CONGENITAL ANOMALIES


Histologic and angiographic postmortem studies are reported in 60 cases with various types of congenital heart disease (47 cyanotic) and in 37 controls. In general, the shape and size of a congenitally malformed heart are determined by the location and severity of the lesion and the extent of associated intracardiac and extracardiac shunts. The coronary vessels usually do not differ in their over-all distribution from normal, but they are wider (including the capillaries) and reveal many intracardiac and extracardiac anastomoses. Histologically, the arterial wall shows abnormalities consisting in doubling of the muscular layer and fissures apparently secondary to contraction of the muscular arteries during death. Cardiac veins are hypertrophic in all cases with pressure elevation in the right heart, as similarly found in mitral stenosis. This may be a factor responsible for the rare occurrence of myocardial fibrosis in congenital heart disease. In 53 instances, numerous nervous elements were found in the myocardium, usually in aggregates, in contrast to their rarity in the control cases.

The authors conclude that dilated and hypertrophic coronary arteries and veins, wide capillaries, well-developed anastomoses and a marked tendency to hypertrophy of the right ventricle are the morphologic factors which, in young individuals with congenital heart disease, prevent development of chronic congestive heart failure.

Pick


The author presents a case of isolated dextrocardia with a functionally normal heart. In isolated dextrocardia, if the arch of the aorta is left-sided and P is erect, then the chambers of the heart are not inverted. The spatial relations of the spatial QRS and T vectors on the frontal plane are also discussed in this condition. A second case, apparently of isolated dextrocardia, is described and is contrasted with the general pattern obtained.

Rinzler


A study was made of 20 cases of the Eisenmenger syndrome, subjected to catheterization. The physiology of the Eisenmenger syndrome may be summarized briefly as consisting essentially of interventricular septal defect wherein the muscular contraction is the major dynamic factor, with a large number of as yet undefined factors in addition. An explanation of the pathophysiologic of the Eisenmenger syndrome is untenable merely on a simple hydraulic principle of two circuits of unequal resistance. The increased pulmonary resistance present in this anomaly is of purely fortuitous occurrence. It is most probable that inflammatory changes or a co-existent, congenital anomaly is responsible for the derangement of the pulmonary circuit. The rapidity and degree of these changes determine whether any given case presents a partial or complete picture of the Eisenmenger syndrome or remains an uncomplicated interventricular septal defect.

Rinzler


Cases of patent ductus arteriosus were classified according to auscultatory findings. The size of the ductus was evaluated according to the acoustic findings and the urgency for surgery indicated. In
cases belonging to group A, type 1, there is a con-
tinuous murmur at the pulmonary area, indicat-
ing a shunt across the ductus both in systole and dis-
tole. The volume of flow across the shunt is not suf-
cient to cause an apical diastolic murmur. Op-
eration in these cases is indicated because of the
danger of subacute bacterial endocarditis.

Cases in group B, type 1a, have an atypical mur-
mur at the pulmonary area. This alteration of the
continuous murmur is the result of an elevated pul-
monary arterial pressure. These cases should be
operated on as early as possible, since pulmonary
hypertension is progressive and terminates in right
heart failure. Surgical correction has, in some cases,
led to a return of the pulmonary arterial pressures
to normal.

Cases in group A, type 2, and group B, type 2,
have in common an apical diastolic murmur. This
indicates a large volume of shunt across the ductus.
In group A, type 2, the aortic-pulmonary pressure
gradient exists both in systole and diastole, while
in group B, type 2, the aortic-pulmonary pressure
gradient permits a flow only in systole. Thus, a
large shunt occurs in systole only. This could only
result from the presence of a ductus of a large dia-
meter. A diastolic murmur at the apex denotes a
large left-to-right shunt through a large ductus. In
infants belonging to this group, surgical correction
is a lifesaving procedure. In all cases of patent ductus
arteriosus with an apical diastolic murmur, surgical
correction is an urgent procedure.

Rinzler

Van Lingen, B., and Bauersfeld, S. R.: The Elec-
trocardiogram in Ebstein’s Anomaly of the

The electrocardiograms of 8 cases of Ebstein’s
anomaly of the tricuspid valve have been studied.
These were characterized by complete right bundle
branch block in all cases, and by small deflections
(R, R’, R + S) in leads V1 and commonly in
leads V2, V3, V4. Tall and prolonged P waves oc-
curred commonly, and were considered to be evi-
dence of right atrial hypertrophy and dilatation.
Prolongation of the P-R interval and supraventi-
cricular tachycardia were also observed. It was con-
sidered that the small deflections of the QRS com-
plex in the right chest leads were due to the thinness
of the proximal chamber of the right ventricle,
which is a characteristic and constant feature of
Ebstein’s disease. This feature of the electrocardio-
gram in Ebstein’s anomaly is only rarely found in
complete or incomplete right bundle branch block
from other causes, and is believed to be of value in
the diagnosis of this condition. The association of
electrocardiographic evidence of right atrial hyper-
trophy in the absence of evidence of right ventricu-
ar hypertrophy (small R or R’ waves in the right
chest leads) is uncommon in other types of congeni-
tal heart disease and is a characteristic feature of
Ebstein’s anomaly.

Rinzler

Ober, W. B., and Moore, T. E., Jr.: Congenital
Cardiac Malformations in the Neonatal Period.
An Autopsy Study. New England J. Med. 253:

The report is concerned with a review of 100 au-
topsies drawn from 1,665 examinations at the
Boston Lying-in Hospital over a 23 year period
during which 100,000 babies were born, and autopsies
were performed on 60 per cent of those who died
during the first month. The anomalies encountered
most frequently were transposition of the great
vessels, interventricular septal defect, cor trilocu-
lar and bilocular, coarctation of the aorta, endocardial
sclerosis, interatrial septal defect, persistent truncus
arteriosus and tetralogy of Fallot. Few lesions in-
volved the pulmonic or aortic valves. Of the 100
cases studied, 64 were male and 36 were female. All
13 cases of complete transposition of the great ves-
sels were males, as were 6 of 7 cases of endocardial
sclerosis. Increased survival during the first month
of life did not appear to be associated with any
particular type of malformation. Of 9 stillborn
infants, the primary lesion in 5 cases was a large inter-
ventricular septal defect. Seven infants, including 4
stillborn children, had severe anomalies of other
systems in addition to the cardiovascular malforma-
tions. There were 11 cases of coarctation of the
aorta, 6 of the infantile type, 3 of the adult type,
and 2 with coarctation of the ascending aorta and
arch; the ductus arteriosus was patent in all of them,
and almost all of these infants died in congestive
failure. In all 5 cases of fibroelastosis, one or more
of the 4 valves were involved. Interventricular septal
defect occurred as the only lesion in 6 cases and in
association with other cardiac anomalies in 9 in-
stances. There were 6 infants with interatrial septal
defects, 4 of which were unassociated with any other
cardiac anomalies. On the basis of clinical features
it appeared difficult to predict the type of congenital
cardiac anomaly to be found at autopsy in these
infants dying in the neonatal period. Cyanosis
seemed most intense in those infants with complete
transposition of the great vessels without intracardiac
shunts. Cyanosis was less constant in in-
fants with tetralogy of Fallot or defect of the in-
ternal septum. The heart weight was nearly always
increased in relation to body weight.

Rosenbaum

Robicsek, F.: Post-Stenotic Dilatation of the Great
Vessels. Acta med. scandinav. 151: 481 (June
18), 1955.

Various studies were performed to determine the
mechanism whereby poststenotic dilatation of ves-
sels occurs, particularly as it is seen clinically in
pulmonic stenosis and coarctation of the aorta.
Studies on models made of glass and of rubber showed no evidence of local rise in pressure in the area distal to the constriction. Catheterization studies in pulmonic stenosis and coarctation of the aorta have shown low pressures in the areas of poststenotic dilatation and in the adjoining undilated sections of the vessel involved. The characteristics of flow of fluid in a model of glass simulating aortic coarctation were studied, with a dye injected into the system at intervals.

It was found that (1) the fluid passes through the constricted and immediately subjacent parts of the system in the form of a homogeneous column (mechanical constriction is followed by a so-called dynamical constriction), (2) active turbulence can be seen in the poststenotic region and (3) the particles of fluid remain in the poststenotic region for prolonged periods of time and are in turbulent motion.

Histologic study of the vascular wall, from the zone of poststenotic dilatation, has disclosed that the elastic elements of the media are defective in parts, and there are extensive areas of increased fragility.

It has been observed that poststenotic dilatation is more apt to occur where the stenosis involves only a short section of the vessel and there is a sudden increase in the vascular lumen, whereas it is uncommon where the stenosis is of the infundibular type and there is a gradual increase in the vascular lumen.

It is concluded that in cases of localized stenosis of the great vessels, there is a considerable turbulence that leads to a loss of energy and causes extensive damage to the vascular wall. As a result of this turbulent flow, the elastic elements in the vascular wall distal to the stenosis are damaged, and the blood pressure in this area brings about dilatation at the site of reduced resistance.

Rosenbaum


Arachnodactyly (Marfan's syndrome) is a rare hereditary disease of unknown etiology. It is characterized by widespread malformations of the skeletal, cardiovascular, and ophthalmic systems. Medial degeneration of the aorta and, rarely, of the pulmonary artery is a constant finding. Aneurysmal dilatation of the ascending aorta, with dissection and rupture and aortic regurgitation and heart failure, is a frequent cause of death. Fibromyxomatous endocardial lesions are also common and may produce murmurs of valvular stenosis or regurgitation. The demonstration during life of an aneurysm in the sinus of Valsalva in a patient with arachnodactyly has hitherto not been reported. Angiocardiographic study of 3 consecutive patients with arachnodactyly disclosed aneurysmal dilatation of the aortic sinuses in each instance. The first patient, a man of 40 years, was asymptomatic in spite of cardiac enlargement of 6 years' duration. The second patient, a 47 year old woman, had sudden onset of chest pain followed by dyspnea and weakness; on examination, aortic regurgitation, mild congestive failure and enlargement of the heart were found. The third patient was also asymptomatic; a systolic apical cardiac murmur increased in intensity over a 6 year period; no enlargement of the heart was present, however.

Wendkos

CORONARY ARTERY DISEASE


An analysis was made of 133 cases, in which the patients died of acute myocardial infarction in the hospital. Necropsy was performed in each case. The three major causes of death were myocardial failure, which occurred in 43 per cent, coronary failure, which occurred in 23 per cent and rupture of the heart, which occurred in 15 per cent. A factor influencing the occurrence of myocardial failure was previous myocardial infarction. Coronary failure, a term used to designate a syndrome of recurrent pain after acute infarction, but without recurrent infarction, occurred in 23 per cent of the patients. In this group, the acute infarct was subendocardial in a greater number of cases than in the entire series. Rupture of the heart was observed only in patients having transmural infarction. Women were predominant among those with rupture of the heart. This complication did not differ significantly in incidence between patients receiving anticoagulant therapy and those who did not. Major emboli occurred in 6 per cent of the patients. One half of these emboli were pulmonary and one half were systemic.

