VASCULAR DISEASE


The blood flow through skeletal muscle, measured by venous occlusion plethysmography, increases less markedly during prolonged intravenous infusions of epinephrine in patients with diabetes than in normal subjects. Light and electron microscopy of biopsy specimens of skeletal muscle were undertaken to find out whether there was a demonstrable anatomic abnormality of the blood vessels. Distinctive lesions were found in the capillaries in 12 of 16 specimens from diabetic patients and in only three of 19 normal specimens. The affected capillaries had a thickened and "reduplicated" basement membrane, seen in paraffin sections stained with periodic acid-Schiff or with periodic acid-Silver methenamine, and in similarly stained osmium-fixed Epon-embedded tissues. The authors reviewed the development of the concept of diabetic microangiopathy and discussed it in relation to other vascular lesions complicating diabetes.

MARSHALL


Of 14 patients with localized arteriosclerotic obstruction of the subclavian artery, seven had ischemic symptoms of the upper extremity, three manifested only vertebral-basilar insufficiency, and four had combined symptoms of cerebral and arm ischemia. The most consistent physical finding was a difference in blood pressure in the upper extremities of 20 mm Hg or more. Arteriographic visualization was essential to plan adequate surgery. Reconstructive surgery was possible in 10 of the 11 patients all of whom obtained a good result. Endarterectomy, often with a patch graft, was used in nine patients.

KALMANSOHN


Obstruction of the left ventricular outflow tract immediately above the aortic valve has been termed supravalvular aortic stenosis. An increasing number of cases have been reported since the term was first introduced in 1958 by Dennie and Verheught. A possible etiological relationship between this anomaly and the severe form of idiopathic infantile hypercalcemia has been noted.

Supravalvular aortic stenosis has been described in two groups of patients, one with mental retardation, dental anomalies, and abnormal facies, and another comprising familial cases with normal mental status and facies. The authors report 15 patients which are divided into three groups on the basis of facial characteristics. Diagnostic cardiac catheterization and angiocardiography were performed on all patients.
These tests demonstrated multiple cardiovascular abnormalities in patients of each of the three groups: pulmonary stenosis in eight; supravalvular aortic stenosis in 14; coronary artery abnormalities and hypoplasia of the thoracic aorta in nine; and celiac and mesenteric artery stenoses in three. Stenosis or atresia of one of the brachiocephalic vessels was found in one patient, and renal artery stenosis in three. Various skeletal and ocular abnormalities are described as well.

YAMAUCHI


The syndrome consists of complete or partial occlusion of the subclavian artery proximal to the origin of the vertebral artery. This results in retrograde siphoning or "stealing" of blood from the cerebral circulation and produces the symptoms and findings of ischemia in the brain and ipsilateral upper extremity. The vertebral artery is the main, but not the sole, route of this siphoning effect. The authors contribute six cases, the remainder being culled from the previous literature on the subject. Cases were accepted only if there was arteriographic evidence of subclavian artery obstruction and retrograde vertebral artery flow. The 74 patients were preponderantly men, and the average age was approximately 54 years. The most common symptoms were visual impairment and dizziness. Less common were paresis, vertigo, syncope, and speech difficulties. The most constant physical finding was a difference in the blood pressure between the two upper extremities, always present when bilateral readings were reported. The obstruction was in the left subclavian artery 76% of the time and there were no instances of bilateral involvement.

MARCH


The review covers a 15-year period during which 315 patients were treated for 379 acute vascular injuries. One hundred and twenty-eight of these injuries involved the smaller vessels of the forearm, wrist, or leg. The remaining 251 vascular injuries in 192 patients involved damage to larger vessels, the majority of which were arterial. Among these latter, the axillary-brachial and femoral arteries were involved most frequently. In recent years, repair of the vessel and restoration of pulsatile flow has been the treatment of choice, and ligation has been done only when prohibitive circumstances interdicted repair. This policy has also been practiced increasingly in the treatment of damage to major veins. During the last 5 years of the study there have been 22 deaths; 19 of these occurred in patients with concomitant injury to the head, neck, chest, and abdomen. Successful treatment of major vascular injury requires early recognition followed by prompt exploration for the control of hemorrhage and the restoration of vascular continuity. Although definitive repair of injured major vessels has tended to replace ligation, there has been no significant change in the amputation rate and this is ascribed to the severity of the local injury, causing irreversible damage. The incidence of vascular trauma has doubled during the past 5 years, injuries have been more severe, and there have been more frequent wounds due to missiles and blunt trauma. The mortality rate has also increased by almost 7% during the same period.

MARCH


A 51-year-old patient complained of dysphagia and backpain. On roentgenological examination a large luetic aneurysm of the descending thoracic aorta was found. The aneurysm produced displacement and compression of the esophagus causing delay in its emptying and prestenotic dilatation. Erosions of the ninth to eleventh thoracic vertebrae were also present.

TRAKS

ARRHYTHMIAS


As some of the effects of the catecholamines are attributed to alpha or beta-adrenergic influence, a study was undertaken to compare and contrast the effects of an alpha-adrenergic blocking agent, dibenamine, and a beta-adrenergic blocking agent, pronethalol, on cyclopropanecatecholamine cardiac arrhythmias in the cat. Such arrhythmias were produced in 40 cats by injections of epinephrine, norepinephrine, ethyl-norepinephrine, or isoproterenol. Injection of dibenamine produced reversal of the epinephrine
response, decreased the pressor response to nor-epinephrine, but increased the depressor action of isoproterenol. Pronethalol produced ethynorpi-
ephrine reversal, increased the pressor response to epinephrine, and reduced or abolished the depressor effect of isoproterenol.

The arrhythmia threshold doses of the cate-
 cholamines were increased to eight times those of the controls; large doses of isoproterenol in-
creased the arrhythmia threshold doses to four times those of the controls. These results suggest that the cyclopropane-catecholamine arrhythmias are blocked by beta-adrenergic blockade and that myocardial ectopic excitation may be attri-
butable to the beta-adrenergic receptors.

LEWY

Killip, Thomas, and Baer, R. A.: Hemody-

Hemodynamic measurements were made in 27 patients with atrial fibrillation before and after reversion (or attempted reversion) to sinus rhythm by the use of direct current counter-
shock. Reversion was successful in 21 patients, of whom 10 had predominant or isolated rheumatic mitral valve disease (group II), five had predominate aortic valve disease (group III), and six had no detectable underlying heart disease (group IV). Group I consisted of six patients with various forms of heart disease, valvular and nonvalvular, whose hearts failed to revert. The initial measurements were obtained after an over-
night fast and following at least 3 days of rest in the hospital; the patients were maintained on digitoxin but received no other anti-arrhythmic drugs or sedatives. Twenty-four hours later, cardio-
version was performed (or attempted) under light anesthesia. Twenty-four hours later the sec-
ond measurements were obtained, also following an overnight fast. There was no significant change in any measurement in the patients of group I. In group II, the mean heart rate increased from 62 to 72 beats/min \( (P < 0.025) \), the cardiac index increased from 1.99 to 2.63 L/min \( (P < 0.001) \), the stroke volume increased from 57 to 65 ml \( (P < 0.05) \), while the oxygen consumption and arterial pressure were unchanged. One patient from group III deteriorated, as judged by both clinical and hemodynamic features; similar marked myocardial depression from counter-
shock has been reported previously by Resnekov and McDonald (Lancet 1: 506, 1965). The re-
main ing four patients in group III showed hemo-
dynamic evidence of improvement comparable in
degree to those in group II. In group IV, cardio-
version was not accompanied by any consistent change; for example, the cardiac index was 2.07 L/min before and 2.21 L/min after. Studies were also made during exercise. The maximal heart rate attained during exercise was less after suc-
cessful reversion than before. The cardiac output during exercise was greater after (3.34 L/min) than before reversion (2.74 L/min) in group II, while in the other groups it did not change signifi-
cantly.

MARSHALL


Forty episodes of ventricular fibrillation were successfully treated by multiple counter shocks in a 63-year-old Caucasian male. The recurrent epi-
isodes of ventricular fibrillation occurred immediately after surgery and, except for an episode of acute pulmonary edema which occurred 11 hours postoperatively, the patient had an uneventful recovery and was discharged from the hospital 6 weeks later. The authors concluded that regardless of how desperate the situation may ap-
ppear, resuscitative procedures should be applied with urgency and vigor since a favorable outcome may occur even when the prognosis is extremely poor.

KARPFAN

ATHEROSCLEROSIS

Buchwald, Henry, and Varco, R. L.: Ileal By-
pass in Hypercholesterolemia and Athero-

Nineteen patients with hypercholesterolemia and atherosclerosis have been subjected to sub-
total bypass of the ileum. One postoperative death was due to myocardial infarction. There was a mean reduction of 40% from preoperative levels of cholesterol in the plasma, and the re-
duction has been maintained for the duration of the follow-up period (up to 30 months). The operation did not result in any significant loss of weight or other evidence of nutritive malabsorp-
tion. Clinically, regression of xanthomata, ameli-
oration of angina pectoris, and apparent cessa-
tion in the progress of arterial lesions were noted.

MARSHALL

Food and drink consumed during a 1-week period were compared with serum lipid levels of approximately 125 male survivors of a myocardial infarction and of control subjects. Significant correlations were found between coffee drinking and elevation of each serum lipid and lipoprotein fraction in the coronary group but not in the control group (who drank similar amounts of coffee). Other nutrients had no consistent correlation in either group. Tea tended to have negative correlations, suggesting that consumption of caffeine was not the basis for the effect of coffee on the serum lipids. It was suspected that coffee contains a substance that elevates serum lipids in susceptible persons and that such individuals may be prone to develop coronary heart disease.

CONGENITAL ANOMALIES


The incidence of urinary tract abnormalities was determined in a group of 421 children with congenital cardiovascular disease. Nine (approximately 2%) were found to have serious urinary tract disease and 15 (3.5%) were determined to have abnormalities which were of no clinical significance. The incidence of four renal anomalies (bifid collecting system, rotated kidney, horseshoe kidney, and ectopic kidney) was compared with the incidence of these anomalies occurring in a group of patients without cardiovascular disease, and no significant difference was found in the incidence in either group.


Of 137 patients with coarctation of the aorta, five (3.7%) had an associated anomalous origin of the right subclavian artery, from above (two patients), below (two patients), or directly at the coarctation (one patient). While this anomalous origin, as such, is diagnosed by its typical impression on the esophagus, its origin with respect to the coarctation can be pinpointed by comparing blood pressure in the four extremities. Equal pressures in both arms indicate that both subclavian arteries arise above the coarctation. If the blood pressure of the right arm is less than of the left, the anomalous right subclavian artery arises at or below the coarcted segment.

THILENIUS

CORONARY ARTERY DISEASE AND CORONARY HEART DISEASE


Two hundred and twenty-three men who had sustained one episode of acute myocardial infarction and were subsequently free from serious complications (such as persistent heart failure) were maintained for as long as 14 weeks on anticoagulant therapy with phenoindione. Therapy was then stopped abruptly (over 3 days or less) in 137 patients, and in 83 patients over a period of 4 days to 6 weeks. During the 6-month period following termination of full anticoagulant therapy, the rate of reinfarction, with or without death, was slightly higher in the group with abrupt termination, but this difference was statistically not significant (0.5 > P > 0.3). There was also no significant difference in reinfarction rate with respect to duration of anticoagulant therapy (4 weeks or less versus 5 to 14 weeks).

THILENIUS

ELECTROCARDIOGRAPHY, VECTORCARDIOGRAPHY, BALLISTOCARDIOGRAPHY, AND OTHER GRAPHIC TECHNIQUES


The exercise electrocardiogram of 13 myxedematous patients (15 to 58 years of age) was studied before and after hormone therapy. Prior to treatment, all patients developed electrocardiographic changes during exercise consisting of T-wave inversion or further increase in depth of an already inverted T wave, sagging of the ST segment, and depression of the J point. After therapy, these changes associated with exercise mostly disappeared.

It is suggested that this abnormal response to exercise, which resembles ischemic heart disease, is secondary to a metabolic defect, resulting in
poor tissue-oxygen uptake. The exercise ECG does not help in determining whether a patient is liable to develop symptoms of cardiac ischemia when treated for myxedema.

Thilenius


The electrocardiograms in 30 patients with complete transposition of the great vessels were analyzed before and after creation of an atrial septal defect and after total repair with the Mustard procedure. Preoperatively, the electrocardiographic picture was variable depending on the underlying pathophysiology; right ventricular hypertrophy was the usual pattern in cases with an intact ventricular septum and low pulmonary vascular resistance whereas combined ventricular hypertrophy was common in the presence of ventricular septal defect and elevated pulmonary vascular resistance. In the preoperative electrocardiogram, right atrial hypertrophy was noted in 56.6% whereas postoperative notching, prolonged duration, and diminished amplitude of the P wave were observed in 90%. A flat and inverted T wave was observed in lead I and in the left precordial leads prior to surgery; postoperatively, the T wave increased in magnitude and became upright in the majority of changes. An rsR' or an rR' pattern occurred in the right precordial leads of the postoperative group; these changes were thought to be due to volume overloading of the right ventricle secondary to an increase in systemic blood flow. The prolonged PR interval and flattening of the P waves, seen in the electrocardiogram after total repair, was thought to be due to surgical trauma. No changes were observed in ventricular hypertrophy patterns after total correction was achieved. Arrhythmias were commonly observed in the immediate postoperative period but these were transitory and responded to medical therapy.

Karpman


The authors carefully reviewed the causes of pacing failure in transvenous and implanted pacemaker systems. In all instances where pacing failure occurred in patients with bipolar pacemaker circuits (except when both wires to the heart were broken), pacing was restored without thoracotomy or replacement of the transvenous pacemaker catheter. In instances of pulse generator failure, the battery or pulse generator was replaced and, in cases of malposition, the catheter was repositioned. Wire breaks or short circuits were corrected by establishing a unipolar circuit and, in situations where increased impedance or threshold for myocardial stimulation occurred, the output of the pulse generator was increased. The authors emphasized that if the defect in the malfunctioning pacemaker system could be exactly detected, it could usually be corrected rapidly and easily. Whereas numerous failures occurred in the early phases of transvenous pacemaker development, the incidence of pacemaker malfunction has been less than 20% in the last 60 cases in this series. However, a 33% incidence of pacemaker malfunction occurred in the last 25 patients with implanted pacemakers. The authors carefully described their technique for detecting the exact location of the pacemaker malfunction in patients with malfunctioning transvenous pacemakers as well as in patients with malfunctioning implanted pacemakers.

Karpman


Serial electrocardiograms (ECG) of 60 patients with acute pulmonary embolism, diagnosed by defined clinical criteria (34 patients), by autopsy only (seven patients), or both (19 patients), were reviewed. Atrial arrhythmias were common (38.3%), consisting of premature beats, flutter, or fibrillation. P waves taller than 0.25 mv, indicating changes in atrial depolarization, were noted in 28.3%. "Staircase ascent" of the ST segment was present in 38.3%. The "classic" changes S1Q3 were observed in 26.8% and transient right bundle-branch block in 25.0%. Clockwise rotation about the longitudinal axis and q waves in V1 occurred in only 16.6%. "Ischemic" ST-T patterns, inversion of T waves in right precordial leads, and 1° A-V block appeared in less than 10%. Three fourths of the patients had at least one of these ECG changes, but 41.6% showed three or more. It is concluded that the ECG is a very useful tool in the diagnosis of acute pulmonary embolism. Since it is not pathognomonic, it has to be carefully correlated with clinical data.

Thilenius