ABSTRACTS

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BLOOD COAGULATION


Mephyton is not as free of toxicity as has been thought. A severe hemolytic reaction following its intravenous administration has been observed. There is evidence that Mephyton is usually as effective orally as it is intravenously, and it is suggested that the use of the oral route may avoid an occasional toxic reaction of the type here described.

Bernstein

CONGENITAL ANOMALIES


The hemoglobin content of the blood was determined in 350 unselected individuals with congenital heart disease, 166 acyanotic and 184 cyanotic. These ages ranged from 2 to 60 years. Like the normal, the hemoglobin level rises until adulthood but the curve is set at a level lower than normal in the acyanotic and higher in the cyanotic group. For this reason, up to age 20, 85 per cent of the cyanotic group can be recognized solely by the hemoglobin level. Beyond this age, the 2 hemoglobin curves merge, perhaps because the more severely cyanotic subjects have died.

Soloff


The authors described a case of an anatomically atypical patent ductus arteriosus in a boy, 7 years of age. At operation a broad-window type of patent ductus arteriosus was found, entering the transverse arch of the aorta proximal to the left subclavian artery. This was unassociated with any other gross congenital cardiac or aortic abnormality.

The proximal portion of the main pulmonary trunk was greatly enlarged and dwarfed the juxtaposed aorta. The fistula measured 1.3 cm. in width. With curved ductus clamps of the Potts type, the communication was divided and the rents in the wall of the aorta and pulmonary artery were closed with continuous sutures. The patient’s postoperative course was uneventful, except for a sinus tachycardia that subsided after digitalization.

Abramson


In this case the length of the stenosis was 6 cm., and the elasticity of the aorta was poor, so that it could not be mobilized sufficiently for an end-to-end anastomosis. The patient is in perfect health 10 months after the operation and has a normal pulse pressure in the legs.

Lepeschkin

The question of the optimum age in which to correct surgically coarctation of the aorta is discussed by the authors. Some infants within the first year of life have been subjected to operation because cardiac failure had developed. The results of surgery in these patients are not good. The authors present the findings in 9 infants who had uncomplicated coarctation clinically and who, in the first year of life, presented signs of congestive heart failure. These infants were treated by medical means with digitalis, diuretics, chemotherapy for intercurrent infection, and a sodium-free formula. The cardiac failure was well controlled and the infants survived and have developed fairly well with the slowness natural in any infant with coarctation. The authors believe that such infants with coarctation can be treated medically and surgery can be delayed until later in life when survival rate is much more favorable.

**Harvey**


The diagnosis of stenosis of the main or smaller branches of the pulmonary artery as a cause of pulmonary hypertension was demonstrated in 4 patients by the use of selective angiocardiography. Poststenotic dilatation was almost invariably present. One of these 4 patients had an atrial septal defect in addition to the multiple peripheral pulmonary arterial stenosis. Three of the 4 had associated systolic murmurs, 2 with maximal intensity over the pulmonic area; 1 had a continuous murmur simulating patent ductus arteriosus. The cause of the stenosis was believed to be due to aplasia of the vascular supply of the lung. Often the circulation was supplied by marked arteries. Although rare, it is an additional cause of pulmonary hypertension.

**Schwedel**


A histologic study was made of lung biopsies done at operation for closure of patent ductus arteriosus in 12 individuals varying in age from 6 years to 58 years of age. Pulmonary vein pressures were measured at catheterization prior to operation in 9 individuals. Five individuals had normal pressures, 2 moderately elevated, and 2 severely elevated (70 mm. Hg mean pressure). The patients with normal pulmonary pressures showed histologically perfectly normal pulmonary arteries, arterioles, and veins. The patients with severe pulmonary hypertension had medial necrosis and atheroma in elastic arteries, medial hypertrophy and occlusion of lumen of the muscular pulmonary arteries, and in the arterioles there was hypertrophy of the media and intimal proliferation. The authors believe that media in the pulmonary arterioles is a congenital abnormality, which is not solely responsible for the increased vascular resistance. Changes in the intima and lumina of the vessels are irreversible and lead to persistent pulmonary hypertension.

**Harvey**


An excellent histologic study of the blood vessels in the lung of an individual with a patent ductus arteriosus, pulmonary hypertension, and reversal of flow is presented. The author has reconstructed graphically the arterioles by plotting graph diagrams of serial sections (10 micron separation) of several blocks of tissues.

The arterioles show occlusion of the lumina in many areas by fibrous tissue. Immediately before the occlusion there arise thin walled vessels clearly demonstrated to be arterial anastomotic channels. Heretofore, these thin walled vessels have been thought to be abnormal arteriovenous anastomoses of congenital origin. The same type of study was done in blocks of tissue from the lungs of a patient with pulmonary bilarciasis and the histological findings were identical.

**Harvey**


One hundred and seventy-four patients with diabetes and heart disease are reviewed with emphasis on the problems that may arise in diabetic patients with angina, myocardial infarction, and congestive failure. In most of the patients, the coexistence of the 2 diseases did not complicate the treatment of either. In a small group of patients (13 per cent), including 10 with myocardial infarction and 5 with congestive failure, the breakdown of diabetic control was severe and posed major therapeutic problems. None of the 40 deaths in the series was attributable to diabetic coma or complicating electrolyte imbalance.

**Rinzler**


Serum aminopherase levels on 68 blood samples from 11 normal subjects and 22 patients not suspected of having acute myocardial damage or liver disease averaged 20.5 units with a range of 11 to
42 units. Elevation of levels occurred in 13 of 14 patients with proved myocardial infarction. One patient who died 3½ hours after onset of infarction had a normal serum aminopherase. Usually after myocardial infarction the serum aminopherase level begins to rise after a delay of 6 to 12 hours with a peak in 24 to 36 hours. There is a decline to normal by the fifth or sixth day. Patients with coronary insufficiency (even with marked ST-T electrocardiographic changes) did not have elevations of serum aminopherase levels. Patients with liver disease have serum aminopherase level elevations but there is a prolonged time-concentration curve in liver disease.

Kitchell


An electrocardiographic study was made at the Groote Schuur Hospital in Cape Town where the very large clientele is divided among Europeans, “Cape Coloured,” and Bantu in the ratio of 2:2:1, respectively. In 1953 and 1954, 5,004 electrocardiograms were taken on adults in response to routine clinical request. Of these, 550 showed evidence of myocardial infarction. Furthermore, of the “infarct records,” 448 were from Europeans, 100 from “Coloured,” and only 2 from Bantu. More electrocardiograms were taken in Europeans than in nonEuropeans. However, 13.54 per cent of European electrocardiograms showed infarction, whereas the corresponding figures were 6.8 and 0.9 for “Coloured” and Bantu.

McKusick


This study is a continuation of others by Keys and co-workers who in several different populations have demonstrated a relationship between the death rate from coronary heart disease, the mean serum cholesterol level and the proportion of calories derived from total dietary fat. In South Africa, there are 3 groups—Europeans, “Cape Coloured,” and Bantu—each of which adheres to its traditional customs, particularly as regards diet. The authors quote a diet survey that concluded that fat constituted 35 per cent, 25 per cent, and 17 per cent, respectively, of the total calories of the diet of these 3 groups. Study of total serum cholesterol and of cholesterol in the β-lipoprotein fraction of serum revealed a parallel series of values. Statistics were quoted which indicate that death ascribed to coronary artery disease is about twice as frequent among the Europeans as among the “Cape Coloured” whereas in the Bantu it is “exceedingly rare.”

McKusick


The authors reviewed 888 consecutive cases of myocardial infarction admitted to the Beth Israel Hospital from 1947 through 1953. The effect of diabetes, hypertension, family history, occupation, etc. on the etiology of myocardial infarction was studied. Symptomatology, physical signs, and laboratory data are reviewed in relation to the infarction. The value of Dicumarol was carefully studied and it was found that the results with the anticoagulants were no better than without them. The significance of this finding is discussed. The deaths in this series were carefully reviewed and the autopsy findings studied and reported. The authors carefully compared their results with those of previous studies and point out the points of similarity and divergence with possible explanations for the differences.

Bernstein
pressure and a rise in diastolic pressure in the ventricle, thus interfering with heart performance.

RINZLER


Single complexes of the Wolff-Parkinson-White configuration could be obtained by direct mechanical stimulation of the ventricular surface. They also appeared during application of direct currents (75 volts, 0.25-1 milliamperes) to the surface of the right ventricle and septum, but not to the left ventricle. Isolated ventricular extrasystoles occurred in both cases.

LEPESCHKIN


In 30 normal persons the end of systolic ejection (first large vibrations of the second heart sound) appeared on the average 0.02 sec. after the end of T (0.04 before to 0.05 after), at the beginning of U and 0.05 sec. (0.04 to 0.13 sec.) before the apex of U. In 100 patients with heart disease it appeared up to 0.10 sec. before or after the end of T, but its relation to the beginning of U was much more constant (0.06 sec. before to 0.02 after, with an average of 0.015 before). It appeared 0.03 to 0.16 (on the average 0.09) sec. before the apex of U. The greatest delay of U with respect to the end of systole was observed in heart disease involving the left ventricle. In 6 cases of mitral stenosis this delay decreased after commissurotomy. In cases showing a split second sound the beginning of U coincided with the first, aortic component. U coincided with the period of rapid filling in the esophageal rheocardiogram and with the protodiastolic negativity of intraventricular pressure curves. The third heart sound appeared 0.01 to 0.12 (on the average 0.05) sec. after the apex of U and about 0.05 sec. before the end of U. In hypocalcemia U is often superimposed on T but its extrapolated beginning coincides with the second heart sound as in normals. When Q-T is shortened, the T-U interval is always prolonged and U begins with the second heart sound. In extrasystoles the second heart sound and the U wave both appear earlier with respect to the T wave, causing superposition of U on T.

LEPESCHKIN


Negative U waves in one or more routine leads (except III, aVR and aVL) were found in 2.3 per cent of 4,500 consecutive electrocardiograms. In these 200 cases variations in the duration of the T-U segment were much greater than in normal subjects, and the average values were greater. In cases with hypertension (63 per cent of the 200 cases) the negative U waves tended to appear in leads I, aVL and V5-V6, corresponding to marked clockwise deviation of the U-wave axis in the frontal and horizontal planes (seen from the front and above). The amplitude of the negative as well as positive U wave was greater in hypertension associated with other cardiac abnormalities such as angina (17 per cent) than in pure hypertension. The clockwise displacement of U axis in the frontal plane tends to increase as the systolic pressure rises to 200, but does not increase any further with further increase of pressure. The maximal voltage of the negative U wave shows no relation to pressure. The U-wave vector tends to become more perpendicular to the frontal plane as the pressure rises, while the incidence of negative U waves in precordial leads falls and that in limb leads rises. In cases showing marked clockwise rotation of the U-wave axis the aorta was markedly enlarged, while in those showing counterclockwise deviation the heart was usually not enlarged; normal hearts were found in 51 per cent of the hypertensives. In cases with angina (12 per cent) with large hearts the U-wave axis was more deviated and U-wave voltage smaller than in those with not enlarged hearts. In mitral stenosis (2 per cent), the negative U waves appear in leads III, aVF and V1, corresponding to counterclockwise rotation of the U-wave axis in the frontal and horizontal planes. In cases with involvement of both ventricles U may become negative in all precordial leads. In the great majority of cases, the negative U wave tends to be opposed to the main direction of QRS, while it tends to be of the same direction as the T wave in less than half of the cases. In 25 of the 200 inverted U waves were the only abnormal electrocardiographic finding; all these persons were between 27 and 60 years of age, 13 had hypertension, 8 angina pectoris, 3 mitral and aortic valvular disease, and 1 “chronic myocardial disease.” In all these cases the negative U waves appeared in left precordial leads. In 1 case the heart was accelerated, U became positive, and T less pointed after inhalation of amyl nitrite. In 1 apprehensive patient with hypertension, the negative U wave became less negative without change of heart rate when the patient calmed down. In 1 case of aortic coarctation, negative U waves in lead I became positive with disappearance of hypertension after operation. In 1 case of hypertension with angina pectoris, U became deeply negative in V5-V6 after exercise.

LEPESCHKIN

In 17 dogs the carotid artery was connected with the pericardial cavity by means of a tube. The arterial blood pressure fell immediately to almost zero, while the venous and intrapericardial pressures rose gradually. The QRS axis showed immediate deviation to the left, which is attributed to upward displacement of the cardiac apex by the intrapericardial blood. One and one half to 2 minutes later the electrocardiogram voltage started to decrease; because of its late appearance, this decrease is attributed not only to short-circuiting effects of the intrapericardial blood, but also to decrease in the membrane potentials due to anoxia. Later the voltage may increase again (in the published curves this was always accompanied by widening of QRS). S-T in leads II–III showed depression in all cases, while elevation was said to appear only once; however, the published curves often show transient elevation of the S-T junction, especially in comparison with a depressed P-R segment. The atrial rhythm showed a progressive slowing, often accompanied by changes in the configuration of P; usually a ventricular ectopic rhythm took over, but sometimes this rhythm originated in the A-V node. This period was usually followed by a return of sinus rhythm and later by A-V conduction disturbances. Ventricular fibrillation appeared in all cases, but in some of these it disappeared later and ventricular standstill with slow atrial rhythm occurred. The higher incidence of fibrillation in pericardial tamponade than in exanguination is attributed to the sudden fall in arterial blood pressure in the former.

Lepeschkin


The Q-T interval, corrected for the heart rate according to the square root formula, was 0.34 in children 2 to 6 years of age. In adults no difference in Q-Tc was found between the sexes. After standing up, Q-Tc increased whenever the rate increased, but in 1 case it showed no change in spite of tachycardia. The increase was usually smaller after previous medication with ergotamine, and is therefore dependent on sympathetic stimulation. After lying down, Q-Tc returned to its initial value without overshooting. Normal inspiration caused increase of Q-Tc related to the tachycardia in 60 per cent, and no change in 40 per cent. During forced expiration (Valsalva), Q-Tc increased in all cases showing tachycardia, decreased in all cases showing bradycardia but also in some not showing any change in the heart rate. After the Master exercise test, most cases showed increase of Q-Tc, a few showed no change, and one showed normalization of a previously increased Q-Tc with no change in rate; this latter reaction is considered a sign of good training. Ocular pressure caused shortening of Q-Tc in all subjects.

Lepeschkin


In 100 normal persons at rest, no significant difference in the U waves was found in tracings taken with different amplifier electrocardiographs. The initial branch of the U wave was always shorter than the terminal branch, in leads where U was positive as well as in those where it is negative. The U wave was found in 99 per cent in lead V3 and 92 per cent in lead II, but only 58 per cent in V8 and 54 per cent in aV_{L}. In V_{S}, 29 per cent had a U wave of 1 or more mm., while in V_{T} this percentage was 23, with 2 cases showing a U wave of 2 mm. In lead III, 2 cases had U of 1 mm., while in aV_{L} U was negative in 19 cases. U was negative in no other leads except aV_{R}. The duration of the U wave ranged between 0.15 and 0.22 sec. and decreased with increasing heart rate. The T-U interval (measured between the end of T and beginning of U) showed little dependence on the heart rate, but tended to be negative (superposition of U on T) at very high rates in children. The U wave was usually highest in V_{S}, while the transition zone of QRS was usually situated in V_{S}. In cases with the transition zone displaced to the right, the U-wave maximum usually coincided with this zone or was to the left of it, while if the zone was displaced to the left, the U wave maximum was usually to the right of it. As the zone moved from right to left from V_{I} to V_{S}, the location of the U-wave maximum also moved from V_{I} to V_{S}, while its voltage at first increased, then decreased. In cases with left axis deviation of QRS the transition zone was usually situated in left precordial leads while the U-wave maximum was situated in right precordial leads, while in cases with normal or right axis deviation both the transition zone and the U-wave maximum were usually in midprecordial leads.

In leads V_{1}-V_{2} U usually exceeded 10 per cent of T, and was positive even when T was negative; in V_{3}-V_{4} U usually was about 10 per cent of T, while in V_{6}-V_{7} U was usually less than 10 per cent of T. The quotient T/U ranged from 2 to 50, with an average of 10.6, but the scatter was very great. The cases with tall T waves had high quotients while those with tall U waves had low quotients. This lack of definite correlation between T and U is interpreted as not favoring a causal relation between these waves.

Tall and slender young persons tend to have high voltage of all waves, including U, in precordial leads; on the other hand, in pregnancy all waves tend to be low. In men, the highest voltage of U in all leads
was on the average 0.71 mm, while in women it was 0.38 mm. In men there is a marked increase in the average highest U-wave voltage with age until the third decennium, and a gradual decrease from then on; in women there is no change with age except that the first and last decenniums have lower values. In the first and second decennium U is lower compared to the T wave than in the fourth through the eighth decenniums. The blood pressure and heart rate do not seem to affect the U wave amplitude noticeably. In deep inspiration U tends to become taller and of shorter duration. After the Master exercise test U usually becomes taller in the precordial leads V1-V6, but never exceeds 150 per cent of its resting value. Sometimes the elevation is only an apparent one, due to better separation of T and U. The T/U quotient always decreases up to 50 per cent.

**LEPESCHKIN**


Coronary sinus rhythm was observed in 16 of 15,000 electrocardiograms (1.1 per cent); 3 of these had hypertensive, 6 coronary, and 2 rheumatic heart disease; 1 had pericarditis and 4 had apparently normal hearts, with 3 of these showing symptoms of neurocirculatory asthenia. The P wave was always negative in II–III and aVF, usually positive in aVR, always positive or isoelectric in aVL, and I, and often negative in V4–V6. In 1 case with cardiac catheterization P was positive in the upper and lower atrial region and completely negative in a mid-atrial position. The average rate of the rhythm was about 65 per min., and when transitions between it and sinus rhythm were observed, the latter always had the higher rate. P-R measured 0.10–0.18 sec., and in all cases except one, transition to sinus rhythm was accompanied by increase of P-R. The case in which P-R was 0.18 showed a P-R of 0.23 with sinus rhythm. The Valsalva maneuver caused the rhythm to appear in 4 cases, to disappear in 1 case, and did not influence it in 2 cases.

**LEPESCHKIN**


Registration of the electromagnetic ballistocardiogram synchronously with the right intraventricular pressure curve shows that the H wave corresponds to the isometric phase of contraction while the I-J branch corresponds to rapid ejection and the beginning of the pulmonary pressure curve. In cases of mitral stenosis with pulmonary hypertension and in those cases of aortic regurgitation, an extra wave often appears in the H-J branch; this extra wave is attributed to opening of the semilunar valves. A vibration in the K wave is attributed to opening of the A-V valves. In aortic regurgitation, a typical finding is increased amplitude of J and K, and this is present also when there is additional mitral stenosis. A similar finding was present in persistent ductus, disappearing after the operation.

**LEPESCHKIN**


In 27 normal children 10 to 13 years old, moderate exercise caused an increase in the range of frequencies contained in the first heart sound, in the upper limit of these frequencies and in the sum of the initial amplitudes of these frequencies. These changes disappeared after 20 minutes and were not present in the second heart sound. In 21 children with presumptive cardiac abnormalities, these changes usually were greater and did not disappear completely after 20 minutes; in several of these cases the frequency range and the sum of initial amplitudes decreased.

**LEPESCHKIN**


Objective recordings of the heart sounds at the cardiac apex made in 15 patients subjected to various levels of cyclopropane or ether anesthesia revealed changes correlated with the depth of anesthesia.

With patients awake or in light anesthesia, the first heart sound was of higher intensity than the second, producing the familiar normal lub-dup. As the dosages of the anesthetic was increased, the second heart sound became more prominent and developed a sharp, slapping or metallic character. With further deepening of anesthesia or with excessive dosage, the first and second sounds became equal in pitch and their intensity was reduced to the point of muffling. The authors believe that the concentration of anesthetic to which the heart is exposed is the critical factor in the production of the changes noted. The changes in heart sounds produced by a certain dose of anesthetic often preceded the clinical signs of the depth of anesthesia.

**SAGALL**


In some cases of A-V block a small sharp wave appears immediately after the a wave venous pulse: about 0.20–0.24 sec. after the beginning of P in the electrocardiogram and at the apex of the TV wave. This wave is attributed to closure of the tricuspid valve.

**LEPESCHKIN**

Sapin, S. O., Donoso, E., Braunwald, E., and Grishman, A.: Spatial Vectorcardiography in the Diag-

The theory of vectorcardiography is presented as well as practical means to record vectorcardiograms. Examples of vectorcardiograms done on infants with congenital heart disease are presented, as well as comparisons of these results with the conventional electrocardiogram. The authors feel that right ventricular hypertrophy is better demonstrated by the vectorcardiogram than by axis deviation on the conventional cardiogram, and they advocate the use of the vectorcardiogram in the diagnosis of congenital heart disease.

Harvey


In the frog, electrically induced extrasystoles are usually followed by a longer postExtrasystolic pause than would correspond to the interval between automatic beats previously present in the stimulated region. This effect is more pronounced in the ventricle than in the A-V region or venous sinus; it is especially common in early extrasystoles and after repeated stimulation, but in old anoxic preparations it occurs independently of the position of the extrasystole in the cycle. Retrograde conduction either does not exist or does not have this effect. In 2 clinical cases atrial extrasystoles caused temporary slowing of the sinus rhythm, followed by escape beats from the coronary sinus or the ventricle. In 1 case such depression was caused by ventricular extrasystoles with retrograde conduction. In 1 case of A-V nodal tachycardia, several conducted sinus beats caused temporary suppression of the ectopic center. However, in another case this tachycardia was regularly elicited by ventricular extrasystoles, which accordingly had a facilitating effect on the ectopic rhythm. In idioventricular rhythm ventricular extrasystoles usually are followed by depression and sometimes by a complete temporary suppression of this rhythm.

Lepeschkin


The case of a woman aged 77 years who was receiving radiologic treatment for gingival carcinoma of the mandible is reported. The patient had known complete heart block. She was given quinidine sulfate 0.3 Gm. daily and on the third day of such treatment began having Adams-Stokes attacks due to ventricular fibrillation. The quinidine was discontinued and ephedrine in doses of 0.025 Gm. was given 3 times daily. The attacks decreased in frequency but for some time the electrocardiograms showed marked T-wave inversion and prolongation of the R-T interval. The patient was still alive some 9 months after the attack of ventricular fibrillation.

Rosenbaum


Sphygmograms on persons with atrioventricular heart block revealed undulations in constant relation with the P-waves of the electrocardiogram. They were usually formed like double waves and traveled in a centrifugal direction at the same velocity as the pulse. An intra-arterial pressure record from the same segment of the artery did not always show corresponding undulations. The nature of the wave is not clear though it is suggested that it may be actively propagated.

Bernstein


In an effort to study the nature of normal and abnormal heart sounds, the authors made use of a vibration analyzer. This instrument, which is described, permits recording of sounds in a manner that depicts their frequency components plotted against time. In this way heart sounds are displayed as a series of successive bursts of sound with definite duration and frequency components. Abnormal sounds (murmurs) were found to be similarly composed. This was in contrast to sounds produced by tuning forks that consisted of single horizontal bars at the rated frequency of the individual fork.

In addition, recordings were made of the sounds produced by fluid flowing through soft-walled collapsible tubes under a constant pressure head. These tubes were surrounded by a chamber that made it possible to vary the external pressure on the tubes. When this external pressure was adjusted to allow the tubes to open alternately and collapse with the fluid flowing through it, a sound was produced that could be recorded by means of the vibration analyzer. At this “critical point,” the recording consisted of discrete bursts of sound much like those recorded in heart sounds and murmurs. The authors consider, therefore, the possibility that the heart sounds are produced by rapid repetitive events as reproduced experimentally in collapsible tubes.

Pick


In an otherwise normal rabbit with increased body temperature, S-A block developed periodically after intravenous injection of 10 mg. of morphine sulfate. The incidence of sino-atrial block became
less and less frequent in this animal within the next half hour. Increasing the vagus tone always caused the sino-atrial block to reappear. During periods of very strong reflex vagus retardation of the heart beat, the S-A block disappeared. After atropine was administered intravenously, S-A block did not appear and application of the same stimuli as before evoked neither an increase of vagus tone nor S-A block.

Bernstein


Esophageal cardiograms, registered at the level of the upper part of the left atrium by means of the “Infraton” condenser microphone, showed the greatest amplitude in the recumbent position. In 57 normal subjects it showed a atrial contraction wave, directed upward, beginning 0.04–0.06 sec. after the beginning of the P wave of the electrocardiogram and having a duration of about 0.13 sec.; this wave is attributed to approach of the atria to the spherical form during contraction. The second upward wave is the ventricular wave, beginning about 0.05 sec. after the Q wave and preceding the first heart sound; this wave usually shows an incisura corresponding to the slow oscillations of the first sound, and is attributed to outward movement of the A-V valves prior to their closure. The third upward wave is the atrial filling wave; its summit appears about 0.05 sec. after the beginning of the second sound. In 15 cases of mitral insufficiency the ventricular wave continued directly into a “mitral reflux wave” with an apex immediately after the second sound and sometimes even before it. This wave was of high amplitude in those cases where the left atrium did not show considerable dilatation. In atrial fibrillation with mitral regurgitation the amplitude increases after long pauses; this is not the case in fibrillation without regurgitation. Mitral insufficiency due to left ventricular dilatation showed similar findings. In 32 cases of predominant mitral stenosis curves of type I are characterized by elevated atrial contraction waves, in type II these waves show no ascending but only a descending branch, while type III shows in addition elevation of the ventricular wave with development of a systolic plateau. Types II and III appear in advanced cases. The descending branch of the atrial filling wave shows a sudden decrease in steepness at the time of the opening snap of the mitral valve, so that this relation can be used to differentiate this snap from a reduplication of the second sound due to asynchronism of the semilunar valves. Types I and II with diastolic plateau were also found in beginning failure of the left ventricle; they are attributed to delayed emptying of the left atrium. In cases of chronic cor pulmonale the atrial curve shows the same changes as in those with left ventricular overload.

Lepeschkin

Endocrine Effects on Circulation


Symptoms of cardiac insufficiency not attributable to myxedema itself (elevated venous pressure, prolonged circulation time, tachycardia with gallop rhythm) were found in only 6 per cent of the cases. Enlargement of the heart was present in 53 per cent; in 7 of 9 patients where paracentesis was made pericardial effusion was found, but this was usually too small to account entirely for the heart enlargement, and was absent in 2 cases with enlarged hearts. Low voltage of the T wave is one of the earliest and constant signs of myxedema, being absent only in 1 case; the T wave always became normal after treatment although it was scarcely modified after pericardial tap in 3 cases, and was present also in cases with normal heart size, so that it cannot be attributed entirely to the pericardial effusion. Inversion of T was present in 6 cases; it was present in 2 young persons with postoperative myxedema of short duration, so that it could not have been caused by coronary sclerosis in these cases. In 1 case with hypertension, a typical left ventricular strain pattern appeared temporarily during treatment. Low voltage of QR5S was present in only 50 per cent, while prolonged P-R or extrasystoles appeared in 3 cases, disappearing after treatment in 2.

Lepeschkin

Hypertension


The authors describe a syndrome that they have named chronic cerebral hypertensive disease. Their description is based on a series of 72 middle-aged and elderly patients. The symptoms include emotional lability and intellectual deterioration. The signs include hypertensive (or a past history of this), evidence of hemiplegia, pseudobulbar palsy, and ophthalmic findings of narrowing and silver-wiring of the arteries and dilatation of the veins. On post-mortem examination, multiple small infarcts were found bilaterally in the caudate nuclei and putamen.

Rinzler

Pathology

Diamox is a widely used as a diuretic agent. The authors report a patient with Hodgkin’s Disease who received Diamox for 4 days and who showed no clinical evidence of renal failure or sulfonamide intoxication. At autopsy 24 days later renal lesions indistinguishable from those produced by the antibacterial sulfonamides were present. This is the first report of renal lesion following the administration of Acetazolamide.

Kitchell


This is the fifth published case of pericardial angiosarcoma; this appeared in a 29-year-old woman and terminated in death after 1½ years. The clinical pattern was that of pleural and pericardial effusion, but pericardial parascenesis disclosed only blood in the pericardial cavity while roentgenologically a double contour of the right atrium made the diagnosis of pericardial tumor likely. The electrocardiogram showed low voltage and depression of S-T in leads I and III.

Lepeschkin


A histologic study of 4 cases showed proliferation of fibrous tissue not only in the endocardium but also in the subendocardial muscle layers and the conducting system; the vacuolization in these structures is attributed to impaired metabolism. One of these cases had a persistent ductus arteriosus, another coarctation of the aorta.

Lepeschkin


In a series of 50 autopsied cases, 19 hearts showed a total of 22 fibroelastic hamartomas. The majority are said to be in individuals dying in the seventh and eighth decades of life; however, the age distribution of cases is not given. The pathologic description, both gross and microscopic, is given with excellent illustrations. There was no clinical evidence of valvular dysfunction during life. The incidence of hamartomas in this series is significantly higher than in other reported series.

Harvey


The average normal weight of the free wall of the right ventricle was 50 Gm., that of the left ventricle and septum was 180 Gm. (the epicardial fat, the valves, and the great vessels were always removed and the heart treated with 10 per cent formaldehyde less than 30 minutes after death, before it went into rigor). In 8 cases of right ventricular hypertrophy the wall of this ventricle weighed 60-220 per cent more than normal while its average thickness was 3.7 mm. at the apex, 5.5 mm. at the base anteriorly and 9.5 mm. at the base posteriorly. In 9 cases of left ventricular hypertrophy the left wall and septum weighed up to 215 per cent more than normal and the average values for the thickness of the wall at the apex were 9.5 mm., at the base anteriorly 17.4 mm. and posteriorly 14.4 mm. Measurements of the left ventricle in rigor showed greater thickness than that shown by the ventricle hypertrophied to 3 times the normal thickness, which was not in rigor. The concept of “concentric left ventricular hypertrophy” probably originated through measurements in rigor and is an artifact. In cases with primary right ventricular hypertrophy there was usually also some left ventricular hypertrophy, but in those with primary left hypertrophy there was no definite relationship to right hypertrophy. In right ventricular hypertrophy there was always a corresponding hypertrophy of myocardial fibers usually without degenerative changes; in severe left hypertrophy there were usually degenerative changes in addition to hypertrophy (sometimes spotty) of myocardial fibers, and usually also marked fatty infiltration of the right ventricle. In 13 cases without hypertrophy the average thickness of the ventricles at the apex, anterior basal wall and posterior basal wall were 1.9, 3.2, 5.0 and 7.5, 12.0, 11.7 mm. respectively. In 1 case of myocardial infarction vicarious hypertrophy of muscle fibers was found in the normal parts of the left ventricle.

Lepeschkin


The authors present a summary of findings in regard to aortic aneurysm found at autopsy in a survey of 9,273 autopsies done at the University of Texas Medical Branch, Galveston, between the years 1892 and 1953. Four hundred and twelve aortic aneurysms were found in 369 cases. The majority were found in individuals in their fifth, sixth, and seventh decades. Sixty-one per cent occurred in Negroes. Eighty-three per cent occurred in males. Abdominal aneurysms occurred more commonly in the white male. Syphilis caused 54 per cent of these, arteriosclerosis 21 per cent, cystic medial necrosis 10 per cent, with congenital, mycotic, and unknown cause as the etiologic situation in the remainder. Saccular aneurysm was the most common type. Clinical features were well correlated with the location of the aneurysm. In abdominal and dissecting aneurysms 80 per cent of the individuals showed cardiac hypertrophy that was unexplained. The cause of death varied but rupture occurred in almost 40 per cent and heart failure in 25 per cent.
PATHOLOGIC PHYSIOLOGY


Survival of animals during pentothal-induced apnea has been attributed to diffusion oxygenation of blood or diffusion respiration. Resuscitation from diffusion respiration under the combination of pentothal and intocostin was more uncertain than when pentothal alone was used, although the physiologic variables studied were the same. The present study was accomplished in order to investigate pulmonary blood flow after cessation of respiration produced by d-tubocurarine under light pentothal anesthesia, in order to eliminate as much as possible the depressive effect of barbiturates on the circulation.

Mongrel dogs were studied by means of cardiac output by the dye-dilution method, electrocardiograms, mean arterial blood pressures, pulmonary artery and vein pressures, alveolar gas samples, and blood pH. These measurements were made during a control period, a 15-minute period of respiratory arrest induced by 0.1 mg. per Kg. of body weight of d-tubocurarine and then alternate periods of controlled breathing, during which time the animal was denitrogenated and breathing by apneic oxygenation. During the first period of respiratory arrest the tracheal valve was open to 100 per cent O2 (apneic oxygenation), but it was opened to air during the second period of respiratory arrest (apneic hypoxia).

Apneic oxygenation and apneic hypoxia caused a fall in heart rate and a rise in the mean arterial blood pressures in the pulmonary artery and the pulmonary vein. There were no significant changes in the electrocardiogram. During apneic oxygenation, arterial blood was fully saturated with oxygen while CO2 content of the blood rose from 37 to 56 vols. per cent, pH fell to 7.10, pCO2 of alveolar air rose to 146 mm. Hg. During apneic hypoxia, arterial O2 saturation varied from 25 to 75 per cent. Cardiac output rose toward the end of the 15-minute period of respiratory arrest. Calculated pulmonary vascular resistance fell during apneic oxygenation but not during apneic hypoxia. There was no change in calculated peripheral vascular resistance.

The increase in mean arterial blood pressure may be attributed to CO2 retention which stimulates adrenaline production. This hypertension is not caused by peripheral vasoconstriction, which does not occur, and is probably related to the increase in cardiac output. The observed bradycardia is probably caused by the known increased sensitivity of the heart to vagal stimulation during respiratory acidosi, later by the rise in CO2 and hypertension by means of the carotid sinus reflex. Other studies of respiratory arrest utilized pentothal sodium. The results indicated that the barbiturate may have depressed the myocardium and, therefore, eliminated the increase in cardiac output found here. Furthermore, the vagal inhibitory effects of pentothal may have prevented the bradycardia found here.

Respiratory arrest was induced in dogs by d-tubocurarine. Circulatory studies during 15-minute periods of “apneic oxygenation” and “apneic hypoxia” revealed an increase in pressures in the systemic arteries and pulmonary vessels, as well as a marked bradycardia. Possible mechanisms for these changes were discussed.

WECHSLER


Inhalation of 10 per cent oxygen for 10 minutes led to the same degree of T wave lowering in the limb leads in 23 average normal persons and 45 outstanding athletes but to a greater degree in 20 patients with circulatory disturbances. S-T depression or inversion of T in I–II appeared only in patients with pathologic hypertrophy of the left ventricle (19 cases). Athletes with large hearts showed smaller T wave changes than those with small hearts. These changes are usually more pronounced after 5 minutes than after 10 minutes of hypoxia and are interpreted as resulting from changes in vegetative nerve tonus rather than from myocardial hypoxia. Previous results of others according to which the large hearts of athletes are more susceptible to hypoxic changes in the electrocardiogram are interpreted as resulting from lack of quantitation of hypoxia and from the fact that few outstanding athletes were studied.

LEPESCHKIN


The diagnosis of atrial myxoma is made by the following findings: mitral stenosis without rheumatic history; symptomatic variability with postural changes; progressively severe heart failure not improved by the usual treatment; confirmatory findings at angiocardiography and cardiac catheterization. These tumors are pedunculated and benign, so that surgical removal is indicated. Patients operated on so far have not survived because of technical or organic difficulties.

BERNSTEIN

Pulmonary wedge pressure curves in 81 cases with mitral valve disease were analyzed and compared with other hemodynamic and clinical findings. According to the morphology of the wedge curve and the presence or absence of atrial fibrillation, the material could be divided into several groups with different clinical aspects. In the presence of sinus rhythm, pure mitral stenosis reveals M-shaped wedge pressure curves of 3 different types. In the first type, the first peak is smaller than the second, the capillary pressure is low, the pulmonary arterial pressure is normal, and the mitral lesion clinically insignificant. In the second group, where the 2 peaks are about equal in size, the wedge pressure is elevated upon exercise and pulmonary arterial pressure is somewhat increased, indicating a moderate degree of mitral block. In the third group, which is characterized by a larger second peak of the wedge pressure curve, both wedge and pulmonary arterial pressures are high but the gradient between the 2 is large. In these cases, increased pulmonary arterial resistance is present in addition to the mitral block. The wedge pressure curves obtained in this third group resemble those in mitral regurgitation. However, the 2 conditions can be distinguished by the fact that in mitral insufficiency, in contrast to mitral stenosis, the second peak has a “tent-shaped” appearance, the maximal value of the wedge pressure approaches the systolic pressure in the pulmonary artery and the ratio of maximal and end-diastolic wedge pressure values equals or is more than 2.

The distinction of these 3 clinical types of mitral stenosis by different contours of the wedge pressure curves is not possible in the presence of atrial fibrillation. In this condition the appearance of the wedge pressure curve is inconstant and largely dependent on the variability of the duration of the ventricular cycle and the diastolic filling time.

Pick


Appraisal of the contour of pulmonary wedge pressure curves of 63 human subjects with normal hemodynamics, rheumatic valvular disease, or congenital heart disease, in relation to pulmonary arteriolar resistance, mean pulmonary wedge pressure and, in one third of the cases, left atrial pulse contour, led to the following conclusions concerning the transmission of the left atrial pulse pressure to the wedged catheter: 1. When both pulmonary arteriolar resistance and mean pulmonary wedge pressure are low, it is hypothesized that transmission mainly via the pulmonary capillaries leads to damped pulmonary wedge pressure curves, while transmission via pulmonary arteriovenous anastomoses results in undamped pulmonary wedge pressure curves. 2. When the left atrial-pulmonary capillary system is distended, as reflected by an elevated mean pulmonary wedge pressure or mean left atrial pressure, transmission is undamped, apparently independently of arteriovenous anastomoses. 3. When pulmonary arteriolar resistance is greatly elevated, transmission is mainly damped, regardless of the level of pulmonary wedge pressure.

In all cases where both wedge pressure curves and left atrial curves were obtained, mean pulmonary wedge pressure corresponded closely to mean left atrial pressure. The incidence of confirmatory blood samples in cases of normal hemodynamics and in the various disease states corresponds roughly with the fidelity with which wedge pressure pulse contour reflects left atrial pressure pulse contour.

Rinzler

SURGERY AND CARDIOVASCULAR DISEASES


The combined use of hypotension (Arfonad-induced) and hypothermia (cooling perfusion blanket or ice packs) is reported in 19 patients undergoing surgery of the thoracic aorta.

Two patients underwent resection of the upper descending aorta for aneurysms immediately below the subclavian artery. In each case the preparation for high aortic occlusion was body cooling to 82 F. Occlusion times were 30 and 68 min. No ischemic damages resulted in abdominal viscera or spinal cord. One patient died on the twelfth postoperative day of hemorrhage from rupture of the aorta distal to the resection.

Nine adult patients were cooled, 6 to a significant degree, in preparation for resection of coarctation. In all these patients the defect was closed with a preserved homologous graft. In each of the 11 patients the blood pressure was reduced with a marked extent before the occluding clamp was applied.

No untoward effects were noted from the combined use of hypotension and hypothermia.

Maxwell


A simple method permitting total bypass of the heart and lungs for the performance of intracardiac surgical operations is described. This method utilizes continuous perfusion of the recipient's (patient's) arterial system from a reservoir of oxygenated blood. An equivalent quantity of venous blood is removed.
ABSTRACTS

from the recipient's superior and inferior cavae. A pump is utilized to control this exchange between the recipient and the arterial and venous reservoirs. Arterial blood for the reservoir was obtained from a donor animal used as an oxygenator independent of the perfusion system. This was done by collecting arterial blood from the donor's femoral artery into a heparin-glucose solution while stored venous blood was infused into his femoral vein at an equal rate. Ordinarily, 2,000 to 3,500 ml of arterial blood were collected from a single donor dog in this fashion. The optimum dose of heparin to prevent clotting in the arterial blood collected was 25 to 32 mg/L of blood. The simplifications of the clinical application of this method are briefly discussed.

Maxwell


Patients undergoing mitral valvulotomy have occasionally manifested an unexpected morbidity during the first postoperative week. Evidence of an increased total body sodium and water with hypotremia, renal conservation of sodium and water, and a decreased exchangeable potassium has been presented. The effects of potassium and cortisone upon the morbidity and metabolic responses of 12 patients subjected to such surgery are described in this report. The administration of potassium was associated with the appearance of mild hyperkalemia in 3 patients given the chloride salt. Of the 9 patients given cortisone, 1 exhibited mental symptoms; none developed either hypotremia or hyperkalemia when fluid and sodium intake were limited. Cortisone was regarded as a useful adjunct in the treatment of circulatory collapse with pressor amines in 1 patient. It was concluded that fluids and sodium administration should be limited in the postoperative management of patients undergoing mitral valve surgery. Potassium should be given only as fruit juices or beef broth as tolerated by the patient rather than as supplemental potassium salts. Cortisone may be of value in occasional patients experiencing profound stress. It did not prevent pericarditis in 5 of 9 patients treated with this agent.

Shuman


Ten cases are reported of cardiac arrhythmia in 82 patients of 50 years or older following thoracic surgery. The operative procedures included thoracotomy for purposes of exploration, biopsy or resection, exclusive of procedures on the heart. The arrhythmias observed were paroxysmal atrial fibrillation in 7 instances, paroxysmal atrial flutter in 2 instances, and ventricular tachycardia in 1 instance. In only 1 case did the arrhythmia develop after the first postoperative week. Seven of the patients had clinical evidence of heart disease prior to surgery. The operative procedures performed on these patients included left pneumonectomy in 4, right pneumonectomy in 3, lobectomy in 1, and subtotal esophagectomy in 2. The arrhythmias resulted in 2 deaths. Predisposing factors in the irregular heart action include age, pre-existing heart disease, antecedent arrhythmias, extent of surgery, electrolyte imbalance, drugs, and anemia. Anoxia, vagal reflexes, and hypotension are considered the major precipitating factors. Treatment of arrhythmias includes prophylaxis with correction of anemia, electrolyte imbalance, prevention of anoxia and hypotension, and active treatment with digitalis and antifibrillatory drugs such as procaine amide or quinidine.

Shuman


The appearance of 2 schizophrenic reactions after mitral surgery prompted the authors to determine the frequency of major psychiatric complications in those who had undergone mitral surgery. Other groups have reported emotional disturbances following this type of surgery.

The records of 37 patients who underwent mitral surgery were analyzed for psychiatric data. This type of data was sparse because of the emphasis on difficult medical and surgical problems. Two patients developed schizophrenic reactions after surgery. One had been psychotic previously and the operation caused a recandescence of his schizophrenic process. Two other patients experienced short-lived schizophrenic reactions after surgery, 1 having delusions and the other auditory hallucinations. One patient had a clearly defined reaction characteristic of an organic confusional state. One other patient had a similar episode, but it was not described in enough detail. Six patients were sufficiently anxious and depressed to merit comments by both physicians and nurses. Two case histories of postoperative schizophrenia are described in detail. One individual died of electro-shock therapy.

These results suggest the possibility that mitral surgery may be a greater psychologic threat than other major surgical procedures and chronic rheumatic patients may be particularly vulnerable under these circumstances. The usefulness and risk of electroshock therapy in the treatment of these schizophrenic reactions have been indicated.

Wechsler

The authors point out that in the end-to-end anastomosis of grafts for the treatment of segmental arterial thrombosis 60 percent failures occur. Because of such results they attempted to study the efficacy of end-to-side anastomosis. With the latter procedure none of the grafts became occluded and the only failures were in 2 patients secondary to sepsis. It was pointed out that a longer period of follow-up on such cases was necessary to obtain a true evaluation of the method.

**ABRAMSON**


Experimental studies of controlled refrigeration in animals showed that the survival of low temperatures was improved when low body temperatures were reached quickly and when ganglionic-blocking agents were administered prior to refrigeration. With the technic of refrigeration plus ganglionic-blocking agents, cardiac disturbance such as ventricular fibrillation, otherwise so frequently noted with hypothermia alone, was almost absent and the mortality rate of the procedure was maintained within reasonable limits.

The current management in the employment of controlled hypothermia as part of the surgical treatment in human beings is presented. The measures consist of the intramuscular administration of a antihistamine (usually Fargan) 2 hours prior to surgery, the intravenous administration of a ganglionic blocker (usually Pendiomide) 1 hour before surgery, and the starting of refrigeration about 15 min. later. A rectal temperature of about 27 C. is reached usually in about 45 min. and then refrigeration is stopped. If shivers develop, Pentothal is given, otherwise only oxygen is administered during the subsequent phases of the procedure. Rewarming is begun as soon as the main surgical steps are completed. During surgery adequate blood replacement is carefully watched. The postoperative period is treated as usual.

Clinical experience with 91 patients subjected to controlled hypothermia indicates that this method is of value in surgical procedures where the blood supply to the vital organs must be interrupted for a period of time for the performance of the corrective measures and also in other conditions in which hypoxia is severe. The procedure is well tolerated in both children and adults for long periods of time and the mortality is low. This method markedly reduces the frequency and severity of accidents commonly associated with cardiac surgery. The safety of the method is increased by refrigerating and rewarming as quickly as possible and utilizing ganglionic inhibiting drugs.

**SAGALL**


In a series of 29 patients with atherosclerotic obstruction of the arteries of the lower limb, grafting was performed. In distinction to the experience with grafting in more proximal arteries, a high incidence of thrombosis, both early and delayed, led the author to conclude that grafting by the end-to-end technic is not worthwhile beyond the proximal part of the femoral artery. End-to-side grafts may prove more successful.

**McKUSICK**


The authors report a case in which total arch resection was accomplished under hypothermia by temporary bypass shunts. The latter, made of compressed polyvinyl sponge, conducted blood from the ascending to the descending aorta and also into the innominate and left common carotid arteries. The patient died on the sixth day postoperatively. Autopsy revealed that the prosthesis was intact and contained no thrombi.

**ABRAMSON**

THROMBOEMBOLIC PHENOMENON


The authors produced experimental emboli in the aorta of dogs with clotted blood, and then a polyethylene catheter was introduced into the vessel above the clot. A solution of highly purified crystalline line trypsin was injected into the aorta through the catheter. Arteriograms were used to determine the location of the emboli and the effect of the trypsin on them.

It was found that trypsin did not have a rapid lytic effect upon hard organized thrombi in dogs. In fact, in dilute doses this substance appeared to initiate a clot.

**ABRAMSON**


The authors describe diagnostic features of a particular type of chronic cor pulmonale caused by pulmonary arterial thrombosis secondary to pulmonary embolism. The diagnosis is suggested when an embolic episode is sooner or later followed by chronic right heart failure. Angiocardiology reveals filling
defects in the pulmonary circulation with exclusion of major or minor segments of the lung fields. At cardiac catheterization the pulmonary arterial pressure is elevated, while the wedge pressure is normal. Cardiac output, however, in contrast to the ordinary type of chronic cor pulmonale, is reduced. In the over-all clinical and hemodynamic picture, chronic cor pulmonale due to pulmonary arterial thrombosis resembles that of "primary" pulmonary hypertension. The necessity to distinguish the 2 conditions is pointed out in view of the possibility of treating thrombotic cor pulmonale by anticoagulants or surgical intervention.

**Pick**


The authors discuss the diagnosis and treatment of pulmonary embolism and infarction. They point out that these conditions are frequently overlooked and misdiagnosed in clinical practice, particularly pulmonary emboli which by themselves do not produce detectable x-ray abnormalities. Only if there is a profound change in lung tissue, progressing to necrosis (pulmonary infarction), will radiologic alterations be produced.

Pain is often the first and most prominent symptom. This may be due to the reaction of the pleura overlying the infarction or it may follow severe anoxia of tissue. Dyspnea commonly accompanies the pain, as well as cough associated with hemoptysis.

Frequent findings are fever, tachycardia and signs of consolidation of lung tissue. The x-ray generally demonstrates a shadow, the shape, size, and density depending on the angle which the infarct makes to the direction of the x-rays. Electrocardiographic changes depend in great part upon the increase in pulmonary artery pressure, which is reflected in dilatation of the right ventricle, producing "right heart strain."

Among the complications of massive pulmonary infarction are cor pulmonale, characterized by readily recognized clinical signs and shock.

Treatment primarily involves prevention of the condition. According to the authors, ligation of the main veins of the lower extremities and even of the inferior vena cava are not prophylactic measures of choice. They prefer properly administered anticoagulant therapy, especially after a thrombosis or a pulmonary embolus has been recognized.

**Abramson**

**VASCULAR DISEASE**


The author reviews several aspects of the problem of arteriosclerosis. He points out that little has been added to the knowledge of the morphology of the disease. However, 1 point worthy of emphasis is the frequency with which hemorrhage occurs within atheromata. Most of the available evidence supports filtration from the blood stream with subsequent phagocytosis by macrophages as the mechanism responsible for the entrance of lipids into the vessel wall.

Very wide variations in the amount of cholesterol ingested have no influence on its concentration in the blood. As a result, the enthusiasm for its restriction as a means of controlling the formation of atheromatous plaques, has waned. Another point of interest in this regard is the accepted fact that cholesterol is synthesized endogenously.

The author emphasizes that the preoccupation with the serum cholesterol is based on the hypothesis of simple causal relationship between hypercholesterolemia and atherosclerosis. However, such a view does not take into account the fact that neutral fats and phospholipids are also constituents of atheromata.

**Abramson**


The author describes the clinical picture of thrombosis of the pulmonary artery and presents 4 cases of this type. He points out that organized thrombi can occlude large branches of the pulmonary artery for long periods of time and yet produce little disability in proportion to the critical function of the vessels involved. This is probably the result of slow progression in the size of the thrombi, the occurrence of recanalization, and limitation in the number of large pulmonary arterial branches involved.

Onset of massive pulmonary artery thrombosis is most commonly observed in pulmonary embolism arising from systemic veins or the right ventricle. It may also occasionally be a complication of local pathologic processes, such as carcinoma of the lung, pulmonary tuberculosis, and congenital and acquired heart disease.

Most often the symptoms of chronic massive thrombosis of pulmonary arteries are those of right heart failure. Dyspnea is a universal complaint. Death in all cases is sudden and unexpected.

The clinical diagnosis of the condition is in large measure dependent upon the radiographic examination of the chest. The pertinent finding is enlarge-
ment of one or more of the vessels in the hilar regions or enlargement of the pulmonary artery itself. On fluoroscopy the thrombosed artery possesses little motion and, as a result, produces sharp, clear images on the x-ray film. It has an elliptic configuration, tapering abruptly at the distal point of thrombotic closure. Distal to the site of thrombosis the lung segment involved exhibits reduced radiability due to diminished blood flow in the affected pulmonary segments.

The electrocardiogram generally reveals signs of right ventricular hypertrophy; angiocardograms are also of aid in diagnosis.

**ABRAMSON**


Diabetes, or some related factor, hastens the onset, and increases the frequency and severity of arterial and arteriolar sclerosis. It gives rise to capillary lesions of the renal glomeruli and retina that belong almost exclusively to the diabetic state. Diabetes increases susceptibility to atherosclerosis to a greater extent in women than in men, and the former have a greater incidence of intercapillary glomerulosclerosis but not of retinopathy. Duration of diabetes is the most important single factor in the development of vascular disease, and its effects are greater in younger persons than in older persons. The highest frequency of advanced lesions occurs in severely diabetic patients with prolonged, heavy glycosuria. However, some patients with mild, well-controlled diabetes have manifest vascular lesions while their opposite numbers seem to escape. These inconsistencies support the view of improved concept that hereditary tendencies may be as important as diabetes itself.

The experimental production of both glomerular and retinal lesions with cortisone and corticotrophin strengthens the possibility that they have a common pathogenesis in man and raises the question of whether their clinical occurrence is related to adrenal hyperactivity. Muco polysaccharides are increased in the blood of diabetic patients with vascular, especially renal, disease but to some extent in those without it, and may be related to the pathogenesis of retinopathy and intercapillary glomerulosclerosis. Hyperlipemia in the treated diabetic patient is neither so frequent nor so marked as has been commonly supposed. Its association with atherosclerosis is loose and inconstant and in many cases is lacking entirely. Elevated lipid levels in intercapillary glomerulosclerosis are probably a result rather than a cause of the disease. The etiology and pathogenesis of diabetic vascular disease remains obscure.

**HARRIS**


Determination of the arterial blood pressure in the lower extremity is of particular value in the diagnosis of conditions such as congenital coarctation of the aorta, acquired occlusive diseases of the aorta and large arteries of the lower extremities, extrinsic compression of the aorta, and aortic aneurysms. It is pointed out that the presence of palpable pulses in the peripheral arteries of the lower extremity does not necessarily exclude these conditions. In the studies made of arterial blood pressure values obtained in the thigh with a nonstandard 18 cm. sphygmomanometer cuff and the standard 12-cm. arms cuff shows a significant difference, especially in the level of the systolic pressure. The values obtained with the 18 cm. cuff more closely approximate the intra-arterial reading in the femoral artery than do the values obtained from the use of the 12 cm. or the 15.5 cm. cuff in the normal adult patient. This and the ease of application makes the larger cuff the more desirable diagnostic tool. However, it is important that the examining physician recognize the difference and when different-sized cuffs are used they should be so defined in order that values be properly determined and evaluated. It is thought that the committee on standardization of blood pressure of the American Heart Association should give consideration to a standard for procedure and normal values for blood pressure readings in the lower extremity.

**KITCHELL**


In all 4 cases, chronic right ventricular failure appeared without apparent cause or subsequent to thromboembolic disease. Angiography showed extensive defects in the pulmonary arterial tree; the pulmonary arterial pressures were very high (69–109 mm. Hg) while the pulmonary capillary pressures were normal. Contrary to cases of chronic cor pulmonale due to bronchial disease, these cases also showed a decreased cardiac output. All cases showed a marked "P pulmonale" pattern, marked right axis deviation, high R or R' in V1, and depressed S-T with diphasic or negative T in V1 up to V5–V6. Contrary to cases of chronic cor pulmonale of respiratory origin, deep S waves in V1–V6 did not appear. These 4 cases are very similar to many published cases of apparently "idiopathic" pulmonary hypertension.

**LEPESCHKIN**


In this syndrome the arterial pulse in the arms
disappears completely, and weakness without trophic disturbances appears in the hands. In 1 case orthostatic syncope was present. One case had aortic insufficiency.

LEPESCHKIN


Twelve chickens were fed a diet containing 0.5 per cent dihydrocholesterol (DHC) for 6 months. Twelve controls were used. It was shown that the feeding of DHC for long periods of time induced extensive arteriosclerosis of the thoracic and abdominal aortas. The aortic and hepatic lesions in the DHC-fed birds were identical with those resulting from the feeding of cholesterol. Crystals found in the aortic lesions appeared larger than cholesterol crystals and gave a negative test for cholesterol. These were presumed to be dihydrocholesterol crystals. Hepatic enlargement in DHC-fed birds was similar to that observed in cholesterol-fed birds, and was due, in part, to reticuloendothelial storage of dihydrocholesterol.

MAXWELL


The authors describe a 75-year-old woman who appears to have had giant-cell arteritis localized to arteries of the legs and producing gangrene. Both legs were amputated. Although it is now established that temporal arteritis is a generalized disorder that may involve the central retinal artery, cerebral arteries, and the aorta and its larger branches, affection of the vessels of the extremities has been described only rarely.

MCKUSICK


Giant-cell arteritis as a cause of aneurysms of large vessels, including the aorta, even with dissection and rupture, has been described in occasional cases. The authors point out that 2 factors, intraluminal pressure and size of the lumen, determine the stress on the wall. Since giant-cell arteritis incites marked intimal thickening, this factor may prevent the production of aneurysms in small vessels.

A 56-year-old housewife had lassitude, weight loss, and night sweats followed by a painless swelling in the right side of the neck and right infraclavicular region. Aneurysms of the right external carotid and the subclavian arteries were discovered. There was early clumping of the fingers of the right hand. In this and a second patient with more conventional temporal arteritis cortisone and ACTH were therapeutically effective.

MCKUSICK


The author reports these cases because seemingly, in contradistinction to the puerperium, pulmonary embolism is rare in the antenatal period. When it does occur, however, it is probably an unusually grave complication. One maternal death and 2 fetal deaths occurred in this group of 3 patients. The author urges that antenatal thrombophlebitis be treated in hospitals.

MCKUSICK


In these experiments the thoracic aorta was occluded at the level of the fourth interspace. During the period of occlusion a collateral circulation was demonstrated between the thoracic and abdominal aorta. The connection seemed to be mainly by means of the anterior spinalis arteries. The anastomosis is effective within a few seconds after the thoracic aorta is obstructed.

OPPENHEIMER


A little stroke is characterized by transient aphasia, numbness somewhere in the body, or weakness in 1 arm or leg. Often momentary dizziness, confusion, or nausea may occur. Sudden changes in character, temperament and ability should arouse suspicion of a little stroke. These strokes may repeat themselves over a period of years. Less usual symptoms are given, such as burning in the skin, pain in the abdomen, and pain in the shoulder and abdomen. Case histories are given as illustrations.

RINZLER


The authors described a case of an abdominal aortic aneurysm involving the right renal artery which was treated surgically. The inferior mesenteric artery was ligated at its origin and the aneurysm was resected. Continuity was restored by anastomosing the upper end of the thoracic aortic homograft to the proximal cut end of the patient's abdominal aorta. The distal end of the graft was anastomosed to the patient's common iliac artery, while the left common
iliac artery was anastomosed to the left lateral side of the graft. The stump of the celiac axis of the graft was anastomosed to the cut end of the patient's right renal artery. The postoperative course was uncomplicated. An excretory urogram taken before discharge from the hospital showed prompt excretion of dye through both kidneys.

It is of interest that the right renal artery was occluded for 135 min. during aortic resection and replacement by a homograft and that, despite this, satisfactory renal function was observed.

**ABRAMSON**


The authors present a case report of a renal arteriovenous aneurysm, presumably on a traumatic (gun shot) basis. This was suspected because of a continuous murmur in the abdominal left upper quadrant and contiguous region posteriorly, plus increased pulse pressure and left ventricular enlargement. Confirmation was obtained by means of a translumbar aortography. Nephrectomy was performed when conditions did not permit local repair.

**SCHWEDEL**


Sheehan and Falkiner in 1948 pointed out that of the 417 reported female cases of splenic arterial aneurysm below the age of 40 years, 23 were pregnant, and rupture nearly always occurred at 7 to 9 months' gestation. The author describes a 22-year-old primigravida who went into circulatory collapse and died a few hours after delivery. Mild hypertensive toxemia had been present in the last weeks of gestation. Furthermore, the second stage of delivery was more than usually burdensome to the patient.

**MCKUSICK**


The authors describe in detail the method of selectively visualizing 1 or the other renal artery with radiopaque dye. Through a Seldinger percutaneous arterial needle a polythene catheter tip (shaped by heat then cooling) is passed under fluoroscopic control into the desired artery. The opacifying substance is then injected under controlled pressure.

The authors indicate that aberrant renal branches occur in as often as 22 per cent of reported cases, and that these are not filled by the selective method. Such areas of nonopacification might erroneously be interpreted as filling defects due to tumor or infarct, thus lessening the value of this procedure.

**SCHWEDEL**


The author describes a method of selectively passing a radiopaque polythene catheter into the aorta, thence to the artery under consideration. Formerly the entire region was suffused with the opacifying fluid, at times resulting in undesirable effects. Since ordinary polythene catheters become soft and pliable at body temperatures the author immerses the catheter in hot water, cools it rapidly, shaping the terminal portion so that it might more readily be guided under fluoroscopic control into a main arterial branch. The catheter is introduced percutaneously through an arterial needle. Side orifices near the tip serve to reduce recoil and displacements during the period of injecting the opacifying substance at high pressures.

Twenty selective angiograms have been performed by this method. Excellent illustrations are offered of filling of subclavian arteries in scalenus anticus syndrome, postoperative axillary aneurysm, Blalock procedure for tetralogy of Fallot, and celiac and renal artery visualizations.

**SCHWEDEL**

**OTHER SUBJECTS**


