ABSTRACTS

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MARTIN WENDKOS, M.D., Philadelphia

ATHEROSCLEROSIS


The relationship of cholesterol to vascular disease was investigated in the presence and absence of dietary choline. Dietary cholesterol leads to marked hyperlipemia (low-density lipoproteins and alpha lipoproteins) and hypercholesterolemia only in the presence of adequate choline. This indicates a close metabolic interdependence between both dietary elements.

AVIADO


Linoleic, oleic, palmitic, and stearic acids are the largest components of the sterol esters, phospholipids, and triglycerides. Most unsaturated acids were observed to be in the sterol esters while saturated acids were found mostly in triglycerides. Some of the fatty acids of phospholipides come partly from those of triglycerides. Transport of fatty acids in animals and man reside largely in the latter. After the use of acetate-1-C14, most radioactivity appeared in palmitic fractions. Linoleic acid was not associated with radioactivity and this means absence of endogenous formation.

OPPENHEIMER


A previous study had shown that canine aortic homografts were more susceptible than the recipient aorta to atherosclerosis induced by chronic hypercholesterolemia. In the present similar study woven Orlon or Nylon aortic grafts were found to be uniformly resistant to atherosclerosis which, however, did develop in the recipient aorta in 10 of 16 dogs made hypothyroid with radioiodine and then hypercholesterolemic by cholesterol feeding for periods up to 13.5 months. In 3 dogs the induction at the proximal suture line of atheromas large enough to occlude the aorta suggests the importance of trauma as a pathogenic factor.

ROGERS


Atherosclerosis is viewed as beginning with an inherited subintimal defect, which under the influence of a number of secondary factors such as hypercholesteremia, diabetes mellitus and hypertension, first becomes inflamed, then incorporates lipid and finally forms a scar; calcification may occur producing a pearly plaque. Either the lipid or the pearly plaque may lead to occlusive disease, but only the former type of plaque seems reversible. In the author's experience, therapy with a number of drugs including sitosterols has been found ineffective in lowering the serum cholesterol value of normal individuals or of those with familial hypercholesterolemia. Estrogen therapy to the point of feminization has improved alpha and beta lipoprotein relationships in a high percentage of survivors of myocardial infarction, but such treatment is yet experimental inasmuch as it has not been shown to affect either morbidity or mortality from the disease. Familial hyperlipemia can usually be controlled by the consumption of a fat-free break-
fast and lunch, with unlimited fat in the evening meal.

Rogers


Specimens of serum from "normal," lipemic, and atherosclerotic men and women were incubated at 37.5 °C for 24 to 72 hours. Twenty-three of the 28 sera from atherosclerotic persons, 12 of the 15 from lipemic patients, and 4 of the 37 from "normal" persons were obviously turbid at the end of 72 hours. When a negative result was observed, and in instances where it was possible, a second test was performed with a sample of blood collected at a later date; if the second specimen of serum developed turbidity, it was classified as positive. Seven atherosclerotic patients who were nonambulatory, 3 lipemic patients who were ambulatory, and 11 "normal" men and women, ambulatory and nonambulatory, were fed a breakfast that had a high content of fats and cholesterol. Only 2 of the 7 atherosclerotic patients manifested a decrease in the levels of total lipid in serum collected 31/2 hours after the meal, in contrast to such findings in the sera from 7 to 11 "normal" persons and all 3 of the lipemic patients. The effects of physical activity, and also the physiologic state of the persons, are regarded as possible explanations for the results observed in this study.

Wendkos


Starch electrophoresis revealed marked increases of cholesterol and phospholipid (in the alpha-2-lipoprotein fraction) of the serum from idiopathic hyperlipemia. Idiopathic hypercholesteremia showed an increase of these lipids in the beta-lipoprotein fraction. The cholesterol and phospholipid contents in the alpha-1-lipoprotein fractions were diminished in both metabolic errors. The consistent alpha-2-peak in idiopathic hyperlipemia suggested a causal relationship with the high concentration of serum triglyceride in this condition. Data in postprandial hyperlipemia showed that certain cholesterol and phospholipid molecules migrated with the mobility of the alpha-2-lipoprotein.

Aviado


Perfused aorta showed preservation of basic histologic architecture of the aortic wall up to 12 days and the characteristic reaction of the aortic tissues to biologic stains. The biosynthesis of cholesterol, phospholipid, and fatty acids was confirmed by the finding of sudanophilic granules in the inner layers of the aortic wall, but there was a lag period of 24 to 48 hours between the chemical and the morphologic appearance of lipid. The simplest explanation for the lag period would be the necessary time for the synthesized lipids to aggregate into particles, but it is probable that more subtle influences of hormonal or enzymic nature are concerned.

No structural change has been found in the perfused aorta that conforms to the classical description of atheroma in human beings. This fact is not at all surprising in view of the short period of the experiments, the species of animal used, and the absence of any lipophages in the perfusion system.

Aviado


There is clinical evidence indicating that hypertension accelerates the onset and accentuates the progress of atherosclerosis. Experimental proof is derived from dogs in which experimental renal hypertension accentuated the severity of thiouacil-cholesterol atherosclerosis. Sex of the animals had no significant effect on the incidence or severity of this experimental atherosclerosis, including coronary involvement.

Aviado


Israel's population is composed of immigrants from East and West. Not only is a higher atherosclerosis mortality rate found among immigrants from Western countries but also among Yemenites who immigrated over 20 years ago compared to those who arrived within the last 5 years. The nutritional status, serum cholesterol values, and incidence of atherosclerosis were investigated in recent and early Yemenite immigrants. Serum cholesterol and total lipid levels were significantly less in recent immigrants. The atherosclerosis mortality rate was 4 times higher in the early immigrants and in European Jews.

Kurland


The effect on serum cholesterol of diets containing various fats was studied in experiments on healthy subjects each of whom received about 150 Gm. of fat daily supplying about 40 per cent of the calories. Corn oil and safflower-seed oil had a markedly depressing effect on the serum cholesterol, rape-seed
oil a moderate effect, olive oil a slight effect, and
cocoanut fat no effect. Milk fat enhanced the chole-
terol level. Experiments suggested that the choles-
terol-depressing effect was related to the content of
unsaturated fatty acids. Nineteen patients with
essential hypercholesterolemia received pure corn
oil and artificial milk, cheese, and ice cream made
from it as well as a basic low-fat diet. Fourteen
were treated for more than a year. The serum choles-
terol fell within 2 weeks and in many patients it
remained low (7 to 40 per cent below control).
One patient was refractory.

KURLAND

Jones, R. J., Wissler, R. W., and Huffman, S.:  
Certain Dietary Effects on the Serum Cholesterol 
and Atherogenesis in the Rat. Arch. Path. 63:  
593 (June), 1957.

The role of various dietary ingredients in the
pathogenesis of coronary atheromatous lesions in
young albino rats was evaluated. A diet containing
casein as the protein source, and lard and per-
comorph oil as the fat source over a 1-year period
regularly resulted in coronary arterial atheromatous
lesions. The incidence of lesions did not depend upon
the presence of a high level of fat or cholesterol in
the diet. The lesions were not influenced by lowering
the level of protein or adding a supplement of a
hypercholesteremic agent; nor were they reversed
or prevented by alpha-tocopherol therapy, which
improves nutrition and corrects the hypercholes-
teremia. Methionine supplementation alone ex-
aggerated the hypercholesteremia and did not alter
the frequency of lesions. The hypercholesteremia
was reduced to control levels when both methionine
and alpha-tocopherol were included in the experi-
mental diet.

MAXWELL

Thomas, W. A., Konikov, N., O’Neal, R. M., and
Taik Lee, K.: Saturated Versus Unsaturated 
Fats in Experimental Arteriosclerosis. Arch.
Path. 63: 571 (June), 1957.

The influence of saturated (butter, oleomargarine)
and unsaturated (corn oil) dietary fats on thrombo-
embolic-induced pulmonary arteriosclerosis in New
Zealand white rabbits was compared with a control
group fed an isocaloric amount of sucrose and water.
Diets containing butter and oleomargarine markedly
increased the extent of pulmonary arteriosclerosis,
whereas similar quantities of corn oil had no such
effect. Although the data would seem to indicate
that the degree of saturation of the various fats
may influence the lesions, other factors, such as
essential fatty acid content, may be equally im-
portant.

MAXWELL

More, R. M., Movat, H. Z., and Haust, D. M.:  
Role of Mural Fibrin Thrombi of the Aorta in
63: 612 (June), 1957.

Two postmortem cases are presented, both show-
ing as incidental changes marked arteriosclerosis of
the aorta characterized by the presence of multiple
pearly white and white opaque plaques. Histologic
examination showed the opaque plaques to consist
of recent thrombus material, mostly fibrin. The
pearly white plaques resembled older thrombi in
various stages of organization, containing some areas
of unorganized fibrinoid material, other areas of
acid mucopolysaccharide-rich tissue with smooth
muscle, capillaries, collagen, and elastic fibers. The
authors believe that the microscopic changes seen
in the opaque and pearly white plaques represent
transitional stages in the organization of mural fibrin thrombi. The question as to whether fibrous
plaques developing from fibrin thrombi represent
an uncommon lesion or whether fibrin is one or
possibly the only factor in the genesis of typical
arteriosclerotic plaques is discussed but unanswered
at this time.

MAXWELL

Wilens, S. L.: The Comparative Vascularity of
Cutaneous Xanthomas and Atheromatous Plaques

Considerable histologic differences in the struc-
tural evolution of cutaneous xanthomas and arterial
atheromatous plaques justify the interpretation
that 2 totally unrelated processes are involved.
However, if it is assumed that the major difference
is in the initial vascularity of the 2 types of tissue
involved, most of the diverse features can be ex-
plained. The lack of an adequate capillary circula-
tion in the early stages of development of arterial
plaques would account for the frequency of central
necrosis, limited and peripherally located fibrosis,
delayed resorption or replacement of lipid, and the
high incidence of marked regressive changes. Ac-

HARRIS

Kaplan, S., Bossak, E. T., Wang, C. I., and Adlers-
berg, D.: Pregnancy Complicated by Idiopathic

The authors report 2 pregnant patients with disturbances of lipid metabolism in whom successful delivery was achieved. The first patient was 25 years old and exhibited the chemical findings of idiopathic hyperlipemia without any external stigmas. Her pregnancy was complicated by attacks of acute pancreatitis in the last trimester. The second patient was 33 years old and showed not only the chemical findings of familial idiopathic hypercholesteremia but also xanthelasma and xanthoma tendinosum lesions. Early in her pregnancy she exhibited subjective and objective findings of myocardial infarction. At delivery, the cholesterol level of the newborn infants' blood was 148 mg. per 100 ml. (normal, 70 mg. per 100 ml.). In both patients serum lipid levels were higher during pregnancy than in the postpartum period. Restriction of dietary fat caused a lowering of lipid levels only in the first patient. The authors call attention to the normal rise in lipid levels during pregnancy.

Enselberg

ELECTROCARDIOGRAPHY, VECTORCARDIOGRAPHY, BALLISTOCARDIOGRAPHY, AND OTHER GRAPHIC TECHNICS


This study concerned 34 children and 34 young persons and adults who had been hospitalized with various infectious diseases. Observations of the working capacity and exercise electrocardiograms were made at the time of discharge and 1 month later. The working capacity of children was essentially the same as that of normal controls at both examinations. The working capacity of adults was reduced below normal at both the first and second exercise tests and more in women than in men. This decrease in working capacity seemed to be correlated with a decrease in heart volume as determined by roentgenographic study. The exercise electrocardiographic observations showed few significant differences from normal controls. Observations made with the patient in the upright position at the time of discharge from the hospital showed an average increase in heart rate of 20 beats per minute, only slight decreases in blood pressure, and electrocardiographic changes consisting of the appearance of high, peaked P waves, depression of the S-T segments and flattened, isoelectric or negative T waves or both. Electrocardiographic changes were more common in adults than in children, appearing in about one half of the former. The working capacity of a small series of trained athletes (3 cases) was much higher than that of normal convalescents when correlated with the heart volume.

Rosenbaum


A vectorial interpretation is presented of 22 patients with the Wolff-Parkinson-White syndrome based on the assumption that limb leads and standard leads may be regarded as manifestations of single instantaneous vectors. It was found that the forces responsible for the delta wave pointed in the frontal plane invariably in the direction of the QRS axis and in the horizontal plane always forward. In 4 patients the delta vector was perpendicular to V1 with its positive portion projecting into the axis of V6 and its negative portion into the negative part of the V1 axis. The mean QRS vector pointed backwards in 7 patients and forward in 15. Left axis deviation was present in the frontal plane in 15 patients and in 11 there was a forward orientation of the mean QRS vectors. On the basis of this analysis the author concluded that the anomalous activation involved the posterior wall of the left ventricle or the ventricular septum and took place from the epicardium toward the endocardium. The usual left axis deviation in the frontal plane was determined, apart from the position of the heart and the relative weight of the 2 ventricles, by the localization and the extent of the ventricular muscle included in pre-excitation.

Pick


The authors present hemodynamic observations based on a study of electrokymograms recorded simultaneously with the electrocardiogram in 60 patients with congenital and acquired heart disease. The material is divided into 2 groups according to the presence or absence of right heart failure. The data refer to the duration of the cycle, and its subdivisions under various circumstances and to changes in the dynamics of the 2 ventricles in some types of heart disease. The most important conclusions were as follows. In the absence of right heart failure a statistically significant increased relationship exists between the right ventricular index and the isometric contraction. The isometric relaxation decreases as the ventricular output increases. Increase in pulmonary resistance (and mean pulmonary arterial pressure) leads to prolongation of the isometric contraction and to reduction of the ejection time of the right ventricle. In mitral stenosis isometric contraction of the right ventricle increases and isometric relaxation of both ventricles becomes shorter in proportion to the degree of stenosis; however, with development of right heart failure, isometric relaxation lengthens. In atrial septal...
defects both hilar shadows and pulmonary arterial branches show hyperpulsation in contrast to pulmonic stenosis with a large pulmonary artery in which only the pulmonary trunks pulse while the hilar shadows beat very slightly. Two peculiar pulsation patterns are described which characteristically may be found in aortic stenosis and in constricative pericarditis.

Pick


Atrial pressure curves were recorded via a balloon inserted into the esophagus in 11 normal patients, 16 patients with mitral stenosis, 11 with mitral insufficiency, and 4 with combined mitral lesions. In patients with sinus rhythm the tracing showed a constant pattern consisting of 3 upright waves, termed I, II, and III. In atrial fibrillation wave I was absent. In 8 patients the recordings were compared with direct left atrial pressure recordings obtained during surgery and a striking similarity between the 2 types of curves could be demonstrated. A statistical evaluation of the data obtained under the various circumstances revealed that neither the shape nor the amplitude of the different waves was of value in the differentiation of mitral stenosis and mitral insufficiency. However, the measurements of the distances between the waves appeared to be of some diagnostic importance in that in some patients with mitral insufficiency wave III reached its peak earlier in systole than in normal individuals and in patients with mitral stenosis.

Pick


The clinical use of an electronic stethoscope described by Taylor and Fothergill (Lancet 1: 1050, 1956) is reviewed. Aside from its use by deaf physicians, application to the fetal heart sounds and to auscultation of patients in a “cabinet respirator” was particularly noteworthy.

McKusick


Using an amplifying electronic stethoscope and a recorder the Korotkoff sounds record themselves on a direct-written record during deflation of a blood pressure cuff. Arrangement for automatic inflation of the cuff is in development.

McKusick

Sigal, A. M.: The Mechanism and Clinical Significance of the Electrocardiographic Syndrome Showing Shortening of P-Q Accompanied by


A patient with mitral stenosis showed this syndrome, accompanied by episodes of paroxysmal tachycardia at the rate of 200, with every second ventricular complex containing inverted P waves and S-T segments in leads II and III; death occurred in 1 of these episodes. The syndrome was explained by spasm of the branch of the posterior coronary artery that supplies the A-V node (causing accelerated conduction and nodal tachycardia) and the posterior left bundle branch (causing the anomaly of QRS).

Lepeschkin


In 15 dogs the electrocardiographic changes produced by temporary or permanent ligation of some of the branches of the coronary arteries were studied. Ligation of the posterior descending branch caused elevation of the S-T segment in lead III, which disappeared within 6 seconds after release of the ligature. Permanent ligation produced deep Q waves in leads II and III, which were especially pronounced in supplementary left dorsal leads. Ligation of the anterior septal artery led to depression of the S-T segment in aVF, and elevation in leads aVR and aVL, while additional ligation of the anterior descending artery caused elevation of the S-T segment and T wave in aVF. The syndrome of Wolff-Parkinson-White, which was observed to appear in several clinical cases of infarction, did not appear in experimental infarction.

Lepeschkin


In animal experiments it was found that only radioactive sodium (11Na) and phosphorus (32P) can be used harmlessly for circulatory studies. In 69 patients 1 ml. of a sodium chloride solution containing 25 μC. of radioactivity was injected into the right cubital vein and the radioactivity curve in different parts of the body was recorded automatically. In normal persons the delay in radioactivity at the aortic arch, compared to that at the right atrium, was less than 3 seconds; this delay corresponds to the circulation time through the lungs. In patients with impaired pulmonary circulation this interval was prolonged. The presence of pulmonary shunts is characterized by an early and gradual rise of radioactivity at the aortic arch; these shunts show considerable activity even at rest.
in the recumbent position, and in some cases result in a minimal pulmonary circulation time of only 0.5 to 1 second. The shunts may have the biological significance of preventing the oxidation of certain enzymes or hormones.

**ABSTRACTS**


Of 68 persons with foreign bodies that had remained 7 to 12 years in the heart, 37 had slight T-wave changes while 31 had normal electrocardiograms; many of these showed abnormalities after exercise. Among 12 similar patients who had the foreign bodies removed, only 1 showed a normal electrocardiogram. The T wave usually showed deep inversion in lead III although the foreign bodies had been removed from the anterior wall of the left ventricle in all patients. Abnormal Q waves did not appear, and this allowed differentiation from the pattern of myocardial infarction.

**Lepeschkin**


The calipers are X-shaped, and allow threefold to fourfold magnification of small values. The values can be read directly in millivolts or seconds, as 2 sliding scales allow accurate adjustment for the actual sensitivity or paper speed.

**Lepeschkin**


This is a report of a 51-year-old woman with rheumatic heart disease, mitral insufficiency, and left ventricular enlargement, who developed ventricular fibrillation in spite of medical management. This occurred while an electrocardiogram was being taken. As a matter of last resort the chest was opened rapidly and manual compression of the heart was started approximately 2½ minutes after the onset of fibrillation. Mouth to mouth breathing was used for 15 minutes, then the lungs were inflated with 100 per cent oxygen through a tight fitting face mask. The patient was taken to the operating room and defibrillation was carried out with application of a single electric shock done through the intact pericardium. In the meantime the heart beat was maintained by manual massage. Five weeks later the patient walked out of the hospital without brain damage and with a regular sinus rhythm.

**Kitchell**


The anatomic and experimental investigations on the coronary sinus rhythm are reviewed. It is pointed out that the very existence of a node of specialized myocardial tissue located in the coronary sulcus is denied by some authorities; and that the electrocardiographic characteristics of systoles originated in this area are not well defined. In experiments on 25 dogs isolated ectopic beats or the shifting of the pacemaker to the "node of the coronary sulcus" were obtained either by depressing the chronotropicism of the normal pacemaker or by stimulating the region of the coronary sulcus. Two types of electrocardiographic changes were described: if the stimulus originating in the coronary sulcus spread to the atrial myocardium by way of the sinoatrial node, the contour of the P wave was only slightly modified; if the stimulus propagated directly to the atrial musculature, the P wave was characteristically


Damage to the myocardium during pericardial paracentesis has occasionally been severe enough to result in pericardial tamponade and death. Animal experiments have shown that contact of the tip of the needle with the myocardium can be detected electrocardiographically if the needle is connected with the electrocardiograph in such a way as to constitute an exploring electrode with the machine set for the chest leads. Myocardial contact was indicated by elevation of the S-T or P-R segment, depending on whether ventricle or atrium was touched. This technic has been used by the authors in 40 patients requiring pericardial paracentesis. All were performed without complications. It is believed that the electrocardiogram is an additional safeguard in cases of pericardiocentesis, serving as an indication of the contact of the needle with the myocardium.

**Kitchell**


Cardiac arrest, ventricular fibrillation, and profound shock demand immediate diagnosis and treatment. The apparatus described is a portable battery-powered electronic device for monitoring the electric impulse of the heart. The amplifier is a multistage transistor circuit that feeds a milliammeter and a headphone. Under normal conditions, in cardiac arrest, shock or peripheral vascular collapse, and in ventricular fibrillation, the monitor gives a characteristic diagnostic response.
inverted in \( L_a \) and \( L_s \); the duration of the P-QR interval was normal or only slightly shortened; this finding differentiated this mechanism from the upper atrioventricular node rhythm. Observations were reported of electrocardiograms of 64 patients showing the typical pattern of "coronary sulcus" rhythm (53 patients) or extrasystoles (11 patients). The statistical incidence of this abnormality, its pathogenesis, and its pathologic or functional basis were presented; it was concluded that this finding per se had no definite prognostic implication.

Calabresi

Bugaro, L., Dalla Volta, S., and De Castro, B.: Considerations Regarding Right Branch Block Occurring in Cardiac Catheterization. Folia Cardiol. 15: 275 (June), 1956.

One observation of right bundle-branch block, persistent for about 4 hours, and 2 other cases of transitory prolongation of QRS during cardiac catheterization are reported. The mechanism of these changes is interpreted in the light of the theory of Segers of the peripheral origin of some of the abnormalities characteristic of intraventricular conduction defects.

Calabresi


The electrocardiograms of 100 normal dogs, in the standard and unipolar limb leads and in 6 precordial leads, have been examined. The results of the measurements of the intervals and of single deflections are reported and compared with similar, more limited, studies of others; statistical analysis of some variables is given. It is concluded that the range of variation of the normal deflections is very large; that a right axis deviation in the frontal plane is frequent; and that respiratory arrhythmia is common in the dog.

Calabresi


In rabbits of large size, ballistocardiograms could be obtained of the action of the heart. Similar tracings were made by the respiratory movements of the animals. The findings of respiratory ballistocardiographic like waves in the rabbit, which occasionally showed all the waves usually seen in the human ballistocardiogram, warranted a report on these findings. It may, therefore, be rather difficult to accept certain physiologic factors used for the explanation of the HIJK waves as satisfactory, in view of the fact that the same waves can be produced by the movement of the body, due to respiratory movements of the animal. These movements, of course, do not correspond to the movements of the blood stream, which are supposed to be the main factors producing the HIJK waves in the ballistocardiogram. The similarity between the respiratory ballistocardiographic-like tracings of the rabbit and the cardiac ballistocardiogram of man should make us cautious in the interpretation of each wave before further exact quantitative experimental investigation is done.

Bernstein


Unipolar electrocardiograms recorded from isolated rabbit hearts showed changes after strophanthoside similar to those reported in isolated frog and intact cat hearts. A shortening of electric systole was confirmed as the commonest effect. The S-T interval was progressively shortened until a fusion between the QRS complex and the T wave could be seen, reaching biphasism in a preterminal phase before the onset of fibrillation.

Avidano

Endocarditis, Myocarditis, and Pericarditis


Chronic constrictive pericarditis may at times be confused with decompensated cirrhosis of the liver. Sixteen patients with chronic constrictive pericarditis in whom hepatic disease was simulated were reviewed. Hepatomegaly and ascites were the most frequent clinical findings. In 15 patients measurement showed elevation of venous pressure in an antecubital vein. This finding suggested the need for thoracic fluoroscopy and electrocardiographic studies that led to the correct diagnosis. Tests of liver function with abnormalities resulting from hepatic congestion associated with chronic constrictive pericarditis may lend support to the diagnosis of primary disease of the liver. Normal concentrations of albumin in the serum in the presence of massive ascites should suggest that portal cirrhosis may not be the etiologic factor. The finding of ascites unassociated with peripheral edema and a relatively high value for protein in the ascitic fluid may also be helpful. Biopsy of the liver that discloses normal hepatic tissue in a patient with hepatomegaly and ascites should suggest the need for further definitive study to exclude the possibility of chronic constrictive pericarditis.

Simon

Hepper, N. G. G., Burchell, H. B., and Edwards, J. E.: Cardiac Clinics. CXLVI. Mitral Insufficiency in

A patient in whom mitral insufficiency caused by rupture of the chordae tendineae contributed to cardiac failure is presented. The lesions found on histologic examination were not unlike those seen in known cases of healed bacterial endocarditis. Before the chemotherapeutic and antibiotic era, spontaneous healing of subacute bacterial endocarditis was considered rare. It is logical to assume that with the widespread use of antibiotics in cases of febrile illness without diagnosis, the number of cases of unrecognized healed subacute bacterial endocarditis will be greater than in the period before the use of antibiotics. Healed bacterial endocarditis is a condition to be considered in the differential diagnosis of mitral insufficiency.

Simon


A series of 118 patients with endocarditis lenta were treated. The blood cultures were positive in 42 patients and negative in 76 patients. Rheumatic heart disease was present in 63 per cent of the cases, congenital heart disease in 8 per cent and in the remainder the etiology of the heart disease was uncertain. In 13 of these latter patients the serologic test for syphilis was positive. The causative organisms in the 42 cases in which cultures were positive were Streplococcus viridans (60 per cent), Streplococcus non-hemolyticus (7 per cent), Streplococcus faecalis (17 per cent), Staphylococcus aureus (10 per cent), Diplococcus pneumoniae (2 per cent), Gaffkya tetragena (2 per cent) and Salmonella enteritidis Dublin (2 per cent).

Of 18 patients who received sulfonamide treatment or no antibacterial therapy, all died within 6 months. Of 39 patients who received penicillin in a total dosage of less than 15 million units, only 20 per cent lived 6 months and only 10 per cent were alive after 12 months. There were 21 patients who received more than 15 million units of penicillin and 38 who received penicillin in combination with other antibiotics; over 66 per cent of these patients were alive after 6 months and death thereafter was usually due to cardiovascular causes other than the infection. The relatively low incidence of positive blood cultures in this series (36 per cent) is attributed to (a) taking blood cultures during or immediately after antibiotic treatment, (b) too few blood samples, (c) poor sampling technic, or (d) defective blood culture technic. The authors believe that a patient with suspected endocarditis lenta should not be left untreated even though the blood culture is negative.

Rosenbaum


A 63-year-old man with a previous history of duodenal ulcer and "sliding" diaphragmatic hernia was awakened from sleep with severe retrosternal pain and became deeply shocked. There was heard a peculiar precordial murmur that could not be separated from the heart beat. "One had the impression that liquid was rushing through a narrow opening, the sound being comparable to that of water passing through a narrow gorge." Death occurred 21 hours after the onset of pain. The autopsy findings are outlined in the title. The case is similar in some respects to that reported by Parkes (Trans. path. Soc. London 2: 40, 1849) of a 19-year-old sword swallower who some hours before death developed a "friction sound both diastolic and systolic . . . mixed with . . . a peculiar kind of metallic rhonchus carried up to the top of the sternum." "The diagnostic clue . . . was the peculiar murmur . . . the significance of which was not appreciated at the time. If it had been, the question of surgical intervention and pericardial toilet would have had to be considered."

