with
tobacco antigen give negative results. The mere fact that results of tests for allergy to tobacco products are negative is no criterion whatever that the patient with asthma can tolerate smoking. The best possible regimen for the relief of chronic asthma may fail if the patient is allowed to continue smoking.


Experience with the use of intra-arterial transfusion in over 100 surgical cases is referred to. Air embolism was not encountered as a complication. For the purpose of the transfusion a cannula was placed in either the dorsalis pedis or the radial artery. Two patients developed ischemia of the radial side of the hand which was overcome by stellate ganglion block in one case but resulted in loss of the terminal phalanx of the index finger in the other. At least six lives were saved including, for example, an instance of rupture of an atheromatous pulmonary artery during pneumonectomy. The author is impressed with the value of the method.


An instance of fever, chills, rash and malaise following oral administration of procaine amide hydrochloride is reported. Cessation of the dosage of the procaine amide restored temperature to normal within 24 hours with dramatic improvement. Two days later procaine amide therapy was started again and within six hours the patient's temperature had risen; he was nauseated, irritable and depressed. Cessation of the dosage again cleared the symptoms. After five days procaine amide was again resumed, and after the third dose the patient recognized the effect of the drug and the entire chain of symptoms returned promptly.


A 53 year old man was given procaine amide orally because of auricular premature contractions arising after an acute anteroseptal myocardial infarction. After the third oral dose a generalized maculopapular erythematous rash developed, accompanied by severe itching, nasal congestion, generalized adenopathy, and a fever of 102 F. Cessation of procaine amide and the use of Benadryl was followed by complete subsidence of all symptoms within 24 hours. Three months later he was tested by dosage of 250 mg. of procaine amide every four hours. Following the fourth dose the identical clinical picture noted above developed, which again promptly responded to the same treatment.


The authors describe the anatomic changes found in the heart and arteries of rabbits made hypertensive by intravenous infusions of renin and noradrenaline. They have reported in previous publications that noradrenaline and adrenaline, alone or in combination, did not maintain hypertension for more than a few days; whereas renin, infused for as long as 18 days, resulted in sustained hypertension. No acute arterial lesions were found in rabbits whose kidneys were intact. In two rabbits in which subtotal nephrectomy was followed by renin infusion acute arterial necroses were found in the gut. Arterial lesions were not present in animals which had had subtotal nephrectomy but had not received renin. Cardiac hypertrophy was found in animals which were made hypertensive, even in those which were hypertensive for a short time as a result of receiving noradrenaline. Microscopic evidence of embolism in the viscera was found in all the animals which were infused, regardless of the character of the infusion. This was considered to be a consequence of the experimental technic. The authors conclude that arterial lesions are produced not by renin, per se, but by hypertension of sufficient degree.


Animals subjected to unilateral nephrectomy and maintained on 1 per cent sodium chloride solution as drinking water developed hypertension following the administration of desoxy corticosterone acetate (DCA). Lesser degrees of hypertension occurred in animals given cortisone and hydrocortisone. When the latter compounds were given with desoxycorticosterone acetate, the onset of hypertension was accelerated. The toxic effects of cortisone and hydrocortisone appear when they are administered simultaneously with desoxycorticosterone acetate. The animals receiving these agents developed lung abscesses, pericarditis, hematuria, anasarca, cachexia and a high mortality. Within the kidneys of these animals there was noted a deposit of homogeneous material within the glomeruli; similar changes were observed in the myocardium. The material described was thought to represent a polysaccharide containing protein deposited from the transudation of plasma proteins into these areas. The urinary output of formaldehydogenic corticoids was measured over 24 hour periods and was found to be elevated only during those periods wherein two steroid compounds were given concurrently. The thiobarbituric acid
indexes used to measure steroid hormone activity were not strikingly altered. While cortisone and hydrocortisone were found to increase DCA hypertension, lipoadrenal extract, pregnenetriolone, and progesterone did not alter the course of hypertension.

**SHUMAN**


The report is concerned with the results of a prolonged study of a group of 18 patients (12 female and 6 male) with acute disseminated lupus erythematosus treated with corticotropin and cortisone and followed for 3 to 20 months thereafter. Of this group six have died and 12 are living, eight of whom are continuing with treatment. Adequate doses of corticotropin or cortisone caused prompt remission in fever, arthritis, pleuritis, pericarditis, Raynauds phenomenon, and the organic mental syndrome. The rash, mucous membrane lesions, retinal lesions, and serous effusions cleared more slowly. The lupus cells persisted despite a remission in the disease. Renal damage tended to persist. Despite the risks attendant on use of these drugs, they constitute the most effective agents yet available for the treatment of this disease. It must be emphasized, however, that no actual cures result, although it is possible that some patients may be maintained in a state of remission for an indefinite period of time.

**KITCHELL**


Gitalin was used in the initial digitalization of 49 patients with cardiac decompensation, and the maintenance dosage was determined for 131 patients. The average digitalizing dose was 6.5 mg., but varied from 4.5 to 9.0 mg. The majority of patients were adequately maintained with 0.5 mg. per day, but a few required higher doses, and a very few, smaller doses. Equivalent doses of powdered digitalis leaf and digitoxin were shown to vary from patient to patient. Toxic effects generally resulted from deliberate increase in dosage and were similar in type to those noted from other preparations. In 22 patients, the average minimal maintenance dose was 0.54 mg., and the average minimal toxic dose, 0.91 mg.