Bernstein


For more than 75 years, no drug has proved superior to nitroglycerin in treatment of angina pectoris. On the other hand, clinical experience has proved that nitrates are not always followed by clinical improvement and may even cause untoward effects. The study of the effect of varying doses of glyceryl trinitrate (0.2 to 1.2 mg.), 1/300 to 1/50 gr. on electrocardiographic response to standard exercise was undertaken in 158 patients with coronary disease who showed consistently positive changes in control studies. With the dose of 0.4 mg. (1/150 gr.) given sublingually 5 minutes before exercise, 131 patients (83 per cent) responded favorably. Eleven patients, or 7 per cent, showed no
significant effect from the drug. Sixteen patients (10 per cent) demonstrated even greater abnormalities than were apparent in the electrocardiographic records of control tests. The study appears to indicate that individualization of dosage is important. In the 16 patients who responded paradoxically to the drug when given exercise tests, the following observations were made: 1. Such electrocardiographic changes induced by glyceryl trinitrate were similar to those that were recorded in the performance of the Master two-step test. 2. Paradoxic response to glyceryl trinitrate is caused by venous pooling in the lower extremities, diminished venous return to the heart, and reduced coronary blood flow in spite of concomitant coronary vasodilatation. In some cases, change from the recumbent to the erect posture produced electrocardiographic alterations similar to those evoked by the drug. Elastic bandages on the lower extremities prevented the changes occurring on standing. 3. The action of glyceryl trinitrate on the venous system may have therapeutic application in the prophylaxis and treatment of acute congestive heart failure where decrease in venous return and diminution in heart size are important therapeutic objectives. 4. It should be appreciated that the drug may have adverse effects in angina pectoris. The optimum dosage for most patients is 0.2 to 0.3 mg., or 1/300 to 1/200 gr., sublingually. Acute myocardial infarction is more than a theoretic danger from overdosage during treatment of the anginal attack.

KITCHELL


The ergonovine stress test has been said to produce electrocardiographic changes indicative of coronary artery disease in patients with angina. In this study, rabbits were fed a high-cholesterol diet and were subjected to the ergonovine stress test at periodic intervals.

Extensive occlusive coronary atherosclerosis, with myocardial damage, was present in the cholesterol-fed rabbits as compared to the control animals. There was a strong correlation between electrocardiographic changes after ergonovine and the presence of coronary atherosclerosis. The authors suggest that the ergonovine test may be a new experimental procedure for the study of coronary artery disease in the living animal.

WAIFE

CONGESTIVE HEART FAILURE


The ability of the heart to fulfill its function in maintaining circulation can be materially influenced by diet. By appropriate dietary regulation, using subcaloric feedings in acute failure, the work of the heart is reduced, thereby increasing blood flow, lowering the blood pressure, slowing the heart rate, increasing vital capacity, and inducing diuresis. The restriction of dietary sodium is a basic step in avoiding fluid retention due to impairment of renal sodium excretion. Effort should be made to assure adequate potassium tissue stores by the periodic administration of potassium salts to cases of chronic heart failure. Supplemental vitamin therapy is required, as shown by the presence of low tissue vitamin stores in heart failure, and the high rates of vitamin excretion during diuresis. The assurance of an adequate protein intake is urgently needed in the hope of avoiding the evidences of protein malnutrition that eventually appear in so many of these patients.

BERNSTEIN


One hundred patients with cardiac decompensation were treated by ligation of the inferior vena cava. Dyspnea was improved immediately after operation. Hepatomegaly and peripheral edema then disappeared. The major indications for the procedure were mitral disease and combined mitral and aortic disease. Absolute contraindications were considered to be cardiac disorders with high output (chronic cor pulmonale, thyrotoxicosis) as well as certain valvular lesions with marked restriction of the circulation (as in advanced aortic stenosis). The mortality during the first postoperative year was 23 per cent. The survival rate, after the first year, was 60 per cent; after the second, 49 per cent; after the third, 40 per cent; and after the fourth and fifth, 33 per cent.

RINZLER


Beer with a high-caloric and low-sodium content was used in the low-salt diet of patients with renal disease. The patients under observation on calculated diets, with and without beer, included those with chronic glomerulonephritis, Kimmelstiel-Wilson's disease, and malignant hypertension. The fluid intake was restricted to 2000 ml. daily. The nutritional content of beer (1150 ml.) is given as calories (480), protein (3.20 Gm.), carbohydrate (50 Gm.), alcohol (40 Gm.), sodium negative. The beer-added diet was well tolerated and was regarded as more palatable than the regular hospital low-sodium diet. There was no clinical or laboratory evidence of increased deterioration in the renal process.
The added beer did not provide clinical improvement. One patient receiving the beer-added diet for one year showed no untoward effect from this regimen.

**SHUMAN**

**ELECTROCARDIOGRAPHY, VECTORCARDIOGRAPHY, AND BALLISTOCARDIOGRAPHY**


The electrocardiographic changes in blast injury of rabbits are variable. An instantaneous, transient, and often pronounced, sinus bradycardia and a lowering of the voltage are found in almost every case. They are due to reflexes from the damaged lungs and partly from the carotid sinus. Intracardiac damage may be responsible for the low voltage, also the premature beats, depression of S-T segment, and atrial fibrillation. Some of the changes are not manifested until several minutes to some days after the detonation.

**AVIADO**


A 46 year old man, with angina pectoris and a normal electrocardiogram before and after exercise test, developed what was almost certainly ventricular fibrillation (flutter, if you will), with an average cardiac rate of 330 per minute. This reverted promptly without specific measures.

**MCKUSICK**


In 148 cases, in all age groups, the contour and QRS duration of premature systoles of ventricular origin were analyzed. Neither widening nor bizarre-ness of QRS is essential to diagnose ventricular premature systoles. The QRS duration is sometimes difficult to determine because of superposition of the sinus P wave on the initial or terminal portion of the ectopic beat. The patient's age has an influence on the QRS duration of the premature beats. In no case under 21 years, was QRS more than 0.15 sec., and in none over 66 years was it shorter than 0.10 sec. No relationship could be established between QRS duration of ventricular premature systoles on the one hand and their degree of prematurity or the duration of QRS in the normal beats, on the other hand.


Methods of investigation are reviewed concerning the mechanical aspects of the heart action, with special reference to electrokymography. In 10 of 20 personally observed cases with gallop rhythm, electrokymograms showed certain distortions that coincided with the pathologic third heart sound. The hypothesis is advanced that during certain phases of the cycle, the heart muscle is physiologically predisposed to abrupt changes in tone. In the failing heart, hemodynamic or muscular (metabolic) factors aggravate or facilitate the occurrence of this tonus alteration in the same portion of the cycle. The additional sound in gallop rhythm is thought to represent the acoustic manifestation of such abrupt changes in tone.

**SCHOTT, A.: Disorders of Auricular Rhythm Associated with Bundle Branch Block Simulating Ectopic Ventricular Tachycardia. With Observations on Intermittent Bundle Branch Block. Cardiologia 26: 353 (Fasc. 6), 1955.**

Three cases of supraventricular (atrial) tachycardia, with impairment of intraventricular conduction, which might have been interpreted erroneously as paroxysmal ventricular tachycardia, are presented. In the first case atrial flutter with ventricular response varying between 2:1 and 3:1 was associated with an intermittent type of intraventricular block. In the other two cases, comparison with previous or subsequent records established the diagnosis of intermittent intraventricular block in the presence of atrial fibrillation.

The three criteria considered characteristic of a ventricular origin of a paroxysmal tachycardia, namely, irregularity of the ventricular rhythm, widened QRS complexes, and a slower independent atrial rhythm, can no longer be considered conclusive. The cases presented are examples invalidating the first two criteria, whereas the third is contradicted by numerous instances of proved supraventricular tachycardia reported previously in the literature.


Histologic lesions of the conduction system in 29 cases with disturbances of A-V and intraventricular conduction were studied with a dissection technic described previously. In the A-V node and common bundle, both vascular and inflammatory lesions have the morphologic characteristics encountered in other parts of the myocardium. Rheumatic lesions of the left bundle branch are circumscribed, and
located at or near the bifurcation, whereas vascular (ischemic or fibrotic) lesions tend to affect the peripheral part of the bundle, and often lead to its compression, sometimes by development of calcifications. The right bundle branch may be affected in its entire course by either inflammatory or vascular lesions. The latter represent extensions of confluent septal infarctions, or may be part of a diffuse sclerosis of subendocardial or deeper myocardial layers.

A comparative study of electrocardiographic alterations and histologic changes in the conduction system shows a good correlation as to the time of evolution and the morphologic type of the lesion.

**Pick**


Displacement of the P-R interval, the only visible section of the atrial T wave in the normal electrocardiogram, has been studied with special reference to the cardiac rate. Displacement of the P-Ta segment is determined by the cardiac rate and the area of the P wave. The P-Ta segment is practically invisible at cardiac rates below 70 beats per minute; it becomes increasingly visible from 71 to 90, and at rates over 90, it is constantly present. The average displacement of the P-Ta segment increases with increasing cardiac rates. The height and the area of the P wave present a direct correlation both with the incidence and the degree of displacement of the P-Ta segment, independently of the cardiac rate. With P waves less than 400 microvolt seconds, the P-Ta segment is visible only occasionally; above the level of 800 microvolt seconds, a P-Ta segment is constantly visible. In the middle zone, from 400 to 800 microvolt seconds, the P-Ta segment becomes increasingly visible. Displacement of the P-Ta segment is a physiologic phenomenon and is found constantly in the normal electrocardiogram under established conditions, and is therefore devoid of clinical and pathologic significance.

**Rinzler**


An electrocardiographic diagnosis of bilateral bundle branch block can be made in rare instances in which conduction in the branches is not completely interrupted and the degree of block in one of the branches is less than in the other on some occasions and greater on others. This allows the patterns of right and left bundle branch block to appear alternately or intermittently in the same patient. Two new cases of this type are reported and seven similar ones in the literature are discussed. While the incidence of definitely proved bilateral bundle branch block is very small, the great incidence of unilateral bundle branch block suggests that many cases of complete A-V block, attributed to a conduction disturbance in the A-V node or the common stem of the bundle are, in reality, caused by bilateral bundle branch block. In seven of the nine cases of definite bilateral bundle branch block, alternation of the right and left bundle branch block patterns was present at some time. The most probable explanation was considered to be 2:1 block in one of the branches and a constantly delayed conduction in the other branch. Conduction in the branches behaves in the same way as in the rest of the conduction system. True bilateral bundle branch block must necessarily prolong the A-V conduction time. The form of the ventricular complex is determined by the branch with the greater degree of block, while the conduction delay in the branch in which the block is less important determines the lengthening of the P-R interval. This must be so because the stimulus reaches the ventricles through the less affected branch. In true bilateral bundle branch block, the intrinsicsoid deflection of the ventricular complex is delayed only on the side of the chest corresponding to the more affected branch, and is within normal limits on the opposite side. Cases in which the intrinsicsoid deflection is delayed over both ventricles probably represent an association of true bundle branch block with an intraparietal-conduction disturbance of the contra-lateral ventricle.

**Rinzler**


An elderly man was observed over a period of seven years. On several occasions he had atrioventricular rhythm with reciprocal beating. On one occasion, during and after anesthesia for a urologic procedure, there was constant bigeminy and reciprocal rhythm for 12 hours. On one occasion intervening reciprocal beats produced a trigeminal rhythm. The bigeminal reciprocal rhythm is said to be the longest recorded period of such rhythm. It is said that the factors leading to atrioventricular rhythm also lead to reciprocal rhythm when they are acting more intensely. Increased vagal tone, which intensifies the retrograde block in the atrioventricular node to the point that the impulse returning to the ventricles is delayed until it finds the ventricle in a responsive state, is considered the most important factor producing this disorder. In the electrocardiograms recorded in this patient, the retrograde P waves were upright in leads II and III, instead of negative, as is usually the case in atrioventricular nodal rhythm, except as the anesthesia deepened. The authors express the opinion that the P waves in nodal rhythm need not be inverted in leads II and
HYPERTENSION


Hypotensive agents, which have been introduced during recent years for the treatment of hypertensive cardiovascular disease, have been administered to rats and dogs with experimentally induced renal hypertension. The dosages of adrenolytic and ganglion blocking agents, veratrum and rauwolfia alkaloids, necessary to lower blood pressure in such animals, are relatively much higher than that tolerated by humans. Hypertensive animals afford a supplementary method for screening potential hypotensive agents.

Aviado


Thirty cases of polyneuritis, admitted to the Belinson Hospital during the years 1940 to 1953 were surveyed. Among these, 12 were found to have had a transient hypertension during their illness (an incidence of 40 per cent). A control group of 26 cases of infectious mononucleosis, of a similar age distribution, showed only a 15 per cent incidence of hypertension. The possible connection between polyneuritis and the rise of blood pressure is discussed.

Bernstein


Sixty-three patients with severe essential hypertension were treated with hexamethonium administered orally. Forty-three responded with a 20 mm. fall in mean blood pressure. Thirty-two patients continued therapy for an average of 10 months. Apresoline, combined with hexamethonium, improved the blood pressure response of 10 patients, 6 of whom failed to respond to hexamethonium alone. Drug-fastness occurred only twice. In general, the dose of hexamethonium did not have to be significantly increased with continued therapy. Side effects, chiefly due to parasympathetic blockade and excessive hypotensive response, were minimized by careful regulation of dosage. These effects decreased with prolonged therapy. Marked improvement in the cerebral and cardiac complications of hypertension occurred with prolonged therapy. No serious accidents have occurred. Oral hexamethonium, alone or in combination with Apresoline, is a practical and effective therapeutic

Rosenbaum


The clinical and electrocardiographic data were analyzed in 100 patients with tracings in which the RT segments showed an elevation of 1 mm. or more in standard or precordial leads. Such records may be interpreted as indicative of heart disease or pericarditis; however, adequate clinical correlation and subsequent tracings may establish the absence of abnormal changes. The elevation frequently presented is a U-shaped connection between the R and T waves, usually maximal in V4, and sometimes, occasionally as high as 3 mm. or more. The QT index and other electrocardiographic periods were normal. The mean spatial vector of sustained systolic potential was directed inferiorly, anteriorly, and to the left in all cases.

No demonstrable heart disease was found in 82 per cent. The remaining 18 per cent had heart lesions that were not believed to be responsible for this type of tracing. There were 46 per cent of the group who presented functional symptoms. Anterior chest wall pain was noted in 32 patients. It is essential that this normal pattern be distinguished from that associated with pericardial or myocardial diseases. Exercise causes the elevated RT segment to return to the baseline. The elevation may be explained by early repolarization of the subepimyocardium before completion of ventricular depolarization.

Shuman


Electrocardiographic findings in 9 cases of progressive muscular dystrophy are presented. Of these, 6 are of the pseudohypertrophic type. The significant electrocardiographic feature in this series was the occurrence of high voltage QRS complexes in one or more of the precordial leads. In 4 of the 6 cases of the pseudohypertrophic type, the voltages exceed normal limits; while in the other 2, the maximum normal values are approached. Cases published previously disclose similar high voltage complexes. In the facioscapulohumeral type of muscular dystrophy, the QRS complexes are of normal amplitude. Tall QRS complexes are regarded as an additional differential feature distinguishing between the two groups of dystrophic disease.

Shuman
agent for the treatment of moderate or severe hypertensive cardiovascular disease.

**BERNSTEIN**


Seventy-five patients with hypertension were given a capsule containing chlorpromazine (15 mg.) and *Rauwolfia serpentina* (whole root, 50 mg.) 3 times daily. No other medication was prescribed for the patients during the course of treatment, and the patients were observed by the same observer at weekly intervals. More than 85 per cent of the patients with mild hypertension showed demonstrable significant lowering of blood pressure. More than 70 per cent of the patients with moderate hypertension were benefited, and more than 60 per cent with severe hypertension were improved. Only 1 patient was unable to tolerate the preparation because of marked somnolence. Blood pressure readings of almost all the patients given placebos during the course of therapy increased to original levels after 10 to 14 days of placebo therapy. After re-institution of combined chlorpromazine-rauwolfia therapy, improvement was again observed in about 2 weeks. In an addendum to the article, it was noted that a total of 350 patients with essential hypertension have been treated, and results were even more promising when the dosage schedule was 25 mg. of chlorpromazine combined with 50 mg. of rauwolfia 3 or 4 times daily. After 18 months of therapy, no jaundice or other side effects were observed in any of the 350 patients.

**KITCHELL**


The effect of untreated human urine on the blood pressure of the cat was observed. After neutralization the urine was injected intravenously into cats anesthetized with Nembutal. Blood pressure was recorded by means of a recording mercury manometer. Comparisons with standard solutions of adrenalin and noradrenalin in normal urine were made.

Most samples of urine had little effect on blood pressure. If a response at least equal to that from 0.1 μg./ml. of adrenalin or noradrenalin was obtained, the following were tested: (a) Boiling the alkalized urine, to which ferric chloride was added, should greatly diminish the pressure response; (b) Intramuscular ergotamine tartrate altered the shape of the pressure-response curve with an inconstant effect on the height of the curve; (c) Dibenzylene completely inhibited the pressor effect; (d) Intravenous mepyramine maleate potentiated the effect of adrenalin and noradrenalin, but completely antagonized any response to histamine, which was the “contaminant” causing the greatest difficulty.

Among 250 patients, 7 cases of pheochromocytoma were discovered or confirmed.

**McKUSICK**


Pitressin lowers blood pressure in rats made hypertensive by renal compression or partial nephrectomy. Daily injections produce a cumulative effect. There is also a delayed depressor response 7 to 9 hours after injection of 4 international units (IU) in rats hypertensive from desoxycorticosterone acetate (DCA). A series of 2 IU injections accomplishes like results. The delayed response is not observed in rats made hypertensive by renal compression. With the larger doses, the delayed response is seen in rats made hypertensive by subtotal nephrectomy. It is not detected when lower doses are used. Poor renal function in subtotally nephrectomized rats may explain the 2 latter observations.

**OPPENHEIMER**


Rats were administered desoxycorticosterone acetate and salt in quantities that produced hypertension and death in all subjects in 71 days. There was some fall in blood pressure and prolongation in survival time when either hydralazine or reserpine was administered. The combination used for as long as six months was observed to reduce blood pressure while at the same time renal and vascular pathologic changes were delayed or prevented. These animals grew faster and survived for three times as long as untreated controls.

**OPPENHEIMER**


Hypertension resulting from nephrectomy was accentuated by overhydration with an electrolyte solution resembling extracellular fluid. However, intermittent peritoneal lavage did not prevent the production of hypertension. High-protein diets containing 4 to 6 Gm./Kg. of casein per day were fed to dogs. The high-protein diets produced a minimal increase in renopral hypertension. Medial arteriolar necroses and focal myocardial
necroses were more frequent and more severe in those fed high-protein diets.

**Oppenheimer**


Antirenin titers of dogs were actively and passively elevated. Subsequent bilateral nephrectomy and overhydration were still able to produce hypertension. Furthermore, the hypertension of normally hydrated renopival dogs was not reduced by antirenin. Antirenin did not prevent arteriolonecrosis or multiple focal hemorrhagic necroses in the myocardiun of renopival hypertensive dogs. In all these previously mentioned cases, pressor responses of small and medium doses of renin were blocked. The responses to large doses of renin resembled those obtained with angiotonin. Also, elevation in blood pressure obtained from transplanted kidneys, which were made acutely ischemic, was greatly reduced. It is concluded that the hypertension of bilateral nephrectomy and the observed associated vascular changes cannot be assigned to residual or extrarenal renin.

**Oppenheimer**


There is a slight rise in blood pressure subsequent to subcutaneously injected renin on conscious rats. These effects are not always present under amytal anesthesia. Bilateral nephrectomy potentiates renin effects in unanesthetized rats. This is also true if rats were pretreated with deoxycorticosterone acetate (DCA) and salt. Renin-induced pressor effects may play a role in the diuresis and proteinuria that follow injection of this substance into normal rats. These same pressor effects may be operative in the vascular lesions produced by renin after administration of DCA and salt.

**Oppenheimer**


The effect of oral reserpine upon renal plasma flow in a group of 15 hypertensive patients was evaluated by means of para-aminomhippuric acid clearance determinations before and after administration of the drug. There was less than 10 per cent change in 13 patients, which was within the limit of accuracy of the test. The blood pressure changes observed were minimal. In 2 patients, decreases of 18 per cent and 33 per cent, respectively, in renal plasma flow, were detected following treatment.

**Shuman**


The effects of rauwolfia alone and in combination with hexamethonium and hydralazine were evaluated in 66 patients having various degrees of hypertensive disease. The results of therapy in 26 patients with mild hypertensive disease receiving rauwolfia alone for an average of 10.5 months, revealed a reduction of the diastolic pressure of at least 15 mm. Hg in 14 patients. Side effects included "stuffy" nose, sleepiness, increased appetite, and depression. Nineteen patients with severe hypertensive disease received a combination of the three drugs in appropriate dosage for an average of 14 months, and achieved an average reduction of blood pressure of 25 mm. Hg diastolic.

Side effects of hexamethonium included constipation, postural hypotension, dry mouth, and blurred vision. Thirteen patients with malignant hypertension were given the combined therapy. Of the 6 patients still living, 5 were white women whose nonprotein nitrogen was nearly normal initially. The 4 Negro men in this group died. Because of increased sensitivity to postural changes, leading to syncopal episodes, hexamethonium was found difficult to use in patients previously treated by sympathectomy. There were 10 deaths in the 66 hypertensives, of which 7 were Negro men. In certain patients, the reduction of blood pressure worsened the clinical status of the patients; however, in others, dramatic improvements, including the reversal of papilledema were obtained.

**Shuman**


Treatment of 47 patients with varying degrees of hypertension with rauwolfia plus adrenergic blockade was reported. Rauwolfia plus phenoxymazine was compared with this combination plus protoveratrine. A significant hypotensive effect is considered as a mean blood pressure reduction of 20 mm. Hg, or more, which was achieved in 74 per cent of the first group (rauwolfia and phenoxybenzamine), and in 82 per cent of the second (above plus protoveratrine). However, the former group was considered to have a slightly more severe hypotensive process. The requirement for phenoxymazine was much less when given with rauwolfia than when given alone; also the orthostatic hypotensive effect was less with the combination. The principal side effects, seen in nearly all patients in this series, consisted of nasal congestion, sedation, fatigue, diziness, bradycardia, increased appetite, and ortho-
static hypotension. The combination of rauwolfa and phenoxybenzamine, with or without protoveratrine, can be effective in the treatment of patients with severe grades of hypertensive disease. The former agent blocks vasoconstrictor impulses centrally, while the latter blocks peripherally, providing a potent combination for reducing hypertensive blood pressures.

SHUMAN


Eighty-three hypertensive patients were treated with reserpine for periods of 3 to 12 months. In 15 of these patients hydralazine was also administered. No controls were employed beyond pretreatment knowledge of the patient's symptomatology and blood pressure range. The authors conclude that reserpine is an excellent hypotensive drug, and that side reactions are few in number and minor in nature.

WESSLER

PATHOLOGY


A series of 10 cases is described in which there was cardiomegaly and intractable heart failure, which at necropsy could not be explained on the usual causes of cardiac enlargement such as coronary artery disease, rheumatism, congenital defects, pulmonary disease, collagen disease, etc. There were 7 males and 3 females, ranging in age from 24 to 53 years. Prominent in the clinical picture was the rapidity of the course, intractability to therapy, low systolic pressure, intermittent fever and cardiac arrhythmias. Premortem studies were extensive and failed to provide any clues as to etiology. At necropsy, the hearts were enlarged and there was uniform hydrocardial hypertrophy and areas of necrosis and scarring with secondary areas of an inflammatory reaction. No etiologic clue was provided at necropsy. In the reported discussion of the paper, it was pointed out that the measurements made during cardiac catheterization of one individual with this syndrome during life that the characteristics physiologically did not suggest nutritional deficiency such as beriberi or anemia or hyperthyroidism. Furthermore, it was pointed out that this condition is seen in greater frequency in the Negro than in the white individual.

HARVEY


In an analysis of 1,007 consecutive autopsies performed during a 57-month period at George Washington University Hospital, 65 tumors metastatic to the heart, pericardium or both, were found among 315 malignant tumors of all kinds, an incidence of 20.6 per cent. Diagnosis was made prior to death in three patients and suggested in two others. Tumors of the breast, bronchus, the lymphoma group and malignant melanoma accounted for about three fourths of the cases with cardiac metastasis, which is in agreement with the experience of others. The development of one or all of the triad of cardiac failure, cardiac arrhythmias or cardiac compression in patients known to have malignant disease should suggest the possibility of metastases to the heart or pericardium. It would appear from this and other recent studies in the literature that neoplastic invasion of the heart is more frequent than was formerly believed, and should be given consideration in the differential diagnosis of heart disease.

WENKOS


Pulmonary vascular lesions were induced in dogs by anastomosing a systemic artery to the pulmonary artery. Within two weeks, the arterioles showed hypertrophy of the media, followed by progressive obliteration of the lumen due to intimal proliferation, which resembled those seen with some types of pulmonary hypertension in humans. After removal of the shunt and re-anastomosis of the pulmonary artery to its proximal stump, there was little regeneration in 3 months, but after one to two years, there was slow re-establishment of patency, chiefly by recanalization. The mechanical factors (increased flow and pressure) play an important role in the etiology of pulmonary vascular lesions.

AVIADO


A case of acrerosclerosis with calcinosus (Thibierge-Weissenbach syndrome) is described, in which the major arteries to the extremity were found to be occluded. The sclerodermatous process had involved skin, vessels, and nerves, as well as the collagenous tissue of the extremity.

WESSLER

PATHOLOGIC PHYSIOLOGY

Williams, M. H., Jr., and Towbin, E. J.: Magnitude and Time of Development of the Collateral Circulation to the Lung after Occlusion of the

Direct measurements were made of the collateral (bronchopulmonary) flow to the lower lobe of the lung after ligation of the lobar artery. The flow immediately after ligation ranged from 4.4 to 9 ml./min., but one year after such ligation, the flow increased, ranging from 68 to 376 ml./min. This increase in collateral flow confirms vessel injection studies, which have demonstrated that bronchopulmonary anastomoses are exaggerated after occlusion (by disease or experimentally induced) of the pulmonary artery.

AVIADO


In dogs, the acute initiation of atrial fibrillation caused change in the shape of the systolic portion of the atrial pressure curve (obliteration of the mid-systolic dip), and evidence of A-V valvular incompetence in the form of regurgitation of Evans blue dye injected into the ventricle. These observations may explain the difficulties in interpreting the amount of regurgitation versus stenosis in the presence of atrial fibrillation, the reason being that there is indeed regurgitation with the arrhythmia. The studies corroborate the view that atrial systole is important in the closure of the A-V valves. When atrial systole is absent, at least slight regurgitation early in ventricular systole seems to occur.

MCKUSICK


Intraperitoneal injections of fecal suspension result in septic shock that resembles hemorrhagic shock of long standing. Plasma in sufficient quantities to restore or prevent a deficiency in plasma volume does not prevent the deterioration and fatal outcome in septic shock. If antibiotics alone are administered before septic shock is produced, they do not prevent hypovolemia and hypotension, although death is prevented. The authors conclude that the hemodynamic hypovolemic disturbances in septic shock and in hemorrhagic shock are not necessarily fatal of themselves. Correction of bacterial action enables dogs to tolerate septic shock better.

OPPENHEIMER


In these experiments a mechanical diaphragm pump replaced the left ventricle. It was possible to vary rate and stroke volume independently. The mean arterial blood pressure was observed to vary as a function of minute volume rather than either stroke volume or rate. When minute volume remained constant but stroke volume was increased, while the rate of pumping was reduced proportionately, there was no change in the mean pressure. Under these circumstances pulse pressure was increased. When the output of the mechanical left ventricle was increased there was a parallel increase in that of the intact right ventricle. This latter increase was brought about largely by an increase in stroke volume. Changes in pump output caused similar changes in pulmonary and systemic pressure-output curves. Blood storage without changes in venous pressure was observed with increased pump output. This excess of blood is apparently not stored in the lungs.

OPPENHEIMER


In normal male rats, administration of renin increases proteinuria. The electrophoretic mobilities of these proteins are similar to those of normal serum. The action of desoxycorticosterone acetate (DCA) is similar to that of renin. On the other hand, cortisone causes a slight increase in urinary albumin. DCA depressed blood albumin levels, but cortisone lowered protein levels. Animals pretreated with cortisone or DCA were sensitized to renin-induced proteinuretic effects, and the appearance of a small peak, measured as albumin, corresponded with increases in serum polysaccharide concentration. Serum lipoprotein patterns were irregularly abnormal, and serum cholesterol was correspondingly altered in rats given DCA. Although the administration of cortisone and renin caused gross visceral hemorrhages and hypoproteinemia with fluid retention, there was no increase in blood cholesterol. It is the authors' opinion that renin increases capillary permeability generally, as is evidenced by the presence of proteinuria. Cortisone inhibits tubular atrophy as the albumin. Steroids and renin increase blood cholesterol and lipoproteins by acute renal damage and consequent nephrogenic hyperlipemia.

OPPENHEIMER


After electroconvulsive shock vasoeexcitor material (VEM) appears in the general circulation of goats and rats. Significant amounts appear in 15 minutes in goats. The peak is reached in the first hour. Ligation of the renal pedicle in rats blocked...
the appearance of this sensitizing factor after electroconvulsive shock.

OPPENHEIMER


A man, aged 57 years, presenting the major clinical features of diffuse muscular weakness, lenticular opacities, gonadal opacities, metabisulfite and testicular atrophy is described.

There was a family history of similar involvement in his father and two siblings. In addition to the usual features of myotonia atrophica, or Steinert's disease, there was marked cyanosis. Cardiac catheterization and studies of the pulmonary function suggested that this cyanosis was related to weakness of the thoracic and diaphragmatic muscles, resulting in impaired alveolar ventilation and incomplete oxygen saturation of the blood in the pulmonary capillary. The observations also suggested an additional factor of direct shunting from pulmonary capillaries to pulmonary veins in ateleastic areas of the lungs. This opinion was evoked from evidence that the arterial oxygen saturation rose to only 86 per cent after breathing 100 per cent oxygen, and that x-ray studies of the thorax showed areas of linear atelectasis.

ROSENBAUM


The collateral blood flow to the left lower lobe of the lung was measured after occlusion of the left pulmonary artery in anesthetized open-chest dogs. Immediately after the ligation, the blood flow was found to range from 4.4 to 9 ml./min. The amount of flow varied with the height of the blood pressure, but with a given blood pressure, did not increase during the 2- to 4-hour period of observation. In dogs that had previously been prepared by ligation of the pulmonary artery, the collateral blood flow was found to be increased, ranging from 68 to 376 ml./min. at the end of approximately one year of chronic ligation of the artery.

SAGALL


Various concentrations of C14 (carboxylic) labeled sodium acetate were added to tissue minces of turkey aorta. After incubation, cholesterol was extracted. The data indicate that the aorta can convert acetate into cholesterol. Minced tissue (which contained intact cells) was more active in cholesterol synthesis than whole tissue slices. Hog aorta was more active than that of turkey. Although the concentration of C14 labeled acetate into cholesterol by aorta was quantitatively less than produced by liver homogenates from the same amount of acetate, aortic cholesterol synthesis may be an important factor in atherogenesis.

WAIFE


Electrolyte changes in the environment have been shown to affect materially the activity of heart muscle. This study quantitated the sodium, potassium, and water exchanges in rat heart muscle under varying environmental conditions.

Rat ventricles were suspended in a bath. Various solutions were used in the bath and aeration was effected with 5 per cent CO2 and 95 per cent O2 or with 5 per cent CO2 and 95 per cent N2. The temperature and pH were kept constant. The heart muscle was analyzed for Na+ and K+ by a flame photometer and extracellular water by the inulin-space method.

In normal Kreb's solution (143 mEq. Na+/L. and 5.9 mEq. K+/L.), the cardiac muscle absorbed Na+ and lost K+. When the Na+ in the bath was then lowered to 93 mEq./L., intracellular Na+ fell. Na+ extrusion was therefore postulated and thought to be a useful measure of pump activity.

With a low Na+ concentration in the bath from the beginning, a smaller uptake of Na+ occurred. It increased without any change in K+ loss with increasing Na+ concentration of the bath to 177 mEq./L. The inulin space was not affected by changes in the Na+ content of the solution. The addition of K+ to the bath failed to produce any changes.

Stretching the muscle increased the inulin space and the extracellular water and decreased intracellular water. Intracellular K+ levels increased while Na+ levels remained constant, indicating extrusion of Na+. Stimulation of the muscle lowered K+ and failed to change Na+. Anoxia increased Na+ uptake and damaged the Na+ extrusion mechanism. Stimulation of anoxic muscle increased Na+ uptake because of this damage to the extrusion mechanism.

Cardiac muscle in physiologic media took up Na+ and lost K+. Stretching the muscle caused Na+ extrusion; this loss may contribute to the efficiency of stretched muscle. Anoxia damaged the Na+ extrusion mechanism permanently.

WECHSLER

PHARMACOLOGY

An improved technic was devised for perfusion of the canine liver, whereby the selective vascular action of physiologically active substances could be demonstrated. Adrenalin and noradrenalin consistently constricted the portal vein and hepatic artery, but the effect on the hepatic vein was variable. Acetylcholine regularly constricted the portal vein, especially when injected into the artery rather than into the venous system. Histamine dilated the artery, but produced intense constriction within the hepatic venous tree. This clarification of a previously confusing situation is an initial step in understanding the physiologic significance of hepatic vasomotor nerves.

**AVIADO**


Although it is generally agreed that the primary effects of the digitals glycosides are on the heart, little is known about the underlying biochemical processes. The magnitude of the positive inotropic action of ouabain in the dog heart-lung preparation was found to be inversely proportional to the severity of the failure induced by cyanide, azide, or dinitrophenol. Mild failure was readily reversed by ouabain, while severe failure did not respond to this cardiac glycoside. In a heart in severe failure, the positive inotropic action of epinephrine was not blocked. This suggests that different biochemical mechanisms are involved in the positive inotropic actions of the sympathomimetic amines and the cardiac glycosides.

**AVIADO**


The intraventricular injection of these two glycosides was compared. Both compounds produce bradycardia and typical digitalis changes in the T wave of the electrocardiogram at low doses, and the usual manifestations of digitalis toxicity at higher doses. The rapidity of onset after such injection indicates that the effects had their origin in the central nervous system. Barbiturate anesthesia abolished these central actions.

**AVIADO**


Dogs with persistent ventricular tachycardia from a previous coronary ligation were given procaine amide and Ambonestyl (2-diethyl-aminoethylisonicotinamide). This new compound was as effective in suppressing the arrhythmia as procaine amide. Ambonestyl was pharmacologically more specific, since it produced less hypotension, a limiting factor in the intravenous use of procaine amide. Other differences of Ambonestyl from procaine amide are lack of depression in cardiac conduction, no elevation of diastolic electric threshold of the ventricle, and small increase in refractory period. The authors believe that the mode of action for this promising compound may be more closely related to factors controlling cellular transmembrane potentials, which do not manifest themselves in changes in threshold and conduction. Some alteration in cellular recovery processes may be implied from the increase in the refractory period.

**AVIADO**


This pungent principle from capsaicin has long been recognized as a powerful gastrointestinal stimulant and as a rubefacient. Intravenous injection of the compound causes powerful circulatory depression by stimulation of receptors in the heart and carotid bifurcation. It does not have a direct action on blood vessels. Like veratridine, capsaicin is a potent pharmacologic tool for studying the reflex circulatory activity of sensory nerve endings.

**AVIADO**


The industrial production of decaborane as a high energy fuel prompted its toxicologic study in dogs. In increasing doses (inhaled or injected), there was a progressive decrease in heart force, complicated by temporary hypertension, which was attributed to clumping of blood masses with obstruction of smaller vessels. The hypertension, in some instances, may have been due also to direct action on the adrenal glands. Progressive electrocardiographic changes included decrease in height of P waves, slow A-V nodal rhythms, occasional ectopic beats, and asystole.

**AVIADO**


These hypotensive agents were studied in the artificial heart-lung to segregate the factors involved in the fall in blood pressure. In a dog in which car-
Cardiac output was maintained constant by substituting an artificial heart-lung, dibenzylamine and hexamethonium produced a significant fall of arterial pressure, indicating that the peripheral resistance, rather than the heart, is the important factor. On the other hand, Veriloid did not lower the blood pressure when the cardiac output was similarly maintained constant. This fact was interpreted to mean that reflex cardiac depression is the major cause of the hypotension in control animals. The suggested, minor role of peripheral vasodilatation for veratrum alkaloids is contrary to reports of other investigators.

**Aviado**


Normal adult and epileptic subjects showed the same concentrations of plasma lipid components in the postabsorptive state. However, the ratio of phospholipid to free cholesterol and the ratio of neutral fat to phospholipid were significantly lower in the epileptic group than in the normal group. One hour after the intramuscular injection of 0.4 mg. of epinephrine, the free, esterified, and total cholesterol concentrations in the epileptic group were significantly greater than the respective values in the normal subjects, and the neutral fat fraction in the normal group was significantly greater than in the epileptics. These changes resulted in significant alterations in the ratios. These different responses to epinephrine undoubtedly reflect differences in the metabolism of epileptic subjects.

**Cortell**


The authors present studies on the effects upon cardiovascular dynamics in unanesthetized dogs, with and without section of the vagus nerves and carotid sinus, of Ro 2-3248 (Ildar). This substance is the most potent of a group of antiadrenalin compounds, which are derivatives of Dibenamine. Cardiac rate, femoral arterial pressure, and electrocardiograms were measured. Cardiac output was measured and total peripheral resistance then calculated. Well controlled experiments were done. It was found that the substance, Ro 2-3248, in the anesthetized animal with carotid sinus sectioned, caused a reduction in arterial tension and thereby a fall in total peripheral resistance and a fall in cardiac output. Tachycardia established at the time of sectioning was not increased. In the intact animal there was only a slight fall in blood pressure and no appreciable change in cardiac output. However, tachycardia occurred.

**Harvey**


Three patients with the combination of pulmonary edema and shock on the basis of acute myocardial infarction and one with only shock were treated with cardiac glycosides in small doses intravenously. Dramatic clinical improvement followed. They recommend 25 to 50 per cent of the initial dose given to the average cardiac patient, because of apparently increased susceptibility to arrhythmias in the patient with myocardial infarction. They used ouabain in 3 patients, lanatoside C in the fourth. The absence of elevated systemic venous pressure should not be taken as an indication that myocardial failure will not benefit by digitalis.

**McKusick**


Myocardial infarction was produced in dogs by two-stage ligation of the anterior descending artery at the level of the free edge of the left atrial appendage. The best results for reduction in the number of ectopic beats were obtained with Dibenzyline intravenously, Regitine when injected directly into coronary arteries, and Dibenamine intravenously. In the case of the last mentioned, large convulsant doses had to be used. Norepinephrine arrhythmias were demonstrated to resemble infarction arrhythmias more closely than those due to epinephrine.

**Oppenheimer**


The authors indicate that meperidine may exert an atropine-like action, and, when 100 to 150 mg. were given intravenously to 26 normal subjects, it caused an increase in the pulse rate by an average of 11 beats per minute, with 2 individuals having an increase over 30 beats per minute. Since atropine may quickly change the ventricular rate in atrial flutter from 85 to 170 beats per minute by going from a 4:1 to 2:1 response, the use of meperidine with its atropine-like action should be used with caution in atrial flutter. Such increases of ventricular rate in atrial flutter by meperidine are illustrated by case reports.

**Rinzler**

Procaine amide, in doses of 0.5 to 1.0 Gm., was mixed with each 500 ml of blood given as transfusions to anesthetized patients. The procaine amide accelerated the administration of the transfusion because local venospasm was prevented. Despite the spasmolytic effect the drug showed no hypotensive effect.

Rinzler


By "sensitizing" animals with moderate doses of anticholinesterase drugs, the authors were able to induce atrial fibrillation of extended duration in the intact heart of unanesthetized normal dogs, goats, and monkeys after the intravenous administration of acetylcholine or other vagal stimulation. The rate of existing atrial fibrillation was found to increase with the injection of acetylcholine. Atrial fibrillation could be induced in the converted heart by additional injections of acetylcholine. Once the fibrillating state was induced, it could be maintained for long periods of time by proper continuous infusion or repeated injections of acetylcholine, or by electric stimulation of the distal end of the cut right vagus nerve. Induction of fibrillation was facilitated by depressing the normal sinoatrial nodal function by cold or crushing. Atropine was found to slow the rate of fibrillation, and small doses converted the rhythm to normal and prevented subsequent induction of fibrillation with acetylcholine.

Sagall


White albino rats were anesthetized with Nembutal, 6 mg./100 Gm., intraperitoneally, in 0.6 per cent solution. Ventricular flutter and fibrillation were induced by an intravenous injection of 0.2 ml./100 Gm. of a 10 per cent solution of calcium chloride. In another series of experiments the same arrhythmias were elicited by topical application of acenapine to the ventricles.

Injection of 0.5 mg./100 Gm. of nupercaine intravenously into rats before these arrhythmias were elicited did not prevent them. The arrhythmias induced by calcium chloride, as well as those caused by acenapine, appeared in 6 out of 10 experiments. Topically applied nupercaine, however, prevented the acenapine arrhythmias in 9 out of 10 animals if aconitine was applied on the same spot as the nupercaine. On the other hand, intrathecal injection of nupercaine prevented the appearance of the calcium arrhythmias in all 10 experiments.

These results support the previous conclusion made by the authors, that the calcium arrhythmias are neurogenic, while the acenapine arrhythmias are cardiogenic.

Schiff

Physical Signs


The authors present a technic for visualization of the mitral valves by angiocardiography, when the clinical findings and left heart catheterization suggest a dominating mitral insufficiency. This technic involves injection of the contrast medium through a needle of 1.0 mm. inner diameter, paravertebrally above the posterior end of the right ninth rib, and into the left atrium. It is possible to prove the diagnosis of a mitral insufficiency and avoid an exploratory cardiotomy by this method.

Rinzler

Physiology


The vasoconstrictor properties, acquired by circulating blood as a result of hemorrhage, were investigated by transferring blood from any available vessel of a donor rabbit through a system of non-wettable tubes and taps to the central artery of the denervated ear of a recipient rabbit. The constrictor activity of plasma is usually slightly greater than that of blood owing to the release from platelets of a substance like 5-hydroxytryptamine (serotonin). Rapid bleeding of one third of blood volume of the donor rabbit increased the constrictor activity of its blood on the recipient's vessels. Adrenalectomy considerably reduced, but did not abolish, the constrictor activity of the blood. The source of extraglandular constrictors is undetermined but they may come from widespread sympathetic endings. The observations do not disclose the function of the constrictor substances in blood, but emphasize the importance of adrenalin and other constrictors in the circulatory compensation to blood loss.

Aviado


In 3 long-distance runners, no alterations attributable to training were seen in the way the tissue de-
mands for an increased supply of oxygen were met during exercise. Increases in cardiac output, A-V oxygen difference, pulmonary arterial pressure, and ventilatory efficiency were for the most part similar to those reported by others. The only apparent effect of training was an increase in the maximum breathing capacity. The possibility has been suggested that chronic inflow-overload of the right ventricle might account in part at least, for the incomplete right bundle-branch-system block sometimes seen in electrocardiograms of athletes engaged in endurance sports.


The oblongata medulla is known to occupy a key position in the control of peripheral blood flow. Direct measurements of the venous outflow of the leg muscles of dogs and cats show that there are two vasodilator mechanisms. Vasocostrictor nerves can be inhibited by depressor reflexes (electric stimulation of vagus or carotid sinus nerve) or by direct stimulation of the depressor area in the medulla. Vasodilator nerves can be stimulated directly at their origin from the motor cortex, or at their intramedullary outflow, which runs in close proximity to the bulbar motor pathways. The authors were unable to induce vasodilatation by both mechanisms simultaneously, a fact suggesting that they form two independent mechanisms. The sympathetic vasodilator outflow appears entirely unassociated with blood pressure-regulating mechanisms. It has been suggested that this vasodilator system takes part in the regulation of the muscle blood flow during exercise.


Fluorometric analysis of adrenalin in plasma from normal human subjects ranged from 0.0 to 0.4 µg./100 ml. Dogs poisoned with Parathion (cholinesterase inhibitor) to the extent of asphyxia, showed increased adrenalin content in blood only when anoxia was severe and when circulation had failed. Elevation was not seen during moderate depression of arterial oxygen saturation, but appeared abruptly in the terminal phase. This does not necessarily indicate that pressor substances were not being liberated throughout the course of asphyxia. It is probably due to the imbalance between rate of production and inactivation of adrenalin during severe asphyxia.


The fingertips of seated subjects were supported at various levels above or below the sternal notch. The rate of heat elimination from the fingertips (to water measured calorimetrically) at all levels below the notch was slightly but significantly greater than that at the reference level. The increased rate of heat elimination from the dependent fingers is regarded as indicative of an unaltered or slightly increased rate of flow. In no experiment was there any evidence for a reduction of rate of blood flow, which has been interpreted by others from venous occlusion plethysmography.


Intravenous infusion of Arterenol into anesthetized dogs caused an increase in the volume of blood in the heart and lungs, measured by dye or tracer dilution technic. Pressure in the pulmonary artery and left ventricle and rotameter flow in the vena cava were also increased.

The authors believe that these changes are due to shifting of blood from the constricted peripheral veins to the pulmonary vessels. The results do not exclude other possible explanations, such as Arterenol acting directly on pulmonary vessels, or the drug stimulating the heart directly and therefore increasing the pulmonary blood flow and blood volume.


A well-planned and technically satisfactory experiment is presented, in which the effect of hypoxia was studied on newborn, premature, and full term infants. Newborn infants, both full term and premature, failed to respond by hyperventilation, either in rate or depth, during hypoxia induced by breathing 12 per cent oxygen. Premature infants several weeks old responded as the adult to hypoxia, with increase in respiratory rate and tidal volume. These studies further substantiate the author's previous hypothesis, that the chemoreceptors in the aortic arch and carotid body in the newborn are not as fully developed, or are not as sensitive as in older infants, or later on in life.


The arterioles of the vascular bed of the femoral artery were observed to function normally during
adrenal crises. They were compared to normal dogs, bled so as to have a comparable blood pressure. Pressor stimuli were more effective in normal dogs than in adrenalectomized subjects.

Oppenheimer


Test objects were isolated papillary muscles of the cat heart. Force and frequency of contraction were directly related. If rate changes were made abruptly, the force of contraction only gradually assumed that characteristic of the new frequency and the first few contractions were subnormal. Conversely, the first few contractions were augmented when the rate was decreased. The "staircase" phenomenon of Bowditch is similar; here the rate is changed from zero to a finite quantity. When single extra stimuli were placed close to a member of a regular series the next member was more forcible. The closer the interval, the greater the response; and the effect of a single extra stimulus lasted for several minutes. Rhythm or spacing of stimuli seemed more important than increased activity itself.

Oppenheimer


Rats were given single injections of epinephrine daily for 14 days. Another series received cortisone and a third a combination of cortisone and epinephrine. A control series was also provided. Plasma and liver lipids were increased by the exhibition of cortisone, with or without epinephrine. These same changes increased plasma and liver phospholipid synthesis. Aortic lipid concentrations and aortic phospholipid turnover were unchanged by use of cortisone. Changes in plasma lipid after epinephrine were only moderate. Increased incorporation of isotopic phosphorus in the aorta was observed after epinephrine.

Oppenheimer


During the period of hemorrhagic shock adrenal blood flow was reduced to 15 per cent of control values. If the rate of adrenal blood flow was above 17 per cent of preshock flow, then rates of corticosteroid secretion were 60 to 100 per cent of controls. When the rate of adrenal blood flow fell below 17 per cent, the rate of corticosteroid secretion was 40 per cent or below. The output of corticosteroids in the control period or during shock was not correlated with the ability to tolerate shock.

Oppenheimer


Renal hypertension was produced in rats by encapsulating both kidneys of rats with latex. In four weeks blood pressure was elevated and water intake increased. Younger rats were observed to have an aversion to NaCl eight weeks after operation, when blood pressure was maximum. Older rats developed the highest pressures, and salt aversion was inconsistent. Only in younger hypertensive rats were life spans shortened.

Oppenheimer


In these experiments, cardiac oxygen consumption was well correlated with cardiac work, output of the left heart, and mean systemic blood pressure. Oxygen use of heart muscle for any increment of output was observed to be greater when these changes took place at elevated levels of blood pressure. The increase of oxygen consumption for a given rise in blood pressure was also greater at higher levels of cardiac output. The efficiency of the heart was a direct function of work, output of the left heart, and mean arterial blood pressure. There was no correlation with oxygen consumption. A low oxygen content was associated with increased cardiac efficiency. Use of oxygen was less when arterial oxygen content was low.

The level of cardiac work plays a role in the determination of cardiac oxygen consumption. This is true whether work is used to overcome increased pressure or to eject more blood. In some cases, the work of the heart increased as oxygen use grew less. At this time, pressure in the left atrium was better correlated with output of the left heart than either systemic arterial pressure or total cardiac work. However, changes in pressure in the left atrium did not correlate with heart oxygen use. On several occasions when there were unexplained changes in coronary flow, an increase in cardiac efficiency was observed. Useful work was thus increased from a fixed amount of oxygen.

Apparently the heart can alter the mechanism by which it obtains energy from oxygen. It appears that oxygen use depends on the level at which oxygen is supplied. The authors also present data that suggest a possible extracardiac mechanism (nonanoxic) that may control cardiac oxygen use in times of stress. It should be emphasized that in the intact animal, other factors than end-diastolic volume...
control cardiac work and the manner in which energy is provided for such work.

Oppenheimer


Heart-lung-head preparations were used that could be quickly converted to heart-lung preparations. Barium sulfate was utilized to embolize the lungs. Pulmonary blood pressure and resistance increased abruptly, cardiac inflow decreased, and the right heart dilated. Death resulted in a few minutes. If the circulation to the head was eliminated at the height of the response, the pulmonary arterial pressure gradually subsided and the animals survived. Removal of the stellate ganglia and sympathetic chain down to the fifth thoracic level prevented the response to barium sulfate in the heart-lung-head preparation. Hexamethonium also eliminated the responses to the emboli. The presence or absence of the vagi was immaterial. Disseminated particulate emboli of the lungs produce marked pulmonary vasoconstriction mediated by pulmonary sympathetic fibers.

Oppenheimer


Rabbits were cooled by blood refrigeration. If cold blood was returned to the head first, these animals died with higher heart and rectal temperatures than those in which the blood was first returned to the heart. Deaths were probably respiratory in both groups. At this time the brain temperature was 16 C. Rectal temperatures were unreliable measures of hypothermia, since they varied widely from heart and brain temperatures. The differences were more marked at the lower temperature levels. Electrocardiographic changes were observed to be a function of heart temperatures.

Oppenheimer


Young chicks were exposed to 1000 r x-ray at 43 r/min. In the period immediately following, severe hypotension was observed. Birds that died in the first 24 hours had their major fall in pressure during the latter half of this period. The moderate earlier hypotension was not associated with any renal disturbances. There was complete anuria associated with the later severe hypotension. Although the kidney could be protected by shielding, anuria was not prevented during severe bouts of low blood pressure. Conversely, local irradiation of the kidney often produced enough kidney damage to cause fatal uricemia. Blood pressure was not changed by local irradiation. Sustained hemorrhagic hypotension failed to support normal renal function.

Oppenheimer


Five week old male rats were fed a synthetic diet containing 0.006 per cent potassium and 0.6 per cent sodium. The latter is a normal amount. On this regimen potassium depletion was well advanced in five weeks. Rats were maintained on this diet for seven weeks, but one half of them had a bilateral adrenalectomy at the end of five weeks. All animals were sacrificed at the end of seven weeks. After adrenalectomy, both controls and those on the potassium-deficient diet were observed to have an elevated plasma potassium. Potassium of skeletal muscle was increased in adrenalectomized rats on potassium-deficient diets but not in controls. Neither experimental nor control adrenalectomized animals were demonstrated to have had any change in myocardial potassium. Myocardium may have more "bound" potassium than skeletal muscle does, and hence may be nonexchangeable.

Oppenheimer


Pulmonary function measurements on 100 patients (aged 15 to 70 years), with pulmonary emphysema, show that: (1) the main difficulty is the increased resistance to moving air in and out of the lungs, and (2) the most characteristic abnormality in blood-gas exchange, is unequal alveolar aeration and perfusion.

Intermittent positive-pressure breathing of compressed air, together with suitable bronchodilators, is a valuable therapeutic procedure in the treatment of pulmonary emphysema. Following such treatment, an increase of activity is observed. Other routine measures may be used in conjunction with intermittent positive-pressure breathing of compressed air.

Rinzler


The resistances to blood flow in the vascular bed of the denervated hind leg of the anesthetized dog.
were determined over a wide range of intraluminal pressures, while maintaining a constant pressure difference between the arterial and venous ends of the circuit. When the arterial and venous pressures were increased in parallel fashion, higher absolute pressure values resulted in an increase of flow despite the constant arteriovenous pressure difference. The immediate influence, therefore, of elevated intraluminal pressure is a diminution of resistance to blood flow. This indicates that certain vessels, which offer significant resistance to blood flow, must be distensible and that passive dilatation of these vessels, due to the elevated internal pressure, is the initial and essential factor in reducing resistance.

SAGALL


Sodium exists in the body in at least three phases: extracellular fluid, intracellular fluid, and in bone. This is a report of a study on rats, some of which were depleted of sodium by transperitoneal dialysis against ammonium chloride.

Extracellular sodium furnished 52 per cent of the sodium lost; intracellular sodium 20 per cent, and bone sodium 28 per cent. Acidosis produced a loss of sodium (carbonate) from bone whether or not there was a net loss of sodium from the body, and the presence of concomitant acidosis may be of crucial importance in the mobilization of bone sodium.

Little or no sodium retention observed (during oral or parenteral repair of acidosis and sodium depletion) could be assigned to the skeletal phase.

WALFE

RHEUMATIC FEVER


The principle of the antigen-antibody reaction has been the basis for numerous tests for the identification of infectious diseases. Because rheumatic fever is associated with tissue reaction to group A beta-hemolytic streptococcus, identification of a specific bacterial antigen, or antibodies elicited by it, was studied as a means of ascertaining rheumatic fever activity.

Two methods of determination were employed: In one method, serum of patients with rheumatic fever was used as the antibody source and sheep red cells, coated with heat-killed group A beta-hemolytic streptococci which had been isolated from active rheumatic fever patients, were used as the source of antigen. Complement was added to produce hemolysis. The second method utilized Group A beta-hemolytic streptococcus antiserum obtained from rabbits as the antibody source. For the antigen source, erythrocytes of rheumatic fever patients exposed to the antigen for coating in vivo were used in an agglutination test.

Control studies of 77 varied patients, including those from whom alpha- and beta-hemolytic streptococci were isolated, showed no interference with either test method by other disease processes. Clinical data were correlated in 78 patients with rheumatic fever, most of whom were tested repeatedly. In most cases the titers in both test methods were elevated within the first few days of the active process. They then gradually subsided and disappeared as the process became inactive. The test results and the clinical status of the disease correlated well, although the height of the titer did not indicate the severity of the process.

These methods are of practical value in ascertaining activity or quiescence of a rheumatic fever process, as well as to distinguish rheumatic fever from other disease processes with similar clinical manifestations.

BERNSTEIN


Among 36 patients with active rheumatic carditis, a significant transient prolongation of the P-R interval occurred in 11 patients, following intravenous injection of 0.08 mg of lanatoside C. This was the case in 70 controls, including patients with neurocirculatory asthenia, chronic valvular disease, and in patients in whom the active stage had subsided and the test had been previously positive. According to the authors, a positive lanatoside C test represents a certain way to establish the diagnosis of an active rheumatic carditis; a negative test, however, does not rule out activity.

PICK


Abnormal ballistocardiograms, as evidence of probable myocarditis, have been observed in rheumatic fever, disseminated lupus erythematosus, scleroderma, trichinosis, acute diffuse glomerulonephritis, in patients convalescing from infectious mononucleosis and pneumonia, and in instances of serum or drug sensitivity reactions. During the active stage of myocarditis, abnormal ballistocardiographic patterns were more frequent than electrocardiographic evidence of disease.

RINZLER

Observations were made on 145 patients, studied for an average of 20 months per patient as outpatients, and 265 additional patients hospitalized at Irvington House, in the acute and convalescent stages of rheumatic fever, for an average follow-up period of 7.4 months. The patients were treated with monthly intramuscular injections of 1,200,000 units of benzathine penicillin G.

There were no recurrences of rheumatic fever in the 145 outpatients treated with intramuscular penicillin. This was in contrast to 2 recurrences in 111 patients in a control group treated with oral penicillin, and 5 recurrences in 73 patients in a control group given sulfadiazine. Of 2,716 throat cultures made in the group treated with intramuscular benzathine penicillin G, there were only 3 positive cultures for group A streptococci. This result contrasted with positive cultures in 19.3 per cent of untreated controls, 10.7 per cent in 75 patients receiving sulfadiazine, and 13.1 per cent in 99 patients receiving oral penicillin. The antistreptolysin 0 titer was determined every four weeks in the patients receiving intramuscular penicillin. A significant rise in titer occurred in only 3 patients. Of the total number of patients treated with monthly injections of benzathine penicillin, evidence of recurrence of infection with group A streptococci appeared in only 4 patients as either a positive culture, a rise in antistreptolysin 0 titer or both.

Of the patients studied, 71 had no clinical evidence of heart disease at the time of admission to the study and no subsequent signs of heart disease appeared in this group. Of 74 patients who were classed as having rheumatic heart disease at the beginning of the study, 8 were reclassified as having no heart disease at the end of the study, and in 3 patients there was some evidence of progression of the heart disease.

A total of 4871 injections were administered to the 410 patients. Deep muscular soreness and tenderness, lasting two or three days, was common. Transient low-grade fever, sometimes associated with local pain and tenderness, occurred in 10 per cent of the patients. Reactions, believed to be due to penicillin hypersensitivity, occurred in 5 patients. Three had mild, generalized urticaria, 1 had urticaria and angioneurotic edema, and 1 had a "serum-sickness" type of reaction. In the first 4 of these patients, injections of benzathine penicillin were resumed without further allergic manifestations. No attempt was made to resume penicillin prophylaxis in the last patient. Nonspecific, nonurticular rash appeared in 8 patients, but treatment was not interrupted. Two of the patients developed subacute bacterial endocarditis due to Streptococcus viridans. Both patients recovered following a six week course of crystalline penicillin G in large doses.

ROENTGENOLOGY


The author suggests that the use of aortography be limited to those patients in whom information by other means is not available. This limitation is based on additional risk to the patient, added expense, and failure to provide significant information that might alter the course of treatment.

SWEDDEL


The authors summarize their experiences in 387 angiocardiograms in 227 patients during a six-year period ending in 1953. The techniques employed are described in detail. A simple inexpensive apparatus was used. Rarely was high speed angiocardiography necessary for diagnostic purposes. Hazards of the procedure are discussed. In the present series there was one fatal complication.

Angiocardiography has disproved certain erroneous assumptions concerning the composition of the normal cardiac contour that were based on the outline of the cardiac chambers found in the cadaver. The authors describe their findings in the normal heart and in hearts with a wide variety of congenital defects pictorially. They emphasize the efficacy of angiocardiography as an ancillary tool, facilitating more exact cardiac diagnosis. Its principal value lies in its aid to cardiac surgery.

WESSLER

SURGERY AND CARDIOVASCULAR DISEASE


Rheumatic heart disease is responsible for 90 to 95 per cent of all organic cardiac lesions in pregnancy. Mitral stenosis, with or without other valvular lesions, is the common offender. Its most dangerous complication is pulmonary edema. The major effect of mitral commissurotomy is reduction of pulmonary vascular hypertension. In the first 500 consecutive commissurotomies performed by the authors, 5 were carried out during pregnancy. All 5 patients withstood the operation well and obtained marked functional improvement. Mitral commissurotomy may be carried out during pregnancy without harm to the mother or fetus. In these cases therapeutic abortion was avoided. The authors set up the following criteria to guide the selection of cases for mitral commissurotomy during pregnancy: 1. The operation is not advisable during pregnancy except in patients in stages 3 and 4 (New York Heart Association classification). 2. In patients in
stages 3 or 4, exploration of the valve and com-
missurotomy should be performed before ther-
apeutic abortion and sterilization, since many pa-
tients may be so improved by surgery that such
measures will not be indicated. 3. Commissurotomy
is best done in the first trimester. As a rule, it is
contraindicated after the thirty-second week and
should be carefully weighed from the sixteenth to
the thirty-second week. 4. The operation should
be carried out during pregnancy in a patient of any
functional grade if repeated emboli are endangering
the life of the mother and fetus. 5. In patients over
35 years of age, or in those with atrial fibrillation,
the condition of the valve found at surgery and the
response following commissurotomy may be used
to indicate whether the pregnancy represents too
great a threat to the patient’s life. Thus, the thoracic
surgeon enters, with the obstetrician and the cardio-
ologist, in the management of cases of mitral steno-
sis in pregnancy. The risk of commissurotomy and
exploration of the valve to both mother and fetus in
experienced hands is that of any abdominal or
thoracic exploration during pregnancy.

KITCHELL

Likoff, W., and Bailey, C. P.: Ventriloculoplasty:
Excision of Myocardial Aneurysm. J. A. M. A.
158: 915 (July 16), 1955.

In a 56 year old male patient with myocardial
infarction, a large ventricular aneurysm, resulting
from the infarction, was excised. Congestive heart
failure was improved and the continuing pain of
coronary artery insufficiency was relieved. Certain
physical characteristics of ventricular aneurysm
permit excision without undue blood loss or compro-
mise of the size or continuity of the left ventricle.
In view of the natural history of such lesions, it is
suggested that excision be contemplated prior to the
development of the serious consequences.

KITCHELL

Halmagyi, D., Robicsek, F., Felkai, B., Ivanyi, J.,
Zsoter, T., and Szucs, Z.: Hemodynamic, Renal
and Metabolic Responses to Experimental Valvu-
lar Defects in Dogs. Acta cardioli. 10: 93 (Fasc. 2),
1955.

Hemodynamic and pharmacodynamic aspects of
4 types of valvular lesions, produced experimentally
in dogs, were investigated with the technic of cardiac
catheterization. In mitral regurgitation, elevation of
left atrial pressure was followed by a decline of
pulmonary vascular resistance. Both pulmonary ar-
terial and left atrial pressure decreased subsequent
to the administration of sympatholytic agents. Pul-
monary arterial pressure and resistance increased
following production of tricuspid incompetence,
or of pulmonary stenosis. In the former, it was in
proportion to a concomitant elevation of right
atrial pressure; in the latter, pulmonary hyperten-
sion proved proportional to the so-called stenosis
index. In both groups, pulmonary arterial pressure
and resistance fell following administration of sym-
patholytic drugs.

The results of these experiments suggest the
presence of a neurogenic vasoconstrictive mech-
anism in the pulmonary circulation, mediated by
receptor bodies in the right heart chambers.

PICK

Campbell, D. C., and Langston, H. T.: Intrathoracic
Surgical Procedures in Patients Past the Age of

The authors report on major intrathoracic surgical
procedures performed with gratifying success on
31 patients, 60 years of age or older. These operations
were performed for known or suspected malignant
conditions, and in 23 of the 31 patients, the presence
of malignant disease was confirmed. Definitive
surgical procedures were carried out in all but 8
instances and included all degrees of pulmonary re-
section. There were 2 deaths in the entire series, and
11 postoperative complications. Of 9 patients with
known cardiac disease, only 4 suffered from heart
failure after operation.

RINZLER

Vaughan, R. H., Deterling, R. H., Jr., and Smith,
F. M.: Successful Excision of an Aortic Aneurysm
Exploded as a Paraspinal Tumor. New England

In a man, aged 49 years, who had low back pain
for one year, diagnostic studies disclosed a mass at
the level of the twelfth dorsal vertebra, associated
with destruction of the bodies of the eleventh and
twelfth dorsal vertebrae. Preliminary diagnosis in-
cluded tuberculosis, neoplasm, and Paget’s dis-
ease. At the time of exploratory surgery, a biopsy
was performed including a portion of necrotic bone,
after repeated aspirations failed to produce pus or
blood. The biopsy was followed by a gush of ar-
terial blood, making it clear that the mass was an
aneurysm. It was possible to isolate the mouth of the
saccular aneurysm and to resect the aneurysm
successfully. The celiac axis and superior mesen-
teric artery arose from the aorta anterior to the
aneurysmal orifice. The patient made a good re-
covery and, after six months, returned to work as a
chauffeur. He was free of pain, and working, two
years following the operation. This case emphasizes
the fact that an aneurysm may masquerade as an
inflammatory mass or neoplasm, especially when
located in the posterior mediastinum or in the para-
spinous region. Both laminography and needle biopsy
failed to reveal the true diagnosis. Visualization
technics might have been quite informative.

ROSENBAUM

Duff, R. S.: Effect of Adrenaline and Noradrenaline
on Blood Vessels of the Hand before and after
The present study attempts to assess the influence of sympathectomy on the reactivity of the blood vessels of the hand to noradrenalin and adrenalin. Vascular responses in the upper limbs of 10 patients, between the ages of 18 and 45 years, were studied before, and some days after, cervicothoracic sympathectomy. Blood flow in the hand was measured by venous occlusion plethysmography. Synthetic I-adrenalin tartrate or I-noradrenalin bitartrate in various concentrations was injected into the brachial artery.

Preoperatively, adrenalin caused vasoconstriction (mean of 16 per cent) if injected at a rate of 1/2 µg/min. Sympathectomy significantly increased the vasoconstriction at this rate to 44 per cent. It gave similar results at slower rates of infusion. This increased sensitivity occurred well before the first week.

Noradrenalin had a consistently greater constrictor effect than adrenalin at all dosage levels preoperatively. Sympathectomy significantly increased the vasoconstrictor effect of noradrenalin but this increased sensitivity (2 x) was not as great as with adrenalin (3 x).

Noradrenalin caused more vasoconstriction than adrenalin. Sympathectomy caused increased sensitivity to these drugs in some, but not all, individuals. This result conflicts with Cannon's theory that sympathectomy necessarily results in vascular supersensitivity. That preganglionic section causes greater sensitivity, was not confirmed; in this series ganglionectomy caused no more sensitivity than preganglionic section.


Detailed protocols are presented of the physiologic alterations in 5 patients during controlled hypothermia for vascular surgery. The refrigerant was a solution of 30 per cent alcohol in tap water, pumped through pads encasing the patients. Best results were obtained by preceding the induction of hypothermia with general anesthesia. There were no significant anesthetic or operative complications. Because bleeding was minimal, the authors suggest that hypothermia deserves consideration in the management of patients under anticoagulant therapy who require surgery.

WESSLER

THROMBOEMBOLIC PHENOMENA


The authors produced thrombi in the blood stream of dogs, using bovine thrombin injected into the venous system, and studied the effects of the subsequent pulmonary emboli. Only in a small number of cases was infarction produced; when it was associated with atelectasis or pneumonia. Examination of the areas of involvement revealed changes, suggesting that the parenchyma had been abnormal before embolization.

The studies were repeated in dogs with distemper, because such animals usually had pneumonia. About half of this group showed frank hemorrhagic infarction in pneumonic lobes at postmortem examination.

In another group of dogs, the right lower lobe bronchus was ligated distal to the first branch of the bronchus and again pulmonary emboli were produced. It was found that limited decrease in ventilation did not materially influence the formation of infarction following embolization. However, additional ligation of the corresponding branch of the pulmonary artery, did increase the incidence of pulmonary infarction. Plugging the bronchus of the right lower lobe with cotton and ligation of two pulmonary vein branches produced infarction even without the formation of pulmonary emboli.

It was concluded that a firm, bland pulmonary embolism is more likely to lead to pulmonary infarction when infection, decreased aeration, or congestion is present in the lungs.

Abramson

Thrombi were produced in the arteries of rabbits by damaging the endothelium and slowing the circulation by occluding with clamps. Both mural and occluding thrombi were produced and their organization was followed over a period of 84 days. Endothelium overgrows mural thrombi within 48 hours. Later the fibrin becomes hyalin and elastic fibers are laid down. Occluding thrombi show new vascular channels within 10 days. The fibroblastic cells in the thrombi are thought to be derived from endothelial cells. The similarities of organizing thrombi experimentally produced and naturally occurring in man are presented, and the role of this process as a factor in the etiology of atherosclerosis is pointed out by the author.

Harvey


Attention is directed exclusively to emboli to the lower extremities, since in the opinion of the author "emboli in the upper extremities do not often constitute a surgical problem." Of 97 emboli (in 72 patients) 7 were to the aortic bifurcation, 9 iliac, 38 common femoral, 27 superficial femoral, 14 popliteal, 2 tibial. In 84 per cent of the patients there was atrial fibrillation, and in 16 per cent recent myocardial infarction.

Multiple emboli, including visceral ones, were frequent. Venous thrombosis was a complication in the embolized limb. There may be a time lapse before development of pain, and the pain may be located appreciably distal to the point of impaction.

In the differential diagnosis one must consider acute thrombophlebitis with extreme reflex arterial spasm (phlegmasia coerulea dolens), arterial thrombosis, and dissecting aneurysm. Transmission of the thrust of each pulse through the clot to the fluid-filled vessel beyond may result in palpation of what seems like a normal pulse (Nordentoft’s sign). Arterial spasm with embolism may have been exaggerated. Collapse of vessels, distal to the occlusion, may be due to lowering of intraluminal pressure according to the implications of Burton’s "critical closing pressure."

Conservative treatment consists of maintenance of blood pressure, relief of pain by heavy sedation, and reflex relaxation of peripheral vasculature by heating the body. The limb should be kept horizontal at 25 C. Vasodilator drugs are ineffective.

The author advises embolectomy for embolus to the aortic bifurcation, following which heparin is not given, since he deems the risk of thrombosis less than of massive hematoma in the wound. Embolectomy is also recommended for femoral emboli but conservative measures are held most practical for lower emboli because of difficulties in making the necessary exposures.

McKusick


In recent years authors have frequently reported that pulmonary embolism is being underdiagnosed. These authors believe a high index of suspicion toward this complication is necessary. One should be especially aware of the frequency of pulmonary embolism as a complication of congestive heart failure. Apprehension, anxiety, and their concomitants should be considered "premonitory" symptoms of pulmonary embolism. These warnings, often confirmed by early electrocardiographic studies, should lead to the institution of appropriate, vigorous prophylactic treatment. Electrocardiograms should be obtained immediately and should be compared with control tracings, since they may be diagnostic or suggestive of pulmonary embolism when physical signs are absent. In the future, a higher incidence of successful removal of an obstructing embolus from the main pulmonary artery or its branches may be accomplished.

Bernstein


Prothrombin-time dilution curves were made with each of 4 widely used, commercial thromboplastin preparations, with prothrombin-free plasma as the diluent. The curves were quite similar, even though the 100 per cent plasma control times varied to some extent. The time of the more dilute mixtures could not be predicted from the time obtained on the whole plasma. Plasmas from Dicumarolized patients gave unpredictable results. Variations in time with one preparation bore no constant relationship with those of another; often the shortest times were obtained with the thromboplastin giving the longest control time. The various thromboplastin preparations for use on Dicumarolized plasmas could not be standardized by comparison with normal plasma diluted with barium sulfate-adsorbed plasma, because of differences between normal diluted plasmas and Dicumarolized plasmas.

In general, it was found that for therapeutic purposes, a 5 to 10 per cent prothrombin level is most satisfactory, and prothrombin times need not exceed 25 seconds, although bleeding has occurred at these levels.

Cortell


Referring to two personal observations, the authors discuss the problem of anticoagulant therapy in cases of pulmonary embolism complicated by massive hemoptysis. The first case, a 31 year old
patient with mitral stenosis, in whom anticoagulants were stopped subsequent to severe hemorrhage in the course of a pulmonary embolus, died from increasing heart failure. Autopsy revealed multiple pulmonary infarcts and severe hemorrhagic pulmonary edema. In another similar case, anticoagulant treatment was continued despite the occurrence of the hemorrhage, and this patient recovered.

Massive pulmonary bleeding in mitral disease subsequent to a pulmonary embolus appears to be attributed to pulmonary hypertension and development of abundant alveolar exudation rather than to the treatment with anticoagulants. Continuation of anticoagulants to prevent new emboli, together with all possible attempts to combat acute heart failure, is indicated in such difficult situations.

**PICK**

**VASCULAR DISEASE**


Arteriovenous aneurysm of the innominate vessels is a rare lesion. Two such cases have been found in the literature and a third is reported. The rarity of this lesion may be explained by the fact that a penetrating mediastinal injury, which might cause it, is usually fatal.

Three cases had the following features in common: (1) penetrating injury of the right upper chest resulting in internal hemorrhage, (2) latent period of 5 to 13 months between the original injury and recognition of an arteriovenous aneurysm, (3) a continuous murmur and thrill in the second right intercostal space, and (4) absence of the superior mediastinal syndrome, distinguishing this lesion from an arteriovenous aneurysm involving the aortic arch.

**BERNSTEIN**


Effects of intravenous administration of serum lipoproteins in the rat are reported. Serum with high cholesterol content was obtained from rabbits that were fed cholesterol and was injected intravenously into rats under a variety of conditions. Cholesterol values in the rat serum were obtained and the hearts and aortas of the rats were examined post mortem. An atheromatous-like change was found in the endocardium only, without any change in the aorta.

**HARRIS**


The authors describe in 2 cases a sign of dissecting aneurysm with external rupture: ecchymosis over the neck and upper thorax. The pulsating character of the pain was striking in 1 patient. One patient, aged 50, survived one year after external rupture and died finally of cerebral hemorrhage.

**MCKUSICK**


The authors report on a method for producing arteriopathy in rabbits. Two hundred and ten adult albino rabbits divided into 3 groups were studied. One group served as controls, another was given daily intravenous injections of cholesterol suspension containing 40 mg. of cholesterol per Kg. of body weight for 11 days, and the third was subjected to daily intravenous injections of epinephrine, 0.4 gamma per Kg. of body weight, and intradermal injections of thyroxine, 0.15 mg. per Kg. of body weight for 11 days. All animals were sacrificed and the aortas examined grossly and microscopically. In the control group, only 1 animal showed sclerotic plaques on the aorta, whereas 23 of 32 animals treated with the cholesterol suspension, showed gross lesions of atherosclerosis. Forty-three of 48 animals treated with thyroxine-epinephrine injections showed medial necrosis but little intimal change. In another 6 animals, given combined treatment, severe arteriopathy of both types was seen in all. The etiology and pathogenesis of the changes are discussed.

**HARVEY**


A case is reported in which erosion of an aneurysm of the aorta into the pulmonary artery, with production of a fistula between these 2 vessels, was proved by cardiac catheterization. The patient was alive and in a fair state of health 19 months after the episode occurred. The diagnosis and pathophysiology of this condition are discussed.

This is a case report of a 32-year-old woman with a loud systolic murmur maximal at the aortic area, and a diastolic rumble extending upward from this area; the blood pressure was 110/90 in the upper extremities, 135/85 in the legs. There were calcified aortic valve leaflets on roentgenography, and a markedly dilated aortic arch extending from the valve region to just beyond the left subclavian artery demonstrable on angiocardiography.

The authors attributed the diastolic murmur to eddies of flow in the greatly dilated aorta; obviously the murmur was not due to aortic insufficiency. Two mechanisms could explain poststenotic dilatation: congenital weakness of the aortic wall and increased lateral pressure secondary to the rapid velocity of the jet flow from the ventricle into the aorta.

Schwedel


The authors report on a case of coarctation of the aorta at the level of the diaphragm. The diagnosis was suggested by lower blood pressures in the lower extremities than in the upper, and confirmed by angiocardiography and aortography.

The authors present the important radiographic findings in cases previously reported, most of which were in the lower thoracic region, and others in the abdominal aorta. They suggest that in patients in whom the diagnosis is suspected on the basis of differential blood pressures, and who do not display evident collaterals in the upper thoracic region, atypical sites should be sought for by opacifying the descending aorta.

Schwedel


An objective test for measuring diminished walking capacity for patients with arterial occlusive disease is useful for clinical assessment of the disorder and for the evaluation of drug therapy. Such a test is provided by the use of a motorized treadmill and has the advantage of measuring the effort that elicits claudication sharply upon contraction of the muscles normally used in walking. The construction and method of use of the treadmill are reported, together with several case reports of its employment in the evaluation and treatment of patients with obliterative arterial processes.

Shuman

OTHER SUBJECTS


New Zealand rabbits were maintained for five months on diets supplemented with cholesterol dissolved in vegetable fat. These animals, and a control series, were then injected intravenously with native plasma phospholipids that were labeled with P32. The resulting atheromatous thoracic aortas were examined for phospholipids by extraction with alcohol-ether and petroleum ether. Deposition of plasma phospholipids could account for less than one tenth of that detected in the atheromatous thoracic aortas. This emphasizes the point that most of the phospholipid in experimental atheromatosis is synthesized locally in the tissue of the aorta.

Oppenheimer


Normal rats were maintained on a low-sodium diet. On a regimen like this, sodium in their aortas was reduced 12 per cent, and phosphorus was significantly elevated. In these animals, there was a very small increase in serum sodium. Water, magnesium, and potassium of aortas were unchanged when compared to those of a control group. Sodium restriction did not reduce blood pressure significantly. However, the author believes that the low-sodium content of aortas, after restriction of sodium in the diet, may be related to the tendency for blood pressure to be lower in such rats.

Oppenheimer


The incidence of organic heart disease in pregnancy is said to range in various clinics from 0.3 to 2.0 per cent and the average death rate in cases of heart disease in pregnancy is between 2 and 3 per cent. The authors cite the report of Adams that the cardiac output increases by approximately 30 per cent immediately after delivery and is maintained at this level for the first few days postpartum. This rise is said to result from the extra blood squeezed from the maternal sinuses as the uterus contracts, and the release of the pressure of the uterus upon the great veins of the pelvis and lower extremities. The authors liken the effects of normal uterine contractions during labor to repeated small autotransfusions. Since no such gradual preparation for obliteration of the placental circulation occurs with abdominal delivery, this may explain, in part, the greater mortality rate.
associated with cesarean section in patients with heart disease. The physiologic changes occurring in the circulation during pregnancy are reviewed, and it is pointed out that the greatest strain upon the cardiovascular system occurs at 28 weeks of gestation and immediately postpartum. Recent reports are reviewed concerning the evaluation of the cardiac status during pregnancy, the occurrence of congestive heart failure and subacute bacterial endocarditis. The onset of congestive heart failure should be suspected if the vital capacity becomes diminished at any period of the pregnancy, if the pulse rate rises above 110 per minute, or if the respiratory rate exceeds 24 per minute. Weight gain during pregnancy in these patients should be limited to 18 pounds, and a sudden increase in weight may denote impending congestive heart failure. If congestive heart failure occurs during pregnancy, it should be treated in the usual way. The authors state that there are no established harmful effects of mercurial diuretics on the fetus. Quinidine or procaine amide may be used when indicated, since these drugs are not oxytocic. The management of labor and delivery is reviewed. Oxytocic agents should not be given routinely during the second stage, lest the contractility of the uterus be increased and greater amounts of blood than usual be forced into the blood stream. A loss of a moderate amount of blood in the third stage may be helpful, but the authors caution against excessive blood loss.

It is said that valvuloplasty may be resorted to in mitral stenosis, but surgery should be avoided during pregnancy unless it seems to be a life-saving measure. After mitral-valve surgery, the patient may undertake future pregnancies with much less risk. In these patients, the cardiac status should be treated as if the patient were not pregnant and the obstetric problem as if she did not have heart disease.

Rosenbaum


This study was undertaken because of the consideration that the supplementary intake of iodine in vitamin-mineral preparations may interfere with diagnostic studies of radioiodine uptake. At least 16 vitamin-mineral formulas commonly sold without prescription contain iodine, perhaps sufficient to block radioiodine uptake. Eight apparently euthyroid patients were given 2 capsules of Gevral daily, a preparation containing 0.5 mg. of iodine per capsule. A scattered response was observed, said to be expected on the basis of iodine from food, differences in absorption from the bowel, and a considerable range of avidity of the normal thyroid for iodine. However, in some subjects there was a definite blocking effect during the period of intake of the drug, with a tendency to recover the pretreatment level when the drug was stopped. It is recommended that patients being considered for determination of radioiodine uptake be questioned regarding their ingestion of compound vitamin-mineral preparations, and it is concluded that such preparations may explain unexpectedly low values in any extended series of observations.

Rosenbaum


One of the most important characteristics of disseminated lupus erythematosus (L.E.) is its simulation of other diseases. The most common clinical findings consist of fever, involvement of the skin and serous surfaces, alopecia, renal and ocular signs, adenopathy, splenomegaly, leukopenia, elevated serum globulin and predominance in females. However, early manifestations of this disease may be obscure. In this series of cases, thrombocytopenic purpura, hemolytic anemia, the presence of a circulating anticoagulant, a false-positive serologic test for syphilis, Raynaud’s phenomenon, and intestinal perforation were seen either as the initial manifestation of the disease or during its course. The authors believe that a positive L.E. test (i.e., L.E. cells and rosettes) is diagnostic of disseminated lupus erythematosus. No false-positive L.E. tests were encountered. Negative L.E. preparations, however, do not rule out this disease, and it is often necessary to repeat the test. Disseminated lupus erythematosus may be present for long periods of time before a positive L.E. test is found, and the L.E. test is more frequently positive where there is an exacerbation of the disease. The authors subscribe to the theory that disseminated lupus erythematosus is due to hypersensitivity to an unknown agent.

Wendkos