McKUsick


Guinea pigs were infected with Coxiella burnetii, Bangui strain, by intraperitoneal inoculation; the animals were sacrificed 7 to 14 days after inoculation. In 3, out of 10, peculiar granulomatous pericardial foci were found; 4 animals showed pleural foci of inflammation. These lesions, which were described in some detail, were found in animals who also have typical splenic, pulmonary, and also myocardial changes. Other localizations in the skeletal muscles, especially in the diaphragm and in the intercostal muscles, were also illustrated.

Calabresi


A review of the literature is highly suggestive of the not infrequent occurrence of tuberculous pericarditis, first described 104 years ago. This remains a serious lesion, difficult to diagnose and often symptomatically dormant despite the presence of characteristic massive effusions. Therapeutic success is not yet assured, despite the hopeful preliminary results with chemotherapeutic agents. Certain factors continue to influence prognosis with or without treatment; these include mode of onset, age, and ease of bacteriologic proof of etiology. Two cases, fairly typical of the developmental possibilities of
the acute lesion, are presented and related to the ensuing discussion. An understanding of the altered dynamics and pathophysiology of pericarditis and cardiac tamponade is emphasized as a key factor in the clinical management of this disease.

BERNSTEIN

HYPERTENSION

Oyen, I. H.: Mechanism of Early and Chronic Experimental Renal Hypertension as Tested by CCK-179. Am. J. Physiol. 186: 161 (July), 1956. A combination of dihydrogenated ergot alkaloids is referred to as CCK-179. This agent lowers blood pressure slightly, produces a moderate decrease in glomerular filtration rate but a marked reduction in renal plasma flow in normal control dogs. With repeated use the renal effects become more pronounced. Goldblatt hypertensive dogs were observed to have a reduction in blood pressure toward normal when this drug was used. At first the renal effects were like those seen in control animals but with time became progressively less. The possible role of increased sympathetic activity in maintaining increased peripheral resistance during chronic experimental renal hypertension is stressed.

Oppenheimer

Litchfield, J. W., and Peart, W. S.: Phaeochromocytoma with Normal Excretion of Adrenaline and Noradrenaline. Lancet 2: 1283 (Dec. 22), 1956. A 39-year-old man gave a 6-year history of paroxysms typical of phaeochromocytoma. His resting blood pressure was normal but he was observed during numerous attacks when his blood pressure rose to 200/120 mm. Hg and characteristic accessory signs appeared. Histamine induced an attack. Pre-sacral retroperitoneal pneumography with tomography revealed a probable tumor in or near the left adrenal. The urine from 3 separate 24-hour periods during each of which an attack occurred was assayed biologically for epinephrine and norepinephrine. The values were always within normal limits. On 3 occasions urine was collected after an attack and the results compared with urine collected in periods of similar duration with attacks. Twice there was no increased excretion; once there was a mild increase associated with a diuresis. The effects of infusion of epinephrine-norepinephrine solutions in a 1:2 ratio were tested. An attack like the spontaneous ones occurred, the only difference being that there was bradycardia not tachycardia as in the attacks. This suggested normal sensitivity on the part of the patient and a larger proportion of epinephrine in the secretion of the tumor than in the infused mixture. At operation a tumor weighing 10 Gms. was found near the left adrenal gland. It contained epinephrine 10 mg. per Gm. of wet weight and norepinephrine 4.25 mg. per Gm. of wet weight. Postoperative assays of urine gave results essentially the same as preoperatively. These results indicate that the urine tests are not infallible. This is theoretically to be expected because only a small percentage of the total epinephrine and norepinephrine is excreted in the urine, and the normal excretion varies widely, making it possible to have a tenfold increase in excretion without exceeding the upper limit of normal.

McKusick

Wells, C. A.: The Surgery of Hypertension: A Five-year Follow-up. Scottish M. J. 1: 245 (Aug.), 1956. The results of thoracolumbar sympathectomy performed over 5 years previously in 102 patients with essential hypertension are reviewed. The results in this series from Liverpool were essentially identical to those reported by Smithwick in a series approximately 3 times as large. Benefit was particularly striking in the Keith-Wagener group IV.

McKusick

Bekaert, J.: Influence of Neurogenic Hypertension on Adrenal Cortical Function. Exper. Med. & Surg. 13: 304 (4), 1955. When neurogenic hypertension was produced in 4 dogs following bilateral extirpation of the carotid sinuses and section of the depressor nerves, a prolonged decrease of the blood eosinophils appeared. This decrease still occurred when the hypertension was produced in 5 animals which had been previously demedullated (operative removal of the adrenal medulla). This neurogenic hypertension was accompanied by a slight decrease in the concentration of plasma potassium; whereas, the plasma of sodium, remained almost unchanged. The onset of the neurogenic hypertension was followed by a definite but brief increase in the urinary excretion of corticoids.

Maxwell

Magakian, G. O., Miminoshvili, D. L., and Kokaia, G. J.: Experimental Studies on the Pathogenesis of Hypertension and Coronary Insufficiency. Klin. Med. 34: 30 (July), 1956. The average blood pressure of 300 monkeys was 115–135/65–85, mm. Hg. Six had transient and 14 stable hypertension, and 26 showed electrocardiographic signs of "coronary insufficiency." These disturbances were attributed to neurosis resulting from conflicts of captivity. Monkeys continually subjected to conflicting stimuli (e.g., food and pain) for many years developed hypertension, sometimes preceded by hypotension, extrasystoles and inverted T waves in leads I, II, and III. In some cases the T wave changes became normal after nitroglycerin. One monkey who died showed apical myocardial infarction with normal coronary arteries. In another monkey inversion of the T wave in leads II and III appeared only when it was falling asleep or waking up, but not in deep sleep or while it was awake.

Lepeschkin

In 100 hypertensive patients with clearly visible U waves, the Q-T interval, corrected for the heart rate, was prolonged in 26 per cent. The duration of U exceeded the upper normal limits of 0.20 second in 32 per cent, while the T-U interval exceeded the normal upper limit of 0.04 second in 18 per cent. The voltage of U was smaller than in normal in lead I, but greater in lead III, and in all precordial leads, especially in V4, where it exceeded the normal limit of 0.2 mm. in 31 per cent. The voltage of T, on the contrary, was smaller than normal in all precordial leads except V6. The magnitude of these changes was approximately proportional to the diastolic blood pressure. The mean axis of U in the frontal plane was 75°, corresponding to right axis deviation from the normal mean of 45°; the magnitude of this deviation, and also the angle between T and U, increased with the diastolic blood pressure. Most cases with deviation beyond the normal limit of 90° had marked enlargement of the heart and aorta, and in some of these the T axis was still within normal limits. The greatest voltage of U was in V4, which corresponds to slight right axis deviation in the horizontal plane; it was to the right of the T wave maximum in 55 per cent, and of the QRS transition zone in 72 per cent. The incidence of negative U waves in precordial leads, of right axis deviation of U in the frontal plane, and of cardiac and aortic enlargement, increased with the degree of right axis deviation of T in relation to QRS. In cases with S-T depression, the U wave voltage was greater. Negative U waves in precordial leads (especially V4) were present in 23 per cent of the cases; these cases showed a greater incidence of cardiac and aortic enlargement, but not of marked hypertension or signs of heart failure. The negative U wave was accompanied by a positive T wave in 76 per cent of the leads.

Lepeschkin


In a 32-year-old woman with neurofibromatosis the blood pressure rose to 300/170 during exacerbations of headache, averaging 240/120 outside of these; oxygen insufflation of the presacral region showed a pararenal tumor. Immediately after removal of the pheochromocytoma, the blood pressure fell to 115/75 and remained at this value permanently. The transient bilateral amaurosis which appeared after operation is attributed to reduction of cerebral circulation due to sudden reduction of blood pressure.

Lepeschkin


The authors studied 58 patients with hypertensive vascular disease who were treated with rauwolfia drugs. A normal blood pressure level was achieved in 53 per cent. Doses were initially small and were gradually increased until a fall in blood pressure or unpleasant symptoms occurred. Doses were reduced when troublesome side-effects appeared. Minor side-effects were observed in 48, and severe mental illness in 4 of the patients. Among the patients with moderate and severe hypertension (mean recumbent pressures greater than 136 mm. Hg) “definite” blood pressure responses were observed in 38 per cent and blood pressure levels fell to normal in 19 per cent. The addition of protoveratrine to therapy reduced blood pressure levels further in only 15 per cent of the patients and this drug was not considered of practical value when used alone. In 19 patients veratrum preparations caused further reductions of only 2–3 mm. Hg for recumbent and standing blood pressures, although the dose was large enough to cause alarming symptoms in 2. It is felt that dose of Rauwolfia drugs should be carefully regulated and patients receiving them should be closely watched.

Kitchell


In 50 cases of chronic cor pulmonale, 24 of chronic bronchopneumonia, and 14 of emphysema, the incidence of systemic arterial hypertension was 33 per cent while in 2,000 control cases (similar age groups), the incidence was only 13 per cent. The incidence of polycythemia, low arterial oxygen saturation, or high arterial carbon dioxide was not significantly higher in cases of cor pulmonale with hypertension than in those without it.

Lepeschkin


This study points out that falsely high blood pressure readings may be obtained in people with obese upper extremities. In markedly obese individuals the true arterial blood pressure may be more accurately determined by measuring blood pressure in the forearm rather than in the upper arm. In this method the standard cuff is placed on the forearm with its midpoint 13 cm. from the olecranon process and the blood pressure determined by either auscultation or palpitation of the radial artery. It is thought that tissue composition as well as the
arm circumference may contribute to the erroneously high blood pressures recorded in obese subjects.

KITECHELL


It was noted that piperoxan given to patients with hypertension due to functioning pheochromocytoma caused a decrease in urine flow. This suggested that with standardized hydration the effect of piperoxan on urine flow might be useful in diagnosing these tumors. Fasting recumbent patients were given 1 L of 0.25 per cent solution sodium chloride orally and the urine was collected for 3 or 4 successive 30-minute periods. The usual test dose of piperoxan was given intravenously after the second urine collection when its effect on blood pressure was also observed. In 3 normotensive patients and 32 patients with hypertension not due to pheochromocytoma, piperoxan had a diuretic effect in that the volume of the third urine sample exceeded that of the second. In 2 patients with pheochromocytoma, and in 7 normal subjects in whom the physiology of pheochromocytoma was simulated by infusions of levarterenol (with and without a mixture of epinephrine), diuretic response to piperoxan was not observed. Antidiuresis occurred in those receiving the mixture of the 2 pressor amines. In 2 patients with pheochromocytoma, the volume of the third sample after administration of piperoxan was substantially less than that of the second urine sample. The procedure is described as a confirmatory observation in the diagnosis of functioning pheochromocytoma.

KITECHELL


An experimental study was carried out in rats to determine whether nonspecific stress produced arterial hypertension and arterial changes through an abnormal secretory response in the adrenal cortex. The study was well controlled. Twenty-four female, unilaterally-nephrectomized rats were maintained on a laboratory diet plus 1 per cent sodium chloride drinking water. Twelve rats were used as controls, and in the remaining right-sided adrenalectomy and left-sided adrenal enucleations were performed. Blood pressure determinations were made. Serum electrolyte levels were determined at varied intervals. At 7 weeks and at 14 weeks some of the experimental animals were sacrificed. Studies were made of the organs with particular attention to the condition of the vessels. The adrenal glands regenerated and showed all 3 zones, but the zona glomerulosa was thin and composed of small cells containing lipids. Focal cortical necrosis was present in these regenerated glands. In the rat allowed 1 per cent saline drinking water, there was widespread arterial disease, in those animals with unilater adrenal ablation and contralateral adrenal enucleation. In the kidney, there were changes of glomerulonecrosis, proliferation of glomerular epithelial cells, hemorrhage, thickening of the tubular basement membrane, and dilatation of tubules. In the cerebral tissues, there were focal infarcts and neuronal degeneration with hemorrhages. The author feels that the study supports the hypothesis that altered adrenal cortical function is important in the pathogenesis of arterial disease and hypertension, and that the stimulus for adrenal cortical hyperactivity can be endogenous, rather than always a nonspecific exogenous stress.

Harvey


It is known that reflex regulation of the blood pressure is mediated through the action of baroreceptors located in the vascular wall of the sinoaortic areas. Experiments devised by the author revealed that arterial pressure does not act directly on the baroreceptors, but that the latter appear to be primarily sensitive to action tension of the arterial wall in which they are located. This tension depends on both the endovascular pressure and the biologic conditions of the vessel wall, that is the intramural tension and the resistance of the arterial wall to stretch. Increase of active tension of the arterial wall provokes, by apparently "resetting" the baroreceptor function to a lower pressure level, a marked reflex fall of arterial pressure. It is possible that a "shift" to a higher set of baroreception by a decrease of tension of the arterial wall could be the primary cause of arterial hypertension.

Pick


The author criticizes the method of producing arterial hypertension by means of renal vasoconstriction. In acute experiments, kidneys removed from normal as well as hypertensive dogs liberate a certain amount of renin as a result of manipulation or of surgical interference. There is thus far no evidence that the kidneys of hypertensive dogs left in situ release a pressure substance. Experiments are reported designed to clarify the problem. Blood of the vena cava was collected (50 ml.) by catheterization under local anesthesia from normal dogs with renal hypertension of variable duration and injected into a small artery of a bilaterally nephrectomized test dog. No vasoconstrictive or pressure action was recorded when blood was obtained from normal dogs or from animals that had been hypertensive for more than 35 days. On the other hand, vena cava
blood from dogs with hypertension from 3 to 31 days' duration had a local vasoconstrictive effect but failed to increase the blood pressure of the test animal. Furthermore, the blood pressure of dogs hypertensive for more than 70 days did not drop during the 3-day survival period following bilateral nephrectomy. No support was found in other experiments for the notion that renal hypertension might be due to increased reactivity to renin, epinephrine, ACTH, or DCA. The author concludes that the mechanism of experimental renal hypertension is still unexplained.

**Pick**


Prolonged, significant hypotensive effects were observed in at least 40 per cent of cases. Severe depression was observed and in 1 case suicide. Drowsiness and nasal stuffiness occurred in about half the cases. Diarrhea occurred in 4 of 54 patients. Interestingly, in 3 women, lactation was induced by the drug.

**McKusick**


Nine of a series of 44 hypertensive patients who came to necropsy after parenteral methonium or pentolinium therapy had dissecting aneurysms. Of the 44, 34 had malignant hypertension. Of the 34 dissecting aneurysm occurred in 6 (the other 3 patients had benign hypertension). Among 89 cases of malignant hypertension not treated with the drugs mentioned only 1 case of dissecting aneurysm occurred. Among 200 control cases of benign hypertension there were 6 with dissecting aneurysms. Therefore, use of the drugs was accompanied by an increase in the total incidence of dissecting aneurysm from 2 per cent (7/289) to 20 per cent (9/44).

Review of the literature appears to confirm the impression that dissecting aneurysm is ordinarily relatively rare in malignant hypertension. As the basis for the observed increase the authors suggest the following possibilities: prolongation of life permits time for development of this complication; fluctuation of blood pressure encourages the development of dissecting aneurysm; and these hypotensive agents have a specific biochemical effect on the aorta.

**McKusick**


Although eclampsia is now infrequently seen at the Boston Lying-In-Hospital, hypertension associated with pregnancy and nonconvulsive toxemia continues to be a problem in management. In the period from 1941 to 1944 in 1 hospital the incidence of hypertension in pregnancy was 87 per 1,000; the comparable figure for the period 1951 to 1954 was 47. Improvement in prenatal care and limitation of sodium intake are considered as plausible explanations for this. Twenty-one patients were observed in whom protoveratrine was helpful in reducing or controlling the hypertension associated with pregnancy, and it is believed that both the oral and intravenous use of this drug is an improvement over the time-honored use of veratrum.

**Kitchell**


Sixteen of 40 unselected hypertensive surgical patients on rauwolfia therapy showed significant hypotension and bradycardia during anesthesia. In some cases electrocardiographic tracings showed ischemic myocardial changes. The suggestion is made that patients on rauwolfia therapy who are to undergo elective surgery should not receive the drug for 2 weeks prior to planned operation. Emergency surgery on such patients may be safely carried out by using vagal-blocking drugs to prevent and treat vagal circulatory responses.

**PHARMACOLOGY**


Hydroxyproline constitutes about 13 per cent of collagen, and 1 to 2 per cent of elastin, but is present in no other protein of the body. It was felt that if there were a significant deviation from normal in collagen metabolism, such changes might be reflected by an increased level of excretion of this amino acid in urine. Patients with rheumatoid arthritis, collagen diseases, and normal controls were studied. It was found that ingestion of 4 Gm. of hydroxyproline and of proline did not increase the excretion of hydroxyproline. The excretion of this amino acid, however, did rise following gelatin ingestion. There was no significant difference in the excretion of the total hydroxyproline in normal individuals or in the patients under study. Children exercised as much as 3 to 4 times the amount excreted by adults. This does not appear to be related to the absence or presence of disease, and suggests that the excretion may reflect increased quantities of a circulating and metabolically active form of collagen in the younger age group.

**Waife**

In the dog, the right inferior cervical ganglion, including the middle cervical ganglion when present, appears to be the group most responsible for the control of norepinephrine in the heart. This is not entirely true in the sheep, for here both the right inferior cervical, and the right thoracic ganglia influence the norepinephrine content to the greatest extent. In both dog and sheep, removal of the cardiac sympathetic ganglia had no consistent effect upon the epinephrine content of the heart.

WAIFE


A reliable method for the estimation of epinephrine and norepinephrine in human plasma is of importance in a number of clinical situations. In this study the method of condensing epinephrine with ethylenediamine to form a fluorescent product was evaluated. The observations indicate that this method is capable of detecting amounts of epinephrine and norepinephrine of the order of 10⁻⁸ µg after the addition of these hormones to plasma. However, the method is not suitable for estimating norepinephrine concentration in plasma. The specificity of the method for norepinephrine in plasma elute is inadequate, while specificity for epinephrine is not established.

WAIFE


Aminometramide is a member of a group of 6-aminouracils that have been found to produce diuresis probably by inhibiting the reabsorption of sodium and chloride in the renal tubule. Because of the occurrence of frequent gastrointestinal side effects, the drug was administered in an enteric-coated form in an effort to obviate these effects. Patients receiving the drug included 8 with portal cirrhosis, 2 with nephrosis, and 18 with congestive heart failure previously treated with mercurial diuretics. The initial dosage was 4 200-mg. tablets daily, given with or after meals; increasing doses were administered as tolerated. Six of the cirrhotic patients exhibited significant diuresis. One nephrotic patient sustained a dramatic diuresis that may have been spontaneous rather than induced. Fourteen of the cardiac group lost edema or maintained dry weight during the study. A high incidence of gastrointestinal symptoms was encountered, including anorexia, nausea, vomiting, and constipation. It is stressed that these effects were part of the test situation and may not be encountered in the therapeutic programs. It is concluded that the drug is a safe and useful addition to the diuretic armamentarium.

SHUMAN


Therapeutic trials with Mictine were conducted in 16 patients with congestive heart failure or cirrhosis of the liver with edema. The majority of cases represented problems in edema management with little response to usual diuretic measures. The evaluation of results was based on a modified Kattus index. The drug was given in doses of 1.5 Gm. daily over a period of 3 days. The diuretic response was generally satisfactory as evidenced by an average daily fluid loss of 500 ml and an average daily weight loss of about 1 lb. The diuretic index revealed that the drug was found to give appreciable responses in 68.8 per cent of the cases. Side effects consisted of nausea and vomiting in 30 per cent of the cases; in 12 per cent it was necessary to stop the drug. Repeated courses of the drug or prolonged therapy increased the tendency to produce nausea and vomiting. The results indicate that Mictine possesses substantial diuretic properties but its use is limited by side reactions.

SHUMAN


The degree of digitalization was evaluated in 20 patients using the acetylstrophanthidin method described by Lown and Levine. Three cat units of the test agent were diluted in 10 or 20 ml of saline or dextrose in water and given intravenously at a rate of 1 ml per minute with a direct-writing electrocardiogram operating continuously during the procedure. After 5 ml the injection was interrupted for 5 minutes (or 3 minutes with second dilution) and then restarted if no changes were noted. If signs of digitalis toxicity developed with 1.5 cat units, the patient was considered to be overdigitalized before the test; if toxicity occurred after 3 cat units, the patient was considered adequately digitalized. Under-digitalization was present if an effect occurred after 3 or 4.5 units. The signs of digitalis intoxication included ventricular premature beats, bigeminy, prolongation of P-R interval, conversion of fibrillation to sinus rhythm and marked nausea or retching. The follow-up studies showed that the interpretation of the test was very reliable. There was 1 fatality associated with the procedure in this group. The fatal case developed ventricular tachycardia during
the test. The authors conclude that the acetylcholine test of digitalization is very accurate but quite hazardous. It is rarely needed but where indicated can give valuable and life-saving information.

**PHYSIOLOGY**


Survival and recovery were unaffected by noradrenaline infusion in unresponsive hemorrhagic shock. As the blood pressure rises after noradrenaline during shock coronary, cerebral and adrenal blood flows are increased. This was true whether or not replacement transfusion had been used. Blood flow in the kidney was reduced but that of the liver unchanged. The cardiac output was increased before transfusion but not after blood was replaced. Pressures in both atria and in the pulmonary artery were increased by noradrenaline, no matter when they were measured during hemorrhagic shock. However, the pulmonary vascular resistance was decreased.

**OPPENHEIMER**


Denervation of baroreceptors do not affect the height to which blood pressure rises after epinephrine. The duration of the hypertension is also unaffected. Denervation increased control levels and thus the height of the pressor response.

**OPPENHEIMER**


Premedication with dibenamine reduced the bleeding volume in dogs subjected to hemorrhagic shock. Dibenamine did not reverse intrahepatic constriction. Dibenamine dogs were less tolerant of blood loss than controls. After transfusion has become ineffective antiadrenergic or antihistaminic drugs do not reduce intrahepatic vasoconstriction nor increase survival time or rate. However, dibenamine premedication permits rats to survive a blood loss that was fatal to untreated controls.

**OPPENHEIMER**


After large transfusions, protein-containing plasma escapes rapidly from the circulation. When the transfusion is greater than 150 to 190 ml. per Kg. the plasma lost is in excess of that given. This would introduce an error into methods that determine blood volume based on a measurement of plasma volume. The authors express the opinion that apparent increases in hematocrit values with transfusions up to 149 ml. per Kg. are due to loss of dye from the vessels. Cells are not lost until very large transfusions produce bleeding.

**OPPENHEIMER**


Coronary blood flow is increased during hypoxia. This increase does not depend necessarily on intact cardiac sympathetics or the adrenal glands. It is concluded that local metabolic changes play a primary role in the determination of coronary flow.

**OPPENHEIMER**


Simultaneous measurements of left ventricular pressure and left ventricular circumference were used to produce loops on an oscilloscope. Such measurements in these experiments indicate that the external work of the heart is not necessarily related to its diastolic length. Contractility and distensibility are important parameters to be considered in cardiac adaptation.

**OPPENHEIMER**


The authors describe a technic which allows controlled cross-circulation for use on small animals such as the laboratory rat. Their apparatus include plastic nonwettable surfaces which could accurately measure and transfuse small volumes of blood from one animal to another. The rate of transfer was about 1 ml. per minute, and at this rate 20 transfers resulted in equilibrium between the 2 circulations. Volumes as large as 100 ml. were exchanged without detriment to either animal. This technic will probably be most useful in investigating certain hematologic and endocrine problems.

**ENSELBERG**

Borst, H. G., McGregor, M., Whittenberger, J. L., and Berglund, E.: Influence of Pulmonary Arterial and Left Atrial Pressures on Pulmonary Vas-

Elevation of either left atrial or pulmonary artery pressure in the perfused dog's lung resulted in lowered vascular resistance. At low pressure levels, small changes in either pressure had a marked influence on resistance; the influence was progressively less in the higher ranges. The passive mechanical effects of these pressure changes, working in the same or opposite directions, may greatly modify or even outweigh the primary effects of any drug or procedure on the lung vessels. Conclusions about changes in pulmonary resistance should therefore be made cautiously, unless the measurements are made at comparable distending pressures. When this cannot be achieved, only those resistance changes opposite in direction from those to be expected on mechanical grounds may be considered due to intrinsic tone change.

AVIADO


Cardiac function is influenced both by neural reflexes and by circulating hormones. Since the autonomic nerves to the heart exert their influence by releasing neurohormones and since the circulating hormones are released by nerve stimulation, these 2 mechanisms are frequently treated as 1. Spontaneous activity (e.g., feeding or exercise) produces effects that resemble the following responses to direct electric stimulation of sympathetic nerves to the heart of dog: tachycardia, more complete systolic ejection, and systemic hypertension. Increase in ventricular pressure following sympathetic stimulation could occur even during clamping of the aorta. These powerful sympathetic effects suggest very strongly that neural control plays an important role in the regulation of cardiac function.

AVIADO


Blood flow to the knee joint as measured by a bubble flow meter varied in 6 dogs from 1.5 to 7 ml. per minute. A rise in temperature in the joint caused an increase in blood flow and a fall in temperature a decrease in flow. Epinephrine administered intravenously caused a constriction of joint blood vessels. These results disagree with those obtained by others utilizing plethysmography and intra-arterial temperature measurements.

AVIADO


In lambs delivered by cesarean section the ductus arteriosus became constricted when the arterial oxygen saturation was raised by ventilating the lungs, and dilated when it was lowered by reducing the oxygen content of the inspired air. The constriction still occurred after destruction of the brain and spinal cord, and when the systemic and pulmonary arterial pressures were stabilized. Infusion of epinephrine and norepinephrine caused constriction of the ductus arteriosus. It was concluded that either a large increase in arterial oxygen tension or the release of sympathetic amines by asphyxia may cause constriction of the ductus at birth.

AVIADO


Blood-flow records from the frontal lobes of sheep, goats, cats, and rabbits (measured by internal caloriometry) showed no spontaneous variations in undisturbed, lightly anesthetized animals. Resting blood-flow levels were unaffected by ganglion-blocking agents, but were reduced by intra-arterial epinephrine. Intravenous epinephrine increased blood flow, partly through the mechanical effect of the raised blood pressure, and partly through a reflex vasodilator mechanism. The evidence suggested that, in response to falling blood pressure, a fall occurred in intracerebral vascular resistance, resulting in the maintenance of relatively constant blood flow in the frontal lobes with blood pressure levels higher than about 40 mm. Hg. When blood pressure dropped below 40, there was a decline in blood flow. The preservation of relatively constant blood flow, despite changing blood pressure, is unaffected by ganglion-blocking agents and is considered to be independent of external nervous control.

AVIADO

RENALE AND ELECTROLYTE EFFECTS ON THE CIRCULATION


Recent observations in man and dog indicate that alterations in sodium metabolism occur very early in heart disease, even before a significant change in resting venous pressure. At such a stage of cardiac incompetence there is usually a fall in renal plasma flow, and only occasionally a decrease in glomerular filtration rate. The findings in such patients are, in many respects, similar to those observed in normal individuals with imposed circulatory stress, and raise the interesting question of the possible role of pressure receptors in the reflex regulation of sodium balance. Even with minor degrees of cardiac incompetence, mild exercise further decreases the renal
ABSTRACTS


Electrolytes can be measured in extracellular fluid. In the intact man, ionic concentrations in other compartments are determined indirectly. One such assay makes use of the total exchangeable body content of electrolyte and water, a figure which may be indicative of changes occurring in the extracellular fluid as well as other body compartments. In this study, 27 miscellaneous patients served as a control for 50 patients with heart disease and edema plus 33 patients with heart disease who had previously been edematous.

Under the conditions of this study, edematous patients with heart disease have a higher ratio of body sodium to body water in their bodies than do edematous patients with hepatic or renal disease. In addition, the cardiac cases have less body water in relation to body weight than patients with hepatic or renal edema. This may indicate a probable loss of intracellular along with a simultaneous gain of extracellular water. An excess of body sodium over body water persists in patients with heart disease who have been rendered edema-free. In other words, patients with heart disease and edema, in contrast to patients with hepatic or renal edema, lose intracellular water as they gain extracellular water. Furthermore, they store excess sodium for a variable period of time after they are edema-free. Therefore, there


The widespread clinical use of the flame photometer has made it apparent that hyponatremia is apt to occur in almost any seriously ill patient. It would appear that 3 or possibly 4 primary mechanisms result in hyponatremia: sodium depletion, potassium depletion, water excess, or possibly intracellular hypo-osmolarity due to a change in the state of intracellular anions. Hyponatremia may supervene in the presence of a normal, a low or a high total body sodium. The strategy of therapy must take into account the level of body sodium, since the administration of saline to a patient with a high body sodium and heart disease may lead to disastrous results. Demonstrable edema is a reliable guide to the quantity of body sodium; for the presence of edema does signify an increased body sodium. Conversely, dehydration and hyponatremia occur in the sodium depleted state, and respond specifically to sodium replacement therapy.

Certain infections, particularly pulmonary and meningeal tuberculosis, induce an intrinsic renal defect characterized by urinary sodium loss and hyponatremia without dehydration. Depletion of body sodium in patients with congestive failure without renal disease is thought to occur rarely, even with low sodium diets and mercurial therapy. Hyponatremia with excess body sodium, however, is not unusual in these cases. As regards serum sodium concentration and total body potassium, loss of potassium (the principal intracellular cation) may result in intracellular hypo-osmolarity and be reflected in extracellular hyponatremia. Loss of body potassium invariably parallels the fall in serum sodium concentration in the instances of postoperative hyponatremia. Administration of potassium to these subjects will raise the serum sodium concentration in a variety of instances. Primary water retention without sodium retention, but with hyponatremia, has been noted in some postoperative patients, subjects with congestive heart failure under poor control, and in patients with cirrhosis of the liver. Where edema and hyponatremia are coexistent, retention of excessive water can be assumed to be a contributing factor. Water deprivation is often an important therapeutic approach to these patients, as well as to the postoperative hyponatremic subject.

A discussion of the pathways in the genesis of hyponatremia was presented, as well as therapeutic considerations in the management of patients with hyponatremia.

MAXWELL

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are different metabolic defects involving sodium and water in these 3 clinical conditions associated with edema formation.


The tissue distribution of the radioactive isotope of mercury, \( \text{Hg}^{203} \), which had been administered parenterally as labeled mercaptomerin sodium, was studied in critically ill patients. Tissue analyses were performed at autopsy ranging in time from 1 to 24 days after the administration. The results indicate that following the administration of 1 dose, the concentrations of mercury in various tissues within the first 48 hours after injection were as much as 10 times higher than those observed previously in normal rabbits. The highest renal concentration of mercury was found in a patient dying of acute myocardial infarction, who had minimal arterial nephrosclerosis. An anuric subject with little functional renal tissue remaining showed the lowest concentration. It would seem that the ability of the kidney to concentrate mercury depends at least partially on the quantity and quality of the functional tissue. Although most of the values ranged between 1.2 and 9.4 \( \mu \text{g} \) per Gm., the highest concentration was 70 \( \mu \text{g} \) per Gm. of wet tissue.


Normal subjects were put in a state of "physiological diabetes insipidus" by maintaining a sustained positive load of water resulting in maximal water diuresis associated with a minimal concentration of urinary solutes. Physiologic observations indicate that the magnitudes of the maximal urinary flow, water clearance, and minimal urinary osmolarity are directly correlated with the rate of solute excretion. The glomerular filtration rate per se, as measured by endogenous creatinine clearance, was directly correlated with the maximal urinary flow and inversely correlated with the minimal urinary osmolar concentration achieved during water diuresis. The results indicate that both glomerular filtration rate and solute load have important and statistically separable effects on the characteristics of water diuresis.

Aortic or iliac artery pressures and pulses recorded during angiocardiography, aortography, or arteriography were obtained in 28 patients. In angiocardiography a fall in mean blood pressure of 8 to 16 mm. Hg occurred between 10 and 20 seconds after the injection period, continued for 30 to 40 seconds, and returned to the original figures generally in 1 minute or shortly thereafter. A slighter but earlier fall in blood pressure occurred during aortography than in arteriography. Generally, as the blood pressure fell the heart rate increased; subsequently, the rate decreased as the pressures rose toward the original values. The authors ascribe the fall in pressure to the peripheral vasodilating effect of the contrast medium.


The authors stress the close anatomic relationship of the esophagus to the heart and aorta that permits important diagnostic observations concerning many cardiovascular lesions. Fluoroscopy and roentgenoscopic views should include posteroanterior, right and left anterior oblique, and right lateral views. They review the pressure defects and displacements resulting from the various congenital abnormalities of the heart and great vessels as well as those observed in rheumatic heart disease, syphilitic aortitis, atherosclerosis of the aorta, and dissecting aneurysms.


The diagnosis of pulmonary sequestration is always tentative until an exploratory thoracotomy confirms the preoperative impression. In the case reported in this article, retrograde aortography established an exact preoperative diagnosis by demonstration of the anomalous artery from the aorta, branching in the sequestrated lung. It suggested that a retrograde aortogram be made when this diagnosis is considered.

ABSTRACTS

WINEBURG, E. N.: The Hospital Visitor: A Study of Responses of Cardiac Patients to Visiting Hours. Cardiologia 29: 332 (No. 5), 1956.

Thirty-two patients hospitalized for organic or functional cardiac disorders were selected to study the influence of visitors upon the momentary state of the disease. Central and peripheral pulse rates, blood pressures, rates of respiration and temperatures were noted on visiting days and compared with corresponding data on control days. All these functions showed a small increase after visiting hours but only the blood pressure elevation was statistically significant. Women were more prone to such changes than men and the reaction of hypertensive patients was more marked than in other conditions. On direct questioning most patients expressed a desire for visiting time shorter than 1 1/2 hours. They felt poorer and more tired after the visit but all were happy to have visitors. Encouraging remarks from the visitors appeared to be beneficial to the patient.

PICK


The author has reviewed his experiences with the diagnosis and treatment of 163 cases of systemic lupus erythematosus over a 6-year period at the Los Angeles County General Hospital. The apparently increasing incidence of this disease is a function of the increased sensitivity and more frequent usage of the L.E. cell test and the broader concept of systemic lupus erythematosus, which is a chronic disease resembling rheumatoid arthritis. Simultaneous L.E. cell studies were performed on 44 patients with systemic lupus erythematosus by 4 different methods, utilizing 2 concentrations of heparin as an anticoagulant, a clotted method, and the recent Snapper technic. In 10 cases the clotted method was the only positive test; in 4 the ring technic was the only positive test, and in 2 cases the heparinized specimen was the only positive one. With increasing amounts of heparin fewer L.E. cells were found. It is advisable that at least 3 different types of L.E. cell tests be performed to screen a suspected case adequately. Despite these refinements, L.E. cells are not found in all patients with the disease.

A study of the natural history of a large series of cases gives us the best concept of the course of the illness. Of this series, 38.6 per cent have had spontaneous remissions prior to any special therapy. Certainly many of the treated patients would have had remissions without therapy. Six per cent of the series had at least 2 remissions, and 16 per cent 3 or more. This makes evaluation of therapy difficult. Antimalarial drugs have a definite place in the treatment of systemic lupus erythematosus, particularly in the milder cases. Their effect on the cutaneous lesions is almost specific. The arthritis is also greatly benefited. Their synergistic use with steroids often reduces the steroid dose and may permit one to stop steroid treatment entirely. Eighty per cent of the milder cases are benefited by antimalarials alone. Steroid therapy is still the mainstay of treatment in the acutely ill patient, and benefits 90 per cent of the patients so treated. Nitrogen mustard has been shown to ameliorate the nephropathy of systemic lupus erythematosus, particularly in the more edematous patients. The lives of these patients are prolonged by this form of therapy. The median duration of life of 59 untreated or inadequately treated patients at this hospital was 24 months. In the present series of 138 adequately treated patients ill for 24 months or more, less than 10 per cent have died. This difference is significant.

WENDKOS


Seventy-nine patients with a variety of circulatory defects were treated with intravenous and intramuscular trypsin and with chymotrypsin. The authors state that although thrombi were not dissolved with these drugs, subsidence of the inflammatory process was accelerated.

WESSLER


The production of experimental cerebral infarction in dogs by injection of vinyl acetate into the isolated internal carotid artery in the neck under aseptic surgical technic invariably leads to marked increase in the activity of glutamic oxaloacetic transaminase in the cerebrospinal fluid, which reaches a peak within 100 hours after infarction. Thereafter the increase in transaminase activity in the cerebrospinal fluid gradually decreases but still remains above preinfarction level 15 days after infarction. The augmentation of transaminase activity in the cerebrospinal fluid is proportional to the severity and extent of cerebral infarction. Usually the transaminase activity in the serum also increases, but the increase is not as marked as in the cerebrospinal fluid, does not always occur, is not proportional to the severity and extent of the infarct, and does not appear as soon as it does in the cerebrospinal fluid after infarction. The determination of transaminase activity in the cerebrospinal fluid may serve as a good test for the diagnosis of cerebral tissue damage.

SIMON

Because of the tremendous advances occurring in the field of cardiovascular surgery, the diagnosis of dissecting aneurysm of the aorta while the patient is still living is quite important, as it is reasonable to expect many of these cases may be amenable to surgical correction. In this series of 86 patients found at autopsy to have this condition, 34 were correctly diagnosed ante mortem. Remarkably enough, pain, which was excruciating in some patients, was absent in 42 of the 86. The symptom complex resulting from dissecting aneurysm of the aorta may be described as cardiovascular, pulmonary, abdominal, renal or neurologic, depending on the dominant group of symptoms and signs. Dyspnea and neurologic disturbances are important diagnostically. A diastolic aortic bruit, bizarre neurologic signs, and hemothorax on the left were valuable diagnostic signs. It is interesting to note that 1 case in this series occurred between the ages of 20 and 29 although the majority of cases occurred between the ages of 50 and 69, and 67 per cent of the cases were noted in men.

Kitchell


Azapetine is one of a group of adrenergic drugs that unmask a latent dilator response to circulating epinephrine in skeletal muscle and skin, converting a constrictor response to one of vasodilatation. During 18 months 52 patients with diagnosed peripheral arterial disease have been treated with this new drug. In addition, 10 of these patients were given azapetine intravenously as a therapeutic trial prior to oral administration of the drug. Sixty-two evaluations, therefore, were made among 52 patients. Of 18 patients receiving 75 mg. of azapetine daily, in divided doses, 5 were classified as showing poor results, 2 fair, and the remaining 11 patients (61 per cent) showed a good response. In the group of 31 patients receiving 100 mg. daily only 5 patients responded poorly; these 5 were made up of one case of Raynaud's Disease with far advanced scleroderma, and the remaining advanced arteriosclerotic obliterator disease. In group 3, 9 patients were given a diagnostic trial of intravenously administered azapetine. Of the 9, only 3 patients presented no beneficial change in amplitude of oscilometric recordings (one of these later responded to azapetine orally). In group 4, all of whom were in acute distress from vasospastic disease or acute occlusive disease with associated vasospasm, azapetine was given therapeutically intravenously to 4 patients. Two cases of peripheral emboli were treated with good results. Remarkably good results were obtained in a patient who suffered from phlebgasia cerulea dolens and who suffered a pulmonary embolus for which she was admitted to the hospital. One patient died 45 minutes after intravenous administration of azapetine. It was impossible to show any direct possible harmful effect of azapetine in this case, but it is reported for further evaluation when more clinical data become available. Azapetine appears to be a very potent vasodilator with a high degree of effectiveness in purely vasospastic peripheral circulation disorders. It is also a useful adjunct in the treatment of a basospastic element in arteriosclerotic obliterative disease. The pattern of response to azapetine administered orally or intravenously correlated closely with the clinical response following sympathectomy in the same group of patients.

Kitchell


The authors describe and picture telangiectases of the bulbar conjunctiva and tortuosities with varicosity of the retinal veins. They suggest that slit-lamp examination of the conjunctival vessels may be helpful diagnostically in suspected Rendu-Osler-Weber syndrome.

McKusick


Gangrene of the limbs resulting from venous occlusion without arterial obstruction is extremely rare. The case reported in this communication represents the thirty first instance of this condition. She was a housewife, age 42 years, who was admitted to St. James's Hospital in Leeds, England, on December 6, 1953, in status asthmaticus of 36 hours' duration. She gave a history of recurrent attacks of bronchial asthma for 15 years. She had no other complaints, and gave no history of serious illness in the past. Nine days after admission, she complained of pain in the right calf, which was swollen and tender. Her temperature rose to 100.2 F. Thrombophlebitis was diagnosed, and treatment with an anticoagulant (Tromexan) and penicillin was started. Two days later the swelling had increased, and marked pitting edema was present up to the midthigh and down over the dorsum of the right foot. The left calf was now also tender, and edema was present below the knee. Both legs and feet were warm and no color changes were visible. The femoral and popliteal pulses were present and equal, but pulsation of the dorsalis pedis arteries was not detected, probably because the edema obscured it. Twenty-three days after admission considerable improvement had resulted. Anticoagulant therapy was stopped 2 days later. Twenty-
ABSTRACTS

WENDKOS


Intraarterial trypsin combined with procaine and Benadryl was used in the management of 7 patients with acute venous thrombosis, and in 8 patients with evidence of chronic venous insufficiency. The author believes that in acute venous thrombosis pain and edema subsided quickly and that the duration of the illness was shortened. Among the patients with chronic venous insufficiency, there was little improvement in edema, moderate improvement in secondary skin changes and marked improvement in the healing of ulcers. In 1 patient with acute venous thrombosis and an allergic background, an anaphylactic-like reaction required the cessation of therapy.

WESSLER


The authors state that in classical periarteritis nodosa the lungs are involved in about one fourth of the cases. Hilir enlargement, nodulation, perivascular and parenchymal infiltrations, often extending bilaterally from the hilus giving a boat wing appearance are frequently noted. Cardiac enlargement combined with lung changes often simulates pulmonary congestions, uremia, or allergy.

Wegener's granulomatosis considered by some to be a respiratory-renal subtype of periarteritis, is characterized by necrotizing granulomatous lesions in the lung or bronchial tree, generalized necrotizing vasculitis, and focal glomerulonephritis. The pulmonary lesions are usually circumscribed and often undergo cavitation.

Three cases are reported, 1 with vascular lesions in the dura, lungs, and spleen, plus subacute and chronic glomerulonephritis and interstitial myocarditis; another with a solitary circumscribed pulmonary lesion removed at surgery, attributed to vasculitis; a third unproved case with a receding
pulmonary density in a man clinically suspected to have periarteritis.

**Schwedel**


In the presence of arteriosclerosis the carotid pulse is characterized by a rectilinear diastolic descent, the femoral pulse by a longer ascent to the apex, the disappearance of the dicrotic wave and the appearance of an incisura. The same changes could be reproduced in dogs by the insertion of a stiff plastic tube into the aorta, and are therefore attributed to decreased elasticity of the aorta. The pulse velocity in the abdominal aorta is usually increased in arteriosclerosis if no obstruction develops, while the velocity in the extremities is usually decreased.

**Lepeschkin**


A 29-year-old woman who complained of paresthesias in the hands and marked orthostatic dizziness showed absence of pulsation in the arteries of both arms, reduced pulsation of the left carotid and the ocular fundus arteries, but increased pulsation in the leg arteries, where the systolic pressure reached 280 mm. The hypertension was attributed to partial obliteration of the carotid sinus. Of the 24 cases of this “pulseless disease” reported in the literature, 22 were women and less than 45 years old. The designation “epiaortic arteritis” is proposed for the syndrome.

**Lepeschkin**


The blood viscosity of 26 patients with Raynaud’s phenomenon was measured over a temperature range of 5 to 40 C. Comparison of the results with those obtained in a control group revealed no abnormalities in the patients with 1 exception. The latter was a patient with chronic lymphatic leukemia whose blood formed a solid mass when cooled below 26 C. Based on these findings the authors conclude that reversible cold embolism caused by cold hemagglutination or cryoglobulins is a rare causal factor in the mechanism of Raynaud’s phenomenon. The measurement of the viscosity of blood in vitro at low temperature is a simple procedure that will detect both types of cold embolism. This test should be included in the examination of patients with this disorder.

**Shuman**


Eleven patients with arterial occlusion in a lower limb were studied plethysmographically before and after replacement of the occluded segment by arterial homograft. The degree of arterial occlusion was best indicated by measurement of the reactive hyperemia blood flow in the foot or calf, and by a reduced arterial cuff occlusion pressure. Maximum resting blood flow was a poor index of the grade of arterial insufficiency, and even gave paradoxic results. The simplest test was the cuff occlusion pressure that served as a reliable index of arterial occlusion.

Postoperative tests indicated at least some success in restoring adequate blood flow. In some cases there was actually an increase in flow through the calf, which subsided in a few weeks. Late follow-ups showed maintenance of adequate blood flow in 3 cases, improvement in 2, and redevelopment of occlusion in the remaining 6.

**Enselberg**