Improvement was noted in 15 of 18 patients with apparently refractory cardiac decompensation when treated with gitalin instead of other digitalis preparations. In nine of these improvement seemed definitely related to the change to gitalin, but the dosage had to be carefully adjusted. It is in the management of such apparently refractory cases that gitalin appears to offer a real advantage over the other digitalis preparations.

**BERNSTEIN**


The intramuscular injection of pronestyl gluconate or pronestyl hydrochloride produces little or no local reaction, provides satisfactory absorption of the drug, and is as efficacious as the oral and intravenous routes of administration in the treatment of arrhythmias. Toxic effects are mild and compare favorably with those following the oral use of Pronestyl. Severe hypotension occasionally following intravenous administration did not occur. After intramuscular injection the action of Pronestyl is more rapid than after oral use, but less rapid than after intravenous use. Although the intravenous route may be used when an extremely rapid effect is desired, the authors believe the intramuscular injection is preferable for routine parenteral administration.

**HARRIS**


Parenteral administration of digitalis preparations produces more cardiac and less emetic effect than oral administration. Nevertheless, the results of this study do not justify replacing the oral by the parenteral route for routine digitalization, although they indicate the possibility that use of the oral route alone may have curtailed the therapeutic potentialities of members of the digitalis series and that supplementing the oral with intravenous dose may, in some cases, enhance the therapeutic results. The emetic response, commonly referred to as "systemic" in the conventional slow oral methods of digitalization, may not be "systemic" but the result of an action in the gastrointestinal tract.

**HARRIS**


Normal subjects were studied by means of the treadmill ergometer and electrocardiogram in order to determine the effect of digoxin upon the respiratory, ventilatory and cardiac changes induced by
the exercise test. Following the performance of an exercise test, the subjects received intravenous digoxin (0.15 mg. per 10 Kg. body wt.) after which the test was repeated in one and one-half hours. No effect of digoxin was noted in ventilation, respiratory efficiency, oxygen consumption or blood pressure. Oxygen transport and oxygen debt were not significantly changed after digoxin. The usual electrocardiographic alterations were noted consisting of a slowing of heart rate and a lowering of the amplitude of T waves, S-T segment depression and occasional premature ventricular beats. The mechanism of production of electrocardiographic abnormalities is unknown but may be related to a disturbance in oxygen extraction and utilization by the myocardium.

SHUMAN


With adequate clinical and laboratory safeguards, sodium-removing resins are effective in the treatment of congestive heart failure. In eight patients, edema previously resistant to other forms of therapy was reduced, while the need for mercurial drugs was diminished or eliminated. Dyspnea and other symptoms of congestive heart failure were markedly alleviated, enabling the patients to live a more normal and active life.

Serum electrolyte determinations before and during ion-exchange-resin therapy are extremely important for the proper management of the cardiac patient. Dangerous complications may be avoided by following the serum carbon dioxide and chloride levels which will give an estimate of the serum sodium concentration, as well as the degree of acidosis. The frequency of these determinations should depend upon the patient’s response to the resin. When renal pathology is suspected, or in persons of the old age groups, more frequent serum electrolyte analyses should be performed. In the absence of laboratory facilities, extremely careful clinical supervision is essential. Most cardiac patients treated with the ion-exchange resin by the average physician probably will be in less severe congestive heart failure and under less rigid sodium restriction than were the patients in this study. In such circumstances, electrolyte abnormalities are less likely to occur, but still better management is possible with chemical control.

It should be emphasized that there can be no routine treatment with ion-exchange resin. The dose, schedule, and duration of therapy, like the frequency of electrolyte determinations, must depend upon the clinical condition and response of the individual patient.

BERNSTEIN


Noncoronary paroxysmal ventricular tachycardia is defined as ventricular tachycardia that is not initiated by acute myocardial infarction or digitalis poisoning. It is considered less dangerous because, although the rapid rate maintained over a sufficient length of time can cause congestive heart failure even in a normal heart, it is not known to be followed by lethal ventricular fibrillation. In cases of noncoronary paroxysmal ventricular tachycardia where quinidine and procainamide do not abolish the arrhythmia, lanatoside C intravenously may be used effectively and without danger. It is generally denied that digitalis can convert ventricular tachycardia to sinus rhythm. They believe their observations refute this statement. The exact action whereby digitalis operates in these cases is not evident. Although it might be assumed that the vagotrophic action of digitalis would be the effective factor, vagal fibers have never been demonstrated in ventricular muscle or septum.

BERNSTEIN


Veratrine has been incorporated into the routine management of the late toxemias of pregnancy at Permanente Hospital since 1947. A salt free diet, magnesium sulfate and hypertonic glucose administration are correlary measures. Emphasis is placed on early and energetic treatment of pre-eclampsia with Veratrine. Under this program only two cases of eclampsia, both mild in degree, have occurred in a total of 7,781 deliveries. It is felt that these gratifying results are to a large measure due to the use of Veratrum viride. It would appear that Veratrum alkaloids have a definite place in the treatment of late toxemias of pregnancy. By decreasing the blood pressure one can stop the convulsions. This aim can almost invariably be achieved with Veratrum viride. No evidence of serious side reactions and no well documented instance of sustained oliguria can be found in the available literature.

The treatment of chronic hypertension by all regimens so far employed, has left the clinician in a discouraging situation. It is evident that the solution for cure of essential hypertension must come from the laboratory by studies aimed at elucidating the etiologic factors responsible for the syndrome. Until this aim has been attained the treatment of essential hypertension must be directed along palliative lines. Though, in the present forms, the oral use of Veratrum viride is beset with many difficulties, it is apparent that it is one of the most
effective agents now available for lowering the blood pressure of hypertensive subjects.

**Bernstein**


A group of 36 ambulatory hypertensive patients were treated with Veriloid by mouth for from 5 to 45 weeks.

Objective improvement as determined by a significant and consistent fall in blood pressure, reduction in heart size, improvement of electrocardiographic changes, and decrease in hypertensive retinopathy, was not observed despite prolonged administration of highest tolerated doses using the blind test and placebos.

Side reactions were common and prevented the administration of effective doses as measured by objective means in ambulatory patients.

Improvement of symptoms attributable to hypertensive disease was expressed by 23 patients.

**Bernstein**


The effect of atropine on Veriloid induced hypotension has been studied in 40 tests on 14 hypertensive subjects. Atropine invariably produces a marked pressor effect when given to patients with pulse rates of not more than 50 beats per minute provided the postatropine pulse rate increased by more than 10 beats per minute. Changes in cardiac output and an increase in peripheral resistance are suggested as explanation for this observation.

The clinical importance of these findings is stressed.

**Bernstein**


Twenty-four female patients and six male patients with long standing hypertensive disease were treated as outpatients with oral Veriloid. Two patients showed some drop in blood pressure but no other evidence of improvement. Both of these patients were forced to discontinue this medicine because of toxic symptoms. Twenty-one of the 30 patients studied had significant toxic symptoms due to the Veriloid therapy. It is concluded that oral Veriloid therapy is of little or no value in the ambulatory treatment of hypertension.

**Bernstein**


One hypothesis for the hypertension of renal origin is that it results from failure of the kidney to eliminate or detoxify a pressor agent. In this paper pitressin is investigated for its effect in inhibiting the hypertensive action of desoxycorticosterone acetate. It has previously been established that these two substances have opposite actions on the retention of sodium. Moreover, the hypertensive effect of desoxycorticosterone acetate is closely related to the amount of available sodium. Aqueous pitressin (0.6–3.0 U per day) subeutaneously opposed the hypertensive action of desoxycorticosterone acetate. Aqueous pitressin was effective either simultaneously or following desoxycorticosterone acetate. Pitressin tannate in oil aggravated the cardiovascular-renal effects of desoxycorticosterone acetate.

**Oppenheimer**


The authors investigated the ability of certain substrates to increase the amplitude of contraction of substrate-depleted rat ventricle strips. At pH 7.6 glucose was most effective although pyruvate, lactate and acetate gave some improvement. At pH 7.6 citrate, succinate, malate and oxalacetate produced no recovery. However, at pH 6.2 pyruvate, succinate, malate and oxalacetate did improve contraction. The metabolic inhibitor iodoacetate prevented stimulation by glucose but not by pyruvate. Malonate blocked stimulation by succinate. Malonate alone depresses at first but final activity may be greater than control values. There was evidence that the degree of recovery of amplitude caused by a substrate and the amount of relaxation of muscle were directly related.

**Oppenheimer**


The sympathetic nervous system was blockaded with benzodioxane and Priscoline. These rendered dogs insensitive to pressor actions of adrenaline and noradrenaline. Electrical stimulation of the center end of afferent nerves produces elevations in blood pressure which are not prevented by removal of cerebral hemispheres, cerebellum, pituitary, adrenal glands or section of the pituitary stalk. Total lumbodorsal sympathectomy, section of splanchnic or carotid sinus nerves did not prevent the response. The authors consider that visceral afferents are concerned. A cerebral pressor substance is thought to be released into the circulation under
the conditions of these experiments. It is not inhibited by renin tachyphylaxis. It is augmented by tetraethylammonium chloride ganglionic blockade. Apresoline, Veratramine and Veraloid inhibit the response.

OPPENHEIMER


Though in older children infections and digitalis poisoning are often associated with paroxysmal tachycardia, in infancy, in the majority of cases, no underlying cause can be found. A congenital defect of the heart, however, is not a rare finding. There are four varieties of paroxysmal tachycardia: supraventricular, auricular and nodal; auricular fibrillation; auricular flutter; and ventricular paroxysmal tachycardia. All these varieties have occurred in young children. The great majority of cases, however, are supraventricular in origin. In infants the extreme rapidity of the heart rate leads to progressive heart failure. As opposed to experience with older children and adults, physical methods of bringing the attack to an end are very rarely successful. Drug therapy is usually required and the consensus of opinion favors digitalis.

BERNSTEIN

PHYSIOLOGY


Simultaneously determined cardiac outputs by the flow-dilution volume of the dye T-1824 and radioactive red cells differed by less than 7 per cent. The authors conclude from this that the dye loss in its primary passage through the lungs is insignificant. If dye is lost from plasma in passage through the lungs erroneously high values for cardiac output would result. Circulation time for dye was greater than for tagged cells. These differences are incompatible with all the assumptions which have been made in calculating pulmonary blood volume from flow and clearance rate data after the injection of one substance. The authors calculated lung plasma volume (dye) and lung cell volume (tagged red cells) separately. The cell to plasma ratio of pulmonary blood based on these values was always lower than that found in the arterial circulation.

OPPENHEIMER


It is known that the kidney in animals has the ability to maintain an almost constant blood flow despite changes in perfusion pressure. For example, little change in renal blood flow has been found in the dog's kidney perfused in situ at pressures between 80 and 180 mm. Hg. The authors described two technics for perfusing in situ the dog's kidney, using variable pressures and measuring renal flow by a flow meter. They correlated previously reported observations that autoregulation (constancy of renal blood flow during changes in perfusion pressure) exists. However they noted that after some hours of perfusion autoregulation may disappear. More striking was the quicker deterioration of autoregulation following sudden massive hemorrhage. This was associated with renal vasoconstriction, which preceded the loss of autoregulation. The authors believe that the vasoconstriction is not the chief factor responsible.

ENSELBERG


This investigation was stimulated by reports of death during or following the operation of vagotomy for peptic ulcer. The possibility that they might have been due to vagal reflexes brought on by stimulation of the lower intrathoracic vagi was considered.

The vagus nerves of 15 dogs were exposed and the portions between the hilus of the lung and the diaphragm were subjected to traction electrical stimulation and cutting or crushing. Also the efficacy of certain drugs in the alteration of the effects of these stimuli were observed.

The interesting findings were as follows: Stimulation of the lower intrathoracic vagi always caused a measurable increase in systemic blood pressure without any demonstrable change in pulse rate or the electrocardiographic tracing. This effect could be abolished by sectioning the vagus in the cervical region. However stimulation of the proximal stump of the severed vagus would again produce the same result. On the other hand, stimulation of the distal stump of the severed cervical vagus would produce a marked decrease in pulse rate and a fall in blood pressure. Therefore it was felt that the afferent limb of this reflex arc was a sensory fiber that courses up the vagus to the vasomotor center.

The efferent limb of this arc should be in the sympathetic autonomic nervous system and does not travel down the vagus. One may conclude this because sectioning of the vagus in the cervical region does not alter the constant rise in blood pressure seen upon stimulation of the proximal stump of the severed vagus. Furthermore the administration of the drug, Dibenamine, will abolish the blood pressure and pulse responses to traction or electrical stimulation of the thoracic vagus.
Atropine has no effect. However atropine will completely inhibit the drop in blood pressure and pulse rate seen following stimulation of the distal stump of the severed cervical vagus.

Variations in method of anesthesia did not alter these findings. None of these effects seemed serious and all ceased as soon as the stimuli were stopped. Procaine infiltration just proximal to the site of stimulus would abolish the effects of electrical stimulation, but not those due to traction. Since the vagus is an inelastic nerve, the traction would be transmitted as high as the cranial foramen and local block would be ineffectual.

On the basis of these findings, gentle handling of the vagus nerves in intrathoracic operations is recommended.

**Probes**


The authors described an artificial heart, using a Dale-Schuster pump, which was studied in 65 experiments on dogs. It was used as a right-sided substitution, as a left-sided substitution, and for complete extracorporeal circulation with mechanical oxygenation. In each instance blood was rendered incoagulable by the use of heparin. Since a right sided substitution was generally associated with a drop in blood pressure, due to the marked atroventricular reflexes arising in the right side of the heart, transfusions and vasoconstrictor drugs were frequently necessary when this procedure was carried out. Left-sided substitution was not associated with such a response.

**Abramson**


The authors described a simple, all glass dispersion-oxygenator and presented some of the problems arising in the use of such an apparatus. The procedure was studied in a series of dogs. It was found that with the use of appropriate doses of heparin and with better matching of technic, the mortality rate was less. Thrombosis of the superior vena cava, which occurred on occasion, was considered to be due to intimal trauma of this vessel, associated with the insertion of the cannulas.

Total by-pass for not less than 30 minutes was successfully accomplished in 52 of 57 dogs.

**Abramson**


The authors attempted to set up tests for the evaluation of the additional collateral coronary blood flow induced by experimental surgical procedures in dogs. They found that the results of intravenously injected fluorescein, photographed by means of slow motion pictures, could be used to detect changes in blood supply in the dog’s beating heart. A visual study of myocardial contractility was also considered of value, since absence of this function, as determined by slow motion pictures, was associated with ischemia of the occluded muscle mass. Finally, through a study of experimental myocardial infaracts, it was concluded that changes in electrograms, obtained directly from the heart surface, gave information regarding the extent and degree of myocardial ischemia.

**Abramson**


Angiography of the cerebral vessels was performed 66 times in 50 children whose ages varied from 9 days to 15 years. Most of these were accomplished by direct exposure and injection of the common carotid artery, but in seven older children the percutaneous route of injection was employed. Various contrast media were used. Local anesthesia was used in children under 2 years of age.

Complications were few and were transient. There were three cases in which convulsions occurred, but all three had had convulsive episodes prior to angiography. Horner’s syndrome appeared after open exposure of the carotid in three patients; all cleared within a period of eight weeks. A pneumomediastinum resulted twice and was discovered by roentgenography of the chest.

Alterations of the vascular pattern were noted in 23 cases. The procedure was helpful in the diagnosis of brain tumors, for pathologic angiograms were noted in 8 of the 12 cases of brain tumor seen. It was useful in discovering obscure hydrocephalus in three patients. In eight cases cerebral malformations such as hydroencephalodysplasia were established. Angiography was diagnostic in three of the five children encountered with cerebral vascular malformations.

Although the technic was difficult to perform in infants, it appeared to be safe. It may be the only way of making an early diagnosis in children with convulsions and evidence of a focal brain lesion.

**Probes**

In reviewing the experience with 174 cerebral angiograms, it was noted that complications secondary to the procedure occurred in 17 cases. Five of these complications were fatal.

Three of the fatalities suffered loss of consciousness, and sudden respiratory failure. The other two resulted from subarachnoid hemorrhage secondary to ruptured cerebral aneurysms.

In four patients a hemiplegia was precipitated or an existing hemiplegia was accentuated by angiography, and the damage was permanent. Transitory hemiplegia occurred in seven cases. The remaining patient had a transitory decerebrate state.

Many etiologic factors have been implicated. Among these are: (1) mechanical distention of the cerebral vessels by the rapidly injected contrast medium; (2) reflex vasospasm of cerebral vessels; (3) direct chemical irritation of the vessels; (4) disturbance of the blood-brain barrier by edema; (5) air or blood clot embolism; and (6) drug sensitivity.

Mechanical distention of the vessels may be of importance in the rupture of aneurysms, but chemical irritation of the vessel wall followed by vasospasm has received the most attention. In view of this the therapy of the complications occurring during cerebral angiography has consisted chiefly of attempts at vasoelastication with stellate ganglion procaine blocks, and the use of systemic ganglionic blocking agents.

Complications can be avoided by using smaller amounts of contrast media which is possible with the new rapid film changing devices.

PROBESE


These authors cite some of the difficulties encountered in making a diagnosis of patent ductus arteriosus; for example, a continuous machinery murmur is present only in one third of proven cases; cardiac enlargement and dilatation of the pulmonary artery is not diagnostic; a hiliar dance not specific; calcification within the ductus was present only twice in 39 of the cases in this series. Cardiac catheterization, angiography, and thoracic aortography are usually diagnostic, but are not always practical in many instances.

The authors describe a specific deformity of the outline of the aorta below the arch (aortic knob) present in 21 of the 39 cases in young adults, in conventional posteroanterior roentgenograms. A filling of the concavity between the aortic knob and the descending aorta, or an actual though slight convexity in this region was considered to be highly suggestive, especially if the point where the aortic knob passes over into the descending aorta seemed to be displaced downwards. This characteristic aortic irregularity due to the infundibulum in patent ductus arteriosus was not observed in a series of normal subjects, and was found less often in children and in infants than in young adults. In older age groups the value of this roentgenographic sign is greatly diminished because of elongation and tortuosity of the aortic arch and the thoracic aorta.

Schwedel


Contraction of the anterior border of the cardiac silhouette as seen in left anterior oblique position preceding contraction of the posterior border was observed in two established and one doubtful case of tricuspid atresia. This phenomenon is regarded as diagnostic of tricuspid atresia.

SOLOFF


The author used two dyes, Patent Blue V and Evans Blue (T 1824) to outline lymphatic trunks in human subjects. The material was injected subcutaneously or intramuscularly into the sole of the foot.

The dyes were first tried on a group of patients suffering from a postphlebitic syndrome, since an opportunity was afforded to inspect the lymphatic trunks at the time when the popliteal or femoral vein was explored for phlebography or ligation. Patent Blue V was found to have outlined the lymphatics in each case. On the other hand, on the basis of the results, Evans Blue was considered unsuitable for deep lymphangiography. The rapidity with which the Patent Blue V flowed up the narrow lymphatic tubes was explained on the basis that in most instances the channels were empty when the limb was at rest.

ABRAMSON


Microangiography is the study of minute blood vessels and capillaries injected with a contrast medium then exposed to roentgen rays. The resultant image is enlarged; stereoscopic views also may be taken. The author demonstrates glomerular capillaries, the vasa recta, blood vessels within bone. The apparatus used, and technical aspects of the procedure are described.

Schwedel

SURGERY IN HEART AND VASCULAR SYSTEM

Litwak, R. S., Gadboys, H. L., Scott, G. B., and Ferrara, J. F.: Surgical Approach for Stenotic

The authors presented an experimental approach to the surgical treatment of pulmonary and aortic valvular stenosis. Their aim was to perform surgical excision of a portion of the valve, combined with adequate means of control of regurgitation.

The results with the substitution of homograft pulmonary and aortic cusps in dogs were found to be disappointing, since ultimately there was fibrosis with shrinkage of the cusp. The use of the combined autograft and homograft cusp prostheses was much more successful. All the specimens appeared slightly thicker than they were at the time of insertion, but still they seemed to meet the requirements for functional cusps.

A. J. Abramson


The function and morphologic changes were studied in 35 homogenous and autogenous vascular grafts placed in defects in various portions of the great vessels in mongrel dogs. Six aortic homografts replacing defects in the abdominal aorta remained patent whereas 15 similar grafts used to replace a defect between the superior vena cava and the auricle became occluded in less than one month.

Only 1 of 11 homografts examined two weeks or more after implantation showed evidence of survival as determined by persistence of smooth muscle cells in the media. Aortic homografts were converted by the host into endothelial-lined tubes which conducted blood very well. The intima became markedly thickened, the smooth muscle cells of the media disappeared and the elastic fibers became lumped, fragmented and irregularly stained. Large areas of calcification were present frequently in the hyalized media and the adventitia was fibrous. Aortic autografts did not show these degenerative changes even when they were wrapped with silver foil at the time of replantation.

W. Wessler


Once a patient with mitral stenosis begins to have significant dyspnea on exertion, paroxysmal nocturnal dyspnea, orthopnea, cough, hemoptysis or symptoms of failure of the right side of the heart, it is probably advisable to recommend surgical procedures for this patient. The presence of subacute bacterial endocarditis is a contraindication to operation. Probably the presence of active rheumatic fever is also a contraindication at that time as is probably the presence of associated serious valvular lesions, such as aortic stenosis or insufficiency. Other than these, however, there are few rigid contraindications. Certain clinical features, such as marked cardiac enlargement, chronic heart failure and a history of arterial emboli, make operation somewhat more hazardous and somewhat less certain of effecting a good result.

H. Simon


It has been reported that increase in the length of hind extremities of puppies has followed the creation of an arteriovenous fistula in the external iliac vessels. The authors hesitated for a time to use this procedure on human beings for the following reasons: (1) The increase in length of the legs of puppies was not great; (2) in one case, the left hind extremity was actually shorter than the right after a fistula had been in operation between the left external iliac vessels for several months; (3) they were not sure what the effect would be on the heart. It was not until Dec. 5, 1950, that they created the first arteriovenous fistula in a child with a short lower extremity due to old anterior poliomyelitis.

Pre-operatively, the measurements of the lower extremities by scansgrams were as follows: right leg, 48.7 cm.; left leg, 45.1 cm. The difference was 3.6 cm. An arteriovenous fistula was created between the left femoral artery and vein in the mid-thigh. Ten months later, the measurements were as follows: right leg, 52.2 cm.; left leg, 49.2 cm. The difference was 3.0 cm. The disparity in the length of the two legs had been reduced by 0.6 cm. This operative procedure has been performed in five other cases at the Clinic. In none of these cases has there been any serious cardiac embarrassment to date, and all of the children are leading normal lives. Among the problems which confront the authors are: (1) How much increase in growth can be expected? (2) Will there be an actual stunting of growth in some cases? (3) When should the fistula be created? (4) How long should the fistula be left in operation?

H. Simon


In nine cases of mitral stenosis spirometric and ergometric studies were performed before and following surgery (finger-fracture). Data indicating insufficient pulmonary function (decrease of ventilation and of arterialization) before, were no longer present in six cases following successful surgery. This was found in tests made at rest as well as after moderate exercise. The authors feel that impair-
ment of pulmonary function in mitral stenosis, ascribed generally to secondary organic structural changes in the lungs, may be reversible to a greater extent than one would anticipate.

**PICK**


Neurosurgical attempts at relief of pain in angina pectoris have consisted of a section of the posterior spinal roots of the upper thoracic region, or of sympathetic ganglionectomy and their intervening trunks. These operations are based on the concept that pain fibers from the heart take origin from cells in the posterior root ganglia of the first five thoracic spinal nerves. While both of these operations have proved effective in the relief of anginal pain each has had undesirable side effects.

Posterior root section results in complete sensory denervation of the upper five thoracic dermatomes and a band of anesthesia across the chest and along the medial surface of the arm results.

Sympathectomy brings on a cessation of sweating and a vasodilatation of the upper thorax, upper extremity, head, and neck, and a Horner’s syndrome. The ocular changes may precipitate glaucoma or aggravate an existing chronic glaucoma.

A modified operation is reported which consists of resection of the second, third, fourth and fifth thoracic sympathetic ganglia and an extrapleural division of the first thoracic posterior root. In this manner sensory denervation of the heart is provided without cutaneous anesthesia of an appreciable area or without a Horner’s syndrome resulting.

The operative technic is described, and an illustrative case, that has been observed for three and one-half years following operation, is briefly reviewed.

**FROBSESE**


The author distinguishes three pathogenetic and therapeutic types of hypotension during anesthesia: (1) Hypotension with a raised pulse rate is the result of reduction in cardiac output, largely because of reduction of venous return, occasionally from depression of the heart by the anesthetic agent. The pulse rises before blood pressure falls. Vasoconstriction can be demonstrated by digital plethysmography. Treatment consists of increasing venous return by positioning of the patient or blood transfusion. Stimulants such as adrenaline and nikethamide are recommended if cardiac depression is suspected as the mechanism. (2) Hypotension with an unchanged pulse rate is the result of reduction of vasoconstrictor tone by reflex mechanisms. Vasopressor agents are indicated. (3) Hypotension with slowed pulse rate results from over-stimulation of the vagus nerve as in traction on the lung hilum at pneumonectomy. Atropine is indicated.

Instructive examples of the three types are presented.

**McKUSICK**


The author reports six cases of cardiac arrest occurring during surgery and then discusses the therapeutic approach and prognosis in this condition. Only one of the patients lived despite intensive efforts in each instance to resuscitate the heart. It is believed that the primary cause of failure was a delay in making the diagnosis of cardiac arrest.

On the basis of an examination of the literature, the conclusion was reached that the immediate institution of cardiac massage is the cardinal point in therapy. To be effective in saving the life of the patient, this must be begun within three and one-half minutes after cessation of cardiac action. Interruption of the circulation to the brain up to 8 minutes and 45 seconds produces permanent changes in psychic behavior, while a longer period is incompatible with life.

Another important step is the institution of artificial pulmonary ventilation. Countershock should also be performed, but if this is unsuccessful, intravenous procaine should be used to produce a coarse type of fibrillation. This latter state can more readily be restored to a coordinated beat with an electric shock.

The best management of cardiac arrest is its prevention through the avoidance of the onset of the inhibitory action of the vagus. In this regard, anoxia of tissue should be minimized, and procedures which cause vagal stimulation should be done only after adequate local blocking of the pathways concerned and following the use of a sufficient amount of atropine.

**ABRAMSON**


A method is described of producing experimental mitral stenosis in dogs. After the chest and pericardial sac are opened, a number 20 gage needle, into the end of which a steel wire has been previously anchored and threaded into nylon tubing, is inserted through the walls of the right atrium. In its course it passes just to the right of the interatrial groove and just above the A-V groove and emerges anteriorly at a similar position. The suture
now occupies a position at the base of the mitral valve. The ends are then passed through a cannula, whose large, flat head is affixed to the chest wall subcutaneously and whose cardiac end prevents displacement of the heart as the ligature is tightened at a later date.

After the animals have fully recovered from the operative procedure, they are again anesthetized, an incision is made over the head of the cannula, and the exposed wire suture is tightened, in order to produce the stenosis. According to the authors, this technique satisfactorily produced the picture of chronic mitral stenosis simulating the clinical picture of this disease in man.

**ABRAMSON**

**THROMBOEMBOLIC PHENOMENA**


Hemorrhage in degenerated adenomas of the pituitary body are rarely encountered. The clinical manifestations are usually coma, diplopia, opthalmoplegia and a bloody cerebrospinal fluid. The diagnosis is difficult, and the outlook is grave even if proper therapy is instituted.

A 65 year old man with a known chromophobe adenoma of the pituitary was observed with a sudden onset of transient coma, a left hemiplegia, and a clear cerebrospinal fluid. It was felt that a thrombosis of the right middle cerebral artery had occurred, and he was treated with right stellate ganglion blocks. At first, there was clinical improvement, but he expired fifteen days after admission.

Necropsy revealed an infarct of the right cerebral hemisphere secondary to compression of the right middle cerebral artery by an extensive hematoma in a degenerated chromophobe adenoma of the pituitary body.

**FROBES**

**VASCULAR DISEASE**


The author discussed the relative merits of the three general plans of management of varicosities, namely, resection and injection, multiple or segmental ligation, with or without injection, and finally, stripping of the main channels of the incompetent system. It was his impression that stripping, combined with division and ligation of the great saphenous vein at the saphenofemoral junction, was the best treatment thus far evolved, although this procedure, too, had certain disadvantages.

**ABRAMSON**


Among 106 autopsy cases with ventricular aneurysms the septum was involved in 24 (22.5 per cent). In 21 cases this was associated with aneurysmal dilatation of one of the free walls of the ventricles (in five instances of the anterior wall, in five of the apical region, and in three of the posterior wall). In all cases the thinned septum showed considerable bulging into the right ventricular cavity.

The clinical features of these verified cases of septal aneurysm are reviewed with respect to the possibility of diagnosing the condition intra vitam. Sixteen cases had some type of defect of intraventricular conduction in the electrocardiogram. The clinical recognition of the condition is very difficult. If all other possibilities (like chronic pulmonary disease or tricuspid stenosis) can be excluded, rapid development and progressive signs of right heart failure (venous congestion and liver enlargement in the absence of pulmonary congestion) following myocardial infarction might suggest the diagnosis of an aneurysm of the ventricular septum.

**Pick**


The clinical history and postmortem findings are reported in a case of multiple coronary aneurysms. The patient died of rupture with dissection of an arteriosclerotic aortic abdominal aneurysm. This is the second case in which an aneurysm elsewhere in the body ruptured and caused death in a patient who also had an aneurysm of a cardiac coronary artery. The author reviews the literature on aneurysms of the cardiac coronary arteries and pertinent articles are cited.

**KITCHELL**


In a group of 24 diabetic patients with advanced atherosclerosis, several of them having lost extremities as the result of arteriosclerotic involvement, serum total cholesterol, lipoprotein, cholesterol ester, and phospholipid values varied over a wide range. No obvious correlation between any of the lipid fractions and the arteriosclerotic process was found, although the mean serum cholesterol values were significantly higher than in a group of non-diabetic elderly controls. Linear mathematic correlation was noted between the lipoprotein and total cholesterol, lipoprotein and cholesterol esters, and cholesterol esters and serum phospholipids. Under the conditions of the study, no significant changes in blood lipids were observed in patients receiving relatively large amounts of inositol or choline. No significant change in the diabetic state was observed in response to the same agents. Depression of serum cholesterol
esters, of serum phospholipids, and of serum lipoprotein was observed in several patients receiving testosterone propionate in a dose of 25 mg. daily. Some changes in insulin requirement were also noted but these changes were not constant.

**Wendkos**


Overnutrition and obesity are generally associated with increased atherosclerosis, whereas undernutrition and wasting disease are associated with decreased atherosclerosis. That the cholesterol content may be more important than the fat content is suggested by the fact that Eskimos, who have a high animal fat diet but low to moderate cholesterol intake show a low incidence of atherosclerosis. That cholesterol and lipid metabolism is related to atherosclerosis is suggested by the fact that certain clinical conditions frequently showing hypercholesterolemia and hyperlipemia are characterized by a relatively high incidence and severity of atherosclerosis. The cholesterol/phospholipid ratio is increased in most cases with atherosclerosis, with a resulting decreased solubilizing effect on cholesterol. There is also inconclusive evidence that the proportion of cholesterol in the form of cholesterol esters is increased in clinical atherosclerosis. It has been reported that the plasma of human atherosclerosis shows an increased concentration of certain lipoprotein macromolecules of comparatively low density. However, the causal relationship of these comparatively large, low density lipoprotein molecules to atherosclerosis remains to be demonstrated. The role of the endocrines is inferred from the fact that diabetes mellitus, hypothyroidism, Cushing's syndrome, and prolonged cortisone therapy are associated with hypercholesterolemia and atherosclerosis. The explanation of the 4:1 ratio of the incidence of coronary atherosclerosis in males, as compared with females, may be related to the finding that the intima of the coronary arteries is considerably thicker in the male and that this difference is present from birth. Regarding the role of hypertension, it has been found that 40 per cent of atheroscleroties are hypertensive and 60 per cent of hypertensives are athero sclerotic. Experiments involving the filtration of serum through excised arteries, as well as intravascular injections of colloidal cholesterol solutions, suggest that cholesterol and lipids are filtered through the intimal mucosa rather than brought to the intima and media by the vasa vasorum. It is believed by some that the basic lesion of atherosclerosis is a localized fibrocalcific change in the media, with subsequent cholesterol and lipid accumulation in the overlying thickened intima. Experimental atherosclerosis induced by cholesterol feeding has been found to resemble human atherosclerosis in many respects. Hypertension, cortisone, desoxycorticosterone acetate and adrenocorticotrophic hormone have each shown to increase the severity of experimental cholesterol atherosclerosis. Local injury predisposes the injured area to subsequent experimental cholesterol atheroma development. In experimental atherosclerosis the findings point strongly to altered cholesterol and lipid metabolism as an important basic factor in the pathogenesis of clinical atherosclerosis. Although much remains to be learned about the prevention and treatment of experimental cholesterol atherosclerosis, the highly important finding that the atheromatous plaque is reversible has already emerged from this work. There is every reason to believe that human atherosclerosis is likewise a reversible process.

**Wendkos**


Twenty-eight cases of primary pulmonary arteriosclerosis collected from the literature are presented, and three additional cases are reported. A review of the clinical and pathologic findings is presented. The disease is manifested in its early phase by respiratory symptoms and terminally by the signs and symptoms of right-heart failure. The outstanding pathologic lesion is a severe fibrous intimal thickening of the pulmonary arteries, as well as hypertrophy and dilatation of the right ventricle. The diagnosis may be suspected during life by detailed clinical evaluation but is established with reasonable certainty only by microscopic examination of a lung biopsy specimen. The disease is discussed with special reference to similar lesions of the pulmonary arterioles occurring during the course of other diseases. The causation and pathogenesis are not known. The role of primary or essential pulmonary arterial hypertension with resultant vascular hypoxia is discussed.

**Bernstein**


From the accumulated data in the literature it seems apparent that cholesterol plays a major role in the pathogenesis of atherosclerosis. It has been demonstrated that the body can synthesize cholesterol within various tissues including the arteries in the absence of exogenous cholesterol. Moderate increases or decreases in dietary cholesterol failed to exert any significant effect upon serum cholesterol levels. However, practically complete elimination of all dietary cholesterol and other lipids including vegetable oils is necessary in order to achieve a reduction of serum cholesterol values. There is great difficulty in providing adequate protein and calories in the absence of dietary fat and the impalatability of such diets renders them virtually useless. Observations as to the effect of other dietary components
such as protein, phospholipid, or certain vitamins upon the physical state of circulating cholesterol are warranted.

**OTHER SUBJECTS**


At least three factors seem to be involved in the great respiratory variation in I-J amplitude of the ballistocardiogram in patients with chronic pulmonary disease. One, which might be called "sensitivity of the right ventricle to priming," occurs after myocardial injury even in those who have no pulmonary disease and whose only peripheral vascular disorder would seem to be reflex disturbances following myocardial damage. Since the change in I-J amplitude seems to be due to the increase and decrease in right ventricular stroke volume, the important factor is the change in venous return to the right atrium. The volume of blood pooled in the pulmonary veins influences left ventricular output, and this increases in expiration, while the right ventricular output and the ballistic waves decrease. In chronic diseases of the lung, high intrathoracic pressure during expiration and fall in intra-abdominal pressure as the diaphragm rises will greatly reduce the gradient between the abdominal venous pool and the right auricle and ventricle. On inspiration this is reversed more markedly than in normals, thus greatly increasing venous return. The third factor, elevated and labile intrapulmonic vascular resistance, would be of importance in modifying right ventricular output, regardless of the volume of blood in the pulmonic venous bed, or pulmonary pool. The increase in respiratory variation in amplitude of the ballistocardiogram, noted in cases of chronic pulmonary disease can be corrected by pneumoperitoneum. The reduction of the respiratory ballistocardiographic variation by pneumoperitoneum is probably due, in part, to better ventilation, reduced anoxia, and fall in pulmonic arterial resistance; and to a reduction of abdominal pooling and an increased pooling in the preveentricular intrathoracic venous reservoir.


The authors were able to record from single fibers in the intact dog and cat heart in situ. Under these conditions the average resting potential was 80 to 85 mv., the action potential was 100 mv. There was a membrane reversal of 15 mv. In the ventricle the action potential has a plateau preceding repolarization but in the atrium it is triangular.


Papillary muscles of cats were rendered hypodynamic by bathing in a low-calcium solution. Contractions of this preparation were increased by a petroleum ether extract of the nonsaponifiable fraction of liver. The active material is water soluble, filterable, and dialyzable. Neither cholesterol nor carotene produce a similar effect.


A 52 year old male had been admitted to the hospital on four occasions between 1943 and 1949 because of recurrent episodes of acute nonspecific pericarditis. During his fourth hospitalization, x-ray film of the chest and fluoroscopy of the heart indicated that the left heart border was fixed, irregular and immobile. Electrokymographic tracings confirmed the absence of normal pulsations along the left ventricular border. These findings were interpreted to be indicative of the presence of a constrictive pericarditis. The ordinary clinical picture of constrictive pericarditis, such as ascites and increased venous pressure, were not present. It is believed that this case represents an instance of constrictive pericarditis secondary to repeated episodes of acute nonspecific pericarditis. It is, therefore, concluded that acute nonspecific pericarditis need not necessarily always be entirely benign.

**Wendkos**
ABSTRACTS

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