ABSTRACTS
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ARRHYTHMIAS

Nine patients, age 34 to 81, had an electric cardiac pacemaker implanted in 1962 to relieve Stokes-Adams attacks. The oldest patient died 4 weeks later of uremia. The remaining eight were relieved of seizures, and seven of them became physically active. Despite the occurrence of a variety of complications associated with the surgery and with the failure of the apparatus or wires in two instances, the over-all opinion was that this was a satisfactory type of therapy in patients inadequately responsive to medical treatment.

Rogers


Alternating electrical current has been widely used in the treatment of ventricular fibrillation. The use of direct-current shock in the treatment of patients with atrial and ventricular arrhythmias has recently been described. The use of direct-current enables the shock to be applied at a precise moment in the cardiac cycle, since the charge is activated by the R wave of the electrocardiogram; thus undesirable effects such as ventricular fibrillation are avoided. Fifty patients with either atrial fibrillation or flutter or tachycardia, who had failed to revert to sinus rhythm after optimum drug therapy, were treated with direct-current shock. Of the 50 patients, 43 (86 per cent) reverted to sinus rhythm after direct-current shock. All seven cases that failed to revert to sinus rhythm had atrial fibrillation; four had mitral valve disease, and in three atrial fibrillation was associated with no underlying heart disease. Of the 43 patients successfully treated, 15 subsequently reverted to their original arrhythmias. The remaining patients have been observed in sinus rhythm for periods up to 9 months. The few complications that ensued were all mild. Four patients, all of whom had atrial fibrillation with no underlying heart disease, developed transient hypotension; one of these had considerably elevated serum transaminase but no associated clinical or electrocardiographic evidence of myocardial damage. Another developed transient T-wave inversion in leads V3 to V5, without associated hypotension or elevation of serum transaminase. In 15 patients frequent ectopic beats, both atrial and ventricular, occurred and two developed atrioventricular dissociation.

Cucci


Synchronized direct current cardioversion was utilized in 70 patients on 94 occasions for attempted reversion of atrial fibrillation or flutter. The arrhythmia was restored to normal sinus
rhythm in 66 of the 70 patients treated; however, 21 per cent of these patients reverted to atrial fibrillation despite multiple cardioversions and maximally tolerated quinidine therapy; the follow-up period was from 1 to 9 months. Cerebral embolization occurred in three patients but all were transient and left no residual neurologic deficit. The authors outlined the emergency and elective indications for the use of synchronized direct current cardioversion and suggested that a broad policy of patient selection be utilized. They were extremely optimistic regarding the use of this technic in the treatment of arrhythmias because of the high degree of acute success, the low incidence of complications, and the success in maintaining normal sinus rhythm over a follow-up period of 1 to 9 months.

KARPMAN


A continuous electrocardiographic monitoring device was utilized to follow the cardiac rhythm of 30 patients admitted to the Massachusetts General Hospital with acute myocardial infarction. Each of the patients was monitored for an average of 52 hours, and 73 per cent of them were found to have arrhythmias. Ventricular arrhythmias were documented in 50 per cent. Thirteen patients had supraventricular arrhythmias and seven had conduction defects. In eight of 11 patients with ventricular tachycardia, the rhythm was brief and without associated symptoms. In the remaining three, the tachycardia continued until death. Most of the arrhythmias recorded by the monitor were not picked up by the usual clinical methods. The highest incidence of arrhythmias occurred in the first 24 hours. No correlation was found with the use of digitalis and the development of arrhythmias. A possible trend toward occurrence of atrial arrhythmias and conduction defects in inferior infarction was found, but there was no correlation between the incidence of arrhythmias and either the severity of the infarct or the patient’s age.

GUREWICH

ATHEROSCLEROSIS


A postmortem study of the distribution of atheromata was conducted in 122 adult male subjects. The ages ranged from 20 to 89 years. Cerebral atherosclerosis was generally more severe in shorter individuals; the more muscular and the fatter the individual, the greater was the degree of atheroma. There was also a high correlation between greater heart weight and higher systolic and diastolic pressure, and the degree of such atheroma. Coronary atherosclerosis correlated with body build as did cerebral atherosclerosis, but did not correlate with the blood pressure. Aortic atherosclerosis related to the blood pressure, but not to body build. It is suggested that the effect of the atherogenic factors responsible for correlations of the body build and the blood pressure, on the one hand, and the distribution of atheroma on the other, varies among the various vascular areas.

SANCETTA


In the state of Oklahoma no correlation could be found when the total water hardness and specific mineral concentrations of calcium, magnesium, sodium, and potassium were compared with the age-sex-race adjusted cardiovascular death rates in Oklahoma counties.

KALMANSOHN


In 262 sheep of varies ages, macroscopic lesions of the aorta or coronary arteries seldom were found. Gross staining with oil-red O, however, demonstrated lipid-containing areas in the aorta or coronaries in 75 per cent of lambs and in 97 per cent of older sheep. Microscopy revealed that the lesions resembled those in the pig and to some extent those in human infants. But the sheep “atheromas” were seldom raised or calcified, and were never hemorrhagic, thrombosed, or ulcerated, so that there was little similarity to atherosclerosis in man.

ROGERS


Fifty-nine squirrel monkeys (Saimiri sciurens) were obtained from a zoological garden in Florida.
and 15 from a trapping source in Colombia. Forty of 47 aortas stained with Sudan IV had either fatty streaks or atheromatous plaques; 72 of 74 examined microscopically had atherosclerotic lesions. Atheromatous lesions were present in the coronary arteries in 17 of 58 hearts. Mean values for serum cholesterol and triglyceride were 165 and 109 mg. per cent, respectively. The mean blood pressure in 30 monkeys was 130/80 mm. Hg; one had a systolic pressure of 208 mm. Hg. There was no evidence of myocardial infarction in bipolar and unipolar limb leads of electrocardiograms. In summary, the squirrel monkey, unlike other simians, approaches man in its susceptibility to atherosclerosis of the major vessels. Since it is small, omnivorous, and inexpensive, it is a promising model for the study of atherogenesis.

M. MARSHALL

ROENTGENOLOGY


An increase of the transverse diameter of the heart is frequently observed during pregnancy, but usually the cardiac contour retains a normal configuration. At times, however, a selective dilatation of the right atrium occurs, and it may be of such magnitude as to suggest organic heart disease. The authors have observed several such patients in whom the right atrial dilatation had appeared during pregnancy and had persisted for a short period after its completion. All pregnant women showed no other evidence of heart disease. It is suggested that dilatation of the right atrium during pregnancy may result from either or both of two physiologic variables: elevation of right atrial pressure or increased blood volume and flow. The elevation of the diaphragm, which is frequently observed in pregnancy, does not seem to provide a satisfactory explanation for this roentgenographic appearance of the heart, since this elevation was not evident in many women whose right atria appeared dilated.

C. CUCCI


A biplane technic of cineangiocardiography is described, with use of 35 mm. film at 48 frames per second, with continuous operation of both x-ray tubes. Use of antidiffusion grids allows an image of good quality. Out of 200 examinations carried out with this technic, 37 concerned acquired mitral disease, which was studied by selective injection of contrast medium into the left ventricle with the retrograde arterial method of Seldinger, or injection into the left atrium with the transseptal method of Forman. The various aspects of mitral incompetence are analyzed, and the valvular movements peculiar to mitral stenosis are described in detail. Further details are possible with a more rapid film speed.

L. LEPESCHKIN


Cyanotic congenital heart malformations allowing survival into adulthood are uncommon. Angiocardiography is a reliable and essential diagnostic tool in these circumstances. The two most frequent anomalies are patent ductus arteriosus and atrial septal defect complicated by pulmonary hypertension. Eisenmenger's complex, pulmonic stenosis with interstitial shunt, tetralogy and pentalogy of Fallot, and Ebstein's anomaly of the tricuspid valve are infrequently observed; extremely rare are tricuspid atresia, total anomalous pulmonary venous drainage, pulmonic atresia with normal aortic root, and truncus arteriosus. Also rare are complete transposition of the great vessels with pulmonic stenosis and single ventricle with pulmonic stenosis. The angiographic, hemodynamic findings, and factors affecting longevity in eight cyanotic congenital cardiac adults are presented and discussed.

C. CUCCI


The course of oblitative arterial disease was studied in the femoral artery and its main branches by means of repeated arteriographies. In 132 observation periods, no propagation occurred during 93 periods of a mean duration of 34.8 months. Short occlusions had a greater tendency to grow than long ones. Patients receiving anticoagulant therapy were less likely to develop total occlusions.

M. KALMANSOHN

Circulation, Volume XXXI, February 1965

The exact location and size of the atrial appendages vary with atrial contraction; angiographically they are best visualized in the frontal view. In the lateral projection the right atrial appendage obscures the outflow tract of the right ventricle. Congenital atrioventricular septal defects, Ebstein's anomaly, and atrial thrombus are often seen in patients with pulmonic stenosis, tricuspid atresia, and Ebstein's anomaly. An unusual case of partial absence of the pericardium with herniation of the left atrial appendage simulating a mediastinal tumor is reported in detail. The identification of a thrombus in the left atrial appendage is of considerable importance in rheumatic heart disease, for this finding will alter the surgical approach to mitral valvulotomy. The angiographic findings of 50 patients with mitral stenosis were correlated with the surgical and pathologic findings. In 38 patients without thrombus the left atrial appendage was not visualized. Thus failure to visualize the appendage does not necessarily mean that a thrombus is present. Of the 11 cases in which the left atrial appendage was visualized, only one patient had a thrombus. For practical purposes, if the atrial appendage is visualized it may be assumed that no thrombus is present. Thrombosis of the left atrial appendage associated with filling defects in the left atrium is a reliable sign of atrial thrombus rather than a myxoma.

Cucci


Roentgenograms of the chest, as well as angiograms and heart catheterization data, were reviewed in 104 patients with ventricular septal defects, 70 patients with patent ductus arteriosus, and 83 patients with atrial septal defects to determine whether there was abnormal vascularity of the lungs. Decreased vascularity of all or a portion of the left lung as compared to the right lung was evident in 16 of the patients with ventricular septal defects, 10 of the patients with patent ductus arteriosus, and four of the 83 patients with atrial septal defects. The changes did not appear to be related to age. The cause is unknown.

Kalmansohn

Surgery and Cardiovascular Disease


This report is based on 126 patients below the age of 20 years (average 15.5 years) with mitral stenosis who were submitted to mitral valvotomy at the Christian Medical College Hospital of Vellore, South India, from 1954 to 1961. A history suggestive of rheumatic fever was given by 53 per cent of the patients. An atrial biopsy was performed in 117 cases: Aschoff bodies were present in 54 per cent. The valve orifice was measured at surgery and was found to be less than 1 cm. in diameter in 87 per cent and between 1 and 1.5 cm. in 11 per cent of patients: in 2 per cent the size of the valve was not recorded. An insignificant degree of associated mitral regurgitation was present in 11 per cent and a moderate degree in 5 per cent. After operation moderate mitral regurgitation was noticed in 13 per cent and severe regurgitation in 2 per cent of the patients. Of the 3 patients who had atrial fibrillation before surgery, the rhythm spontaneously reverted to normal in one after valvotomy. In one patient atrial fibrillation developed after operation but was reverted to sinus rhythm by quinidine. Two patients had an activation of rheumatic fever after surgery which responded promptly to steroid treatment. The surgical mortality was 13 per cent. Seventy per cent of the patients were followed for periods varying from 1 to 7 years. Their result was graded as excellent in 17 per cent, good in 51 per cent, fair in 28 per cent, and poor in 3 per cent. One per cent died during the follow-up. Thus 68 per cent had a satisfactory result and 96 per cent of the survivors improved as a result of the operation. Only one patient has developed re-stenosis.

Cucci


The authors describe for the first time the clinical findings of a congenital aneurysm of the sinus Valsalva ruptured into the pulmonary artery, confirmed and corrected by operative means. This case confirms the concept of Mall and Abbott that these aneurysms result from lack of union of the lateral ridges forming the
spiral septum which divides the truncus arteriosus. In this explanation it must be assumed that the defect becomes secondarily lined with aortic endothelium.

LEPESCHKIN


Coronary angiography was performed by the percutaneous transaxillary approach in 50 patients. The objectives were to confirm the presence of normal coronary arteries in individuals with anginal-like syndromes, to estimate the extent of coronary artery disease for prognosis and therapy, to assist in the selection of patients for coronary surgery and to evaluate the results of coronary endarterectomy. The procedure was monitored by pressure tracings. One patient developed an acute myocardial infarction and two patients had transient hemiparesis. In the more recent examinations, the authors switched from 16- to 35-mm. cineflor film to obtain a more detailed picture.

KALMANSOHN


In the present study the results of the Blalock-Taussig anastomosis performed 10 or more years ago in the United Birmingham Hospitals are analyzed and compared with the outcome in a group of untreated patients with Fallot's tetralogy over the same period. Between the years 1948 and 1952 the diagnosis of Fallot's tetralogy was made in 42 patients. In 30 the disability was so great that operation was performed in or before the year 1952. The remaining 12 patients were less disabled and operation was not therefore recommended. Sixty-seven per cent of the individuals treated have survived, are clinically improved, and are leading relatively normal lives. Of the 12 untreated patients, nine have died (their mean age at death was 13 years) and three are still alive (25 per cent survival rate).

CUCCI


Stainless-steel wire-mesh cylinders implanted subcutaneously in dogs became lined with regular layers of fibrocollagenous tissue. After 4 months, the cylinders were removed and the steel mesh was separated from the lining leaving a fibrocollagenous tube. This tube was used for abdominal aortic grafts in the same or other dogs. Three homografts and two autografts failed for technical rather than biologic reasons. Seven dogs were observed for 3 years and then sacrificed for study of the aortae and vivi grafts. The grafts were thick and inelastic when compared with the normal aorta. Microscopically, there were alternating longitudinal and radial layers of fibrocollagenous fibers. These presumably were due to perpendicular lines of force set up by maturing fibroblasts aligning each lamella at right angles to the succeeding layer. The lining of the tubes became endothelialized. Both autografts and homografts were relatively inert with little lymphocytic response after three years. Before that period, the homografts demonstrated some response in the form of lymphocytic infiltration, indicating some possible rejection response. No evidence of elastic fibers was noted in any of the specimens. Slight constriction was noted at suture lines, but no aneurysmal dilatation or degeneration was encountered. Some biologic activity was demonstrated by radioactive sulfur concentration, but was minimal in comparison with other regenerating similar tissue in these dogs.

KALTMAN


A 10-year experience with the management of 190 patients who had experienced 214 major arterial emboli is recounted. Seventeen patients were given no specific treatment. Six of these were terminal and died, five others presented with frank gangrene and had an amputation, and six were patients with emboli that were improving spontaneously. Thirty-one patients had anticoagulant therapy alone. These were either critically ill or the extremity was judged not to be in jeopardy. Five died during the course of treatment and there were two amputations. Embolectomy was carried out 169 times on a group of 142 patients. The over-all success rate with embolectomy is 63 per cent who survive and improve. Nine per cent survived but had to undergo amputation. The operative mortality rate was 28 per cent. The authors' practice is to administer heparin as soon as the diagnosis of arterial embolism is made. They believe that most major peripheral emboli should be removed. Earliest possible embolectomy is considered basic.
The criterion for operability, however, should be viability of the limb rather than the time interval. A direct surgical approach is not always necessary and emboli may be removed from a distance with a balloon catheter. Heparin is administered 6 hours after the removal of the embolus, and continued until the prothrombin time is 20 per cent of normal by oral anticoagulants. Prolonged oral anticoagulation therapy is then maintained.

March


Seven hundred and sixty-six surgical patients were evaluated from the standpoint of risk factors. The total mortality was 13 per cent. Nearly one third of the patients in the present study underwent abdominal or intrathoracic surgery. Eighty-five per cent of the deaths occurred after the first 24 hours, suggesting that the postoperative heart patient should be watched for late complications. Local anesthesia carried a low mortality rate which may have been due to its association with minor procedures. There was a linear relation between the functional capacity and the mortality rate. Mortality increased in the following sequence: one rheumatic heart disease, two arteriosclerotic heart disease or hypertensive heart disease, and three, pulmonary heart disease.

KALMANSOHN

UNCOMMON FORMS OF HEART DISEASE


Although amyloid deposits in the heart were found in all cases of congo red-negative para-amylloidosis, the cardiac symptoms are minimal or are overshadowed by the neurologic, digestive, or nutritional symptoms. Three patients showed elevated diastolic right ventricular pressures. The electrocardiographic changes seen in 57 patients consisted of T-wave inversion and ST depression of the ischemic type and, in a few cases, myocardial infarction patterns. Other changes included incomplete AV block, intraventricular conduction disturbances, premature beats, right or left ventricular hypertrophy patterns, and, in persons with diarrhea, hypokalemic T-U fusion waves. One of the latter showed also multiple types of dissociation with interference. Normal electrocardiograms were found in only seven patients. Anatomic studies in three patients showed amyloid deposits in the AV valves and in all three cardiac layers, but especially in the endocardium and the subendocardial myocardial regions. These deposits are not so solid as in other forms of para-amylloidosis and do not cause obstruction of vascular lumen. Deposits in the perineurium and endoneurium are characteristic for this special "Portuguese" form of para-amylloidosis.

March


The report consists of 11 cases in which the heart weighed over 500 Gm. at autopsy, and in which a cause for the cardiomegaly could not be established on clinical or pathologic grounds. Cases showing extensive endocardial fibrosis were also eliminated. The patients were between the ages of 34 and 52 at the time of death, and a careful perusal of the Veterans Administration claims folders of these patients indicated that they had normal-sized hearts and no hypertension 7 to 17 years prior to the onset of overt congestive failure. From this study and from the evidence available to them in the literature, the authors conclude that idiopathic cardiomegaly is an acquired disease.

March


The clinical and pathologic features of 17 patients with the carcinoid syndrome were reviewed; nine patients had carcinoid heart disease. The only clinical finding that distinguished those with heart disease from those without heart disease was the presence of a systolic heart murmur suggestive of tricuspid regurgitation or pulmonic stenosis. Urinary excretion of 5-hydroxyindoleacetic acid was similar in the two groups. Cardiac output appeared to be increased in some patients without heart involvement. The heart lesions were pathognomonic and bore little resemblance to lesions found in other diseases. The valvular cusps per se were normal. Left-sided lesions were found in the absence of right-to-left shunts or pulmonary carcinoid tumors. The pathogenesis was unknown and was thought to involve mechanisms other than serotonin.

KALMANSOHN
VALVULAR HEART DISEASE


A diagnosis of supravalvular pulmonary stenosis can be made with certainty only by means of angiocardiography. The localized narrowing can appear in the main trunk of the pulmonary artery, at its bifurcation, in the main branches, or in the peripheral branches. In the latter case pulmonary hypertension is most likely to occur. Four types of stenosis are illustrated with four personal cases.

Lepeschkin


A synthetic plastic mitral valve was described that had leaflets of conical design. The valve was tested in a pulse duplicator and in mongrel dogs. There was no appreciable change of pressure in the left atrium after placing of the valve. The annulus was used for support of the leaflet during closure, which added significantly to longevity of the valve.

Kalmanson


Phasic aortic blood flow was measured by the pressure gradient technic of Fry in five patients proved to have hypertrophic subaortic stenosis by means of pressure measurements and selective cardioangiography and five subjects who had normal blood pressures and no heart disease. In the patients with subaortic stenosis, the flow curve rapidly declined during mid-systole, with the result that 77 to 85 (mean 80) per cent of the stroke volume was ejected during the first half of systole. In the control subjects, 57 per cent of the stroke volume was ejected during the first half of systole. This difference between the two groups was statistically highly significant (p < 0.001). The possibility that the rapid deceleration of forward flow may be causally related to the biferiens pulse in the central aorta is discussed. The forward flow contour in one patient was altered during infusion of isopropylarterenol, a sympathomimetic amine which previous investigators have shown to change the dynamics of ventricular contraction.

Marshall


A 37-year-old man in whom transcutaneous direct angiocardiography of the left ventricle disclosed a localized systolic narrowing several centimeters below the normally wide aortic valve showed characteristic physical findings which were confirmed also in six other patients with subaortic stenosis. The carotid pulse showed a normal ascent to a sharp initial summit, followed by a deep depression and then by a second summit; the depression was responsible for a "celer" quality of the pulse felt by palpation. An intense systolic murmur, not transmitted to the carotid region, showed a maximum in the left parasternal region in the fourth interspace. The murmur began after a silent interval after the first heart sound and the beginning of the carotid pulse, and showed a first maximum corresponding to the first summit of this pulse and a second maximum corresponding to its second summit. The depression between the two summits is attributed to decreased ejection caused by the stenosis appearing as the ventricular muscle contracts, and later overcome by the increasing intraventricular pressure. A paradoxically split second heart sound (aortic component later than pulmonic component) was present. After a postextrasystolic pause the left intraventricular pressure pulse showed greater amplitude but the femoral pulse was smaller. The gradient between the two pressures varied between 0 and 75 mm. at different times. All these findings are characteristic of muscular stenosis, where the degree of the stenosis is variable. A second patient with the same findings in addition to those of mitral stenosis showed also a systolic gradient of 10 mm. in the outflow tract of the right ventricle, which is attributed to a functional systolic stenosis of this tract by the hypertrophic septal muscle.

Lepeschkin


Of 15 patients showing predominant mitral stenosis combined with atrial septal defect, 13 had cardiac catheterization and 14 postmortem or operative confirmation. The atrial septal defect could be easily diagnosed; a systolic pulmonic murmur was present in 13 patients, and the pulmonary artery was wide and showed expansile pulsation in all, corresponding to an...
important left-to-right shunt. Mitral stenosis was difficult to diagnose as an apical diastolic murmur was very soft or truncated in four and absent in three patients, and the pulmonary capillary pressure may be normal or only slightly increased. Left heart catheterization is important as it shows a gradient across the mitral valve and a diastolic murmur near this valve even in these cases. The size of the atrial septal defect cannot be judged by the magnitude of the shunt, as this can be great even in small defects. A tight mitral stenosis with a small defect is suggested by a definite left atrial dilatation, a high left atrial and pulmonary capillary pressure, and a marked difference between pressures in the two atria. Atrial fibrillation appeared in four patients, right bundle-branch block was present in 12, and a right ventricular hypertrophy pattern in five cases. The average life span of 61 cases from the literature as well as personal observation was 41 years, similar to that of mitral stenosis, and early operative treatment is, therefore, recommended. In the present material, correction of both lesions was attempted in seven patients, with excellent results in four under extracorporeal circulation by way of the right-sided route or double thoracotomy.

**Lepeschkin**


The indirect carotid pulse wave was recorded by a cup applicator connected by rigid plastic tubing through a piezoelectric microphone and the tracing obtained on a Cambridge photographic instrument. Simultaneous heart sounds and electrocardiogram were recorded on other channels. Thirty-five normal subjects were compared with 47 patients with aortic stenosis without significant aortic regurgitation in whom the peak systolic gradient across the aortic valve was measured either by left heart catheterization or at operation, 21 patients with mitral and aortic valvular stenosis who had left heart catheterization, and 30 patients with severe mitral stenosis. All measured parameters were corrected for rate by the Bazett formula. When systolic ejection time was greater than 0.36 second (normal 0.309 second) peak systolic gradient was greater than 45 mm. Hg. A normal ejection time did not however rule out significant aortic stenosis. When systolic upstroke time was greater than 0.17 second (normal 0.08 second) this was associated with a peak systolic gradient of 45 mm. Hg or greater. A normal upstroke time did not exclude the presence of significant aortic stenosis. When the time taken to achieve half the maximum height of the systolic rise (the "T" time) exceeded 0.055 second (normal 0.032 second) the peak systolic gradient was greater than 45 mm. Hg. A normal "T" time did not exclude significant aortic stenosis. When the ascending index (upstroke time/mean systolic ejection time) was greater than 0.42 (normal 0.26), the peak systolic gradient was greater than 45 mm. Hg and again a normal value did not rule out significant aortic stenosis. In the presence of aortic stenosis there is a greater prolongation of the ejection time with increasing stroke volume than occurs in the normal heart. In the presence of mitral obstruction sufficient to decrease the cardiac output, and consequently decrease the stroke volume at a given rate, the effect of left ventricular outflow tract obstruction on the carotid pulse wave becomes less evident.

**Hellman**

**Vascular Disease**


Forty-seven patients between the ages of 16 and 37 years were examined. Fifty-three per cent had intermittent claudication and the remainder suffered rest pain, ulceration, and gangrene. Bilateral lower extremity involvement was present in 81 per cent. Twenty-four patients had no associated disease. Six individuals were diabetic and considered to represent precocious atherosclerosis. The remaining 17 patients had thromboflebitis and upper extremity involvement, clinical manifestations of Buerger's disease. Segmental occlusive lesions in the aorta and iliac arteries in 32 patients were demonstrated by arteriography. Seven of these had distal occlusive processes as well. In 15 patients, occlusion was limited to the leg. Reconstructive surgery was performed in 38 patients considered suitable candidates. There was no significant difference in operability in the three clinical categories. Histologic studies of the excised tissue revealed arteriosclerosis or atherosclerosis in 76 per cent of the cases. In the remainder, the findings were similar to those described in Buerger's disease. These latter lesions were seen in all clinical groups, but were more common in those with associated thromboflebitis and upper extremity disease. All patients survived surgery and had improvement except one patient who developed progressive distal arterial occlusion and gan-
muscular pain and wasting, raised erythrocyte sedimentation rate, anorexia, and loss of weight. It has been recently suggested that the underlying histologic lesion is a giant-cell arteritis. The present investigation was concerned mainly with 36 arterial biopsies in 21 of 23 patients with polymyalgia rheumatica seen within a 2-year period. Biopsies were obtained from the temporal artery in all 21 patients as well as from other arteries in a few. The control material was obtained from 12 patients, aged 47 to 94 years who had no known history of this disease. Giant-cell arteritis of the temporal artery was found in 12 patients and nonspecific temporal arteritis was seen in four. Nonspecific inflammation was found in the occipital artery in one patient and in the superior gluteal and a perforating branch of the femoral artery in another. The authors conclude that this investigation supports the view that polymyalgia rheumatica and temporal arteritis are both manifestations of a generalized arteritic disease.

Cucci


The object of this investigation was to attempt a quantitative evaluation of certain changes commonly observable in the arteries of the lower extremity. This study indicates that the arteries of the lower leg develop an increased thickness of the elastic intima as age advances, which is correlated with a diminished thickness of the muscular media. Arteries which subserve a collateral circulation develop a greatly increased bore, associated not only with abnormally thin and elongated muscle cells but also with an increase in the number of these. An unexpected finding was that at all ages the thickness of the muscle coat of the dorsalis pedis is greater than that of its parent artery, the anterior tibial.

Cucci


Raynaud’s disease, a benign functional vasomotor disturbance confined to the finger arteries, must be distinguished from arteriolitis of these arteries, which is more progressive and is often accompanied by similar arteriolitis in the lower extremities, the heart or the brain. Of the 10 patients seen by the authors, six showed such localization. Arteriography of the hand from the denuded radial artery showed that in Raynaud’s disease thrombosis is a late event and appears distally, at the level of the last phalanx, while in digital arteriolitis thrombosis occurs at the base of the phalanx and is an early event. Accordingly, in arteriolitis gangrenous plaques are localized also at the base or middle of the fingers, and the disease progresses too rapidly to allow osseous rarefaction of the distal phalanx or painful hyperkeratosis to occur, as they do in Raynaud’s disease. Thoracic sympathectomy has the best effect in Raynaud’s disease before terminal thrombosis had had time to develop but even in digital arteriolitis it results in cicatrization of the gangrenous plaques.

Lepeschkin

Circulation, Volume XXXI, February 1965

The historical and clinical features of Takayasu's arteriopathy were reviewed and three new cases are reported. Lower limb arteriography was performed in each of three young women. The authors believe that the natural course of this illness could be divided into two distinct phases. The early pre-pulseless phase was of variable duration and severity, was characterized by an elevated sedimentation rate, and demonstrated many of the symptoms commonly seen in systemic lupus erythematosus, namely, arthralgias and arthritis, febrile periods, pericarditis, dermatitis, splenomegaly, Raynaud's phenomenon, anemia, protein abnormalities, and a number of pulmonary manifestations. In the late phase of this illness, dilatation of the aorta or stenosis of its major branches resulted in a protean clinical picture which included one or a combination of the following: aortic insufficiency, angina pectoris, myocardial infarction, hypertensive heart disease, intermittent claudication, a variety of gastrointestinal signs or symptoms, and the various features of the aortic arch syndrome. The authors emphasized that early diagnosis of Takayasu's arteriopathy was important, since combined anticoagulant and corticosteroid therapy may now prevent progression of this disabling and often fatal disease. They concluded that the arteriopathy was essentially a generalized disease process with a predilection for the aorta and its branches.

Karpman


The architecture of the rabbit aortic media was carefully studied by light and electron microscopy at various distending intraluminal pressures after the segments of abdominal aorta had been restored to in vivo length and fixed in formalin or osmic acid. Transverse, longitudinal, and tangential sections of vessels fixed at various distending pressures were examined and measured. At or above diastolic pressure levels, the following occurred: the radius and wall thickness changed only slightly with increasing pressures, Elastin lamellae were straight and interlaminar distances were uniform, the fibrils of the interlaminar elastin net were ranged obliquely, collagen fibers were arranged nearly circumferentially, and collagen and elastin fibers were closely intermingled in the narrow interlaminar space. With increasing pressures below the diastolic value, the changes consisted of an increase in the aortic rates, a decrease in the wall thickness, the waviness of the tubular elastin lamellae decreased uniformly throughout the wall whereas the interlaminar distances decreased uniformly and markedly, and a fine fibrillary elastin network connected the thick lamellae. The mechanical properties of the collagen and elastin components of the aortic media indicated that the wall normally functions as a "two-phase" material; at or above physiologic pressures, circumferentially aligned, collagen fibers of high tensile strength bear most of the stressing force whereas elastin lamellae and fibrils distribute stressing forces uniformly.

Karpman

OTHER SUBJECTS


Methods for the prompt diagnosis of more common forms of cerebrovascular stroke are discussed. Intracerebral hemorrhage was less than one third as common as infarcting lesions, tended to occur in younger individuals with a higher blood pressure and have a more catastrophic onset. The rapid development of stiffness of the neck is practically diagnostic. Eighty per cent of patients with intracerebral hemorrhage have a bloody or xanthochromic cerebrospinal fluid. The differentiation of small versus large vessel occlusive disease is discussed. Some 50 per cent of non-hemorrhagic strokes are due to occlusive disease in one of the arteries in the neck. The clinical diagnosis of large artery disease is suspected when there has occurred one or more bouts of symptoms of stroke with reasonably prompt recovery. An outline of data from 245 necropsy-proved cases is included.

Gurewicz

Azerad, N., Joly, F., Jegou, Cl., and Carlotti, J.: Catheterization of Left Cardiac Cavities with the Micromanometer through the Axillary Artery. Results of the First 100 Cases. Arch. mal. coeur 57: 121 (Feb.), 1964.

Left heart catheterization was performed with a micromanometer catheter introduced through the right axillary artery, with a technic requiring arteriotomy and arterial suture, in 100 patients aged 8 to 58. This was combined with catheterization of the right heart through the axillary vein. Failure to reach the left ventricle was due to failure to penetrate the aortic valvular orifice in 15 patients, failure to enter the ascending aorta despite respiratory maneuvers in 13, and excessive arterial spasm

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in one. However, in 13 of these cases the left ventricle could be reached by a means of trans-septal catheterization from the right atrium. The only serious side-effects during the catheterization were knotting of the catheter in one and excessive trauma of the axillary artery in three patients; these required excision of the area of entry and end-to-end suture. After the catheterization, transient disappearance of the radial pulse with unpleasant sensations in the hand was frequent, but rarely persisted more than 4 hours. In 16 patients disappearance of the radial pulse was permanent, but was not accompanied by motor or sensory disturbances. The advantage of using the axillary instead of the femoral artery for introduction of the catheter is that it requires only one incision for both arterial and venous catheterization, and that it permits leg exercise if the catheters are positioned so as not to cause arrhythmias. The main value of the method is in aortic disease, where it allows recognition of the exact site of stenosis and evaluation of its degree. It was also very valuable in double mitral and aortic stenosis, severe aortic insufficiency, some ventricular septal defects, rupture of the sinus of Valsalva, and mitral stenosis not revealed by auscultation. Numerous examples are given in which this method was crucial in reaching the correct diagnosis.

LEPESCHKIN


An electromagnetic flowmeter and an indicator-dilution method were utilized in order to measure cardiac output, intrathoracic blood volume, and beat-to-beat changes in cardiac output in mongrel dogs. The purpose of the experiments was to test in the intact, conscious dog whose reflexes were unaltered by anesthesia, the concept that a reduction in carotid sinus pressure produced widespread systemic vasoconstriction leading to increased venous return, increased intrathoracic blood volume, and increased cardiac output. The systemic arterial pressure increased markedly during carotid occlusion but there was no significant change in cardiac output, and there was no evidence of a shift of blood from the systemic to the intrathoracic vascular beds. On release of the occlusion, there was a sudden rise in carotid sinus pressure with a reflex slowing of the heart, a rise in right atrial and venous pressure, and an increased stroke volume. The cardiac output decreased immediately after the release of occlusion and there was a drop in systemic pressure. The authors concluded that when the carotid sinus pressure is reduced, the resultant increase in systemic pressure is due to vasoconstriction; however, when the carotid sinus pressure increases, the cardiac output may decrease as the heart slows and this may be responsible for the decrease in the systemic pressure.

KARPMAN


A series of 16 patients suffering from cerebral or retinal ischemia are presented in detail in this paper; in all but three of these patients repeated minor episodes occurred which were either isolated or which heralded a more severe episode. These minor episodes were usually of sudden onset, lasted only a few minutes, and then completely disappeared with no residual signs or symptoms. Four of the patients suffered episodic monocular blindness, two of them had episodic paresis, and five had episodes of both blindness and hemiparesis, but blindness and hemiparesis never occurred simultaneously. These episodes often occurred in the absence of a fall of arterial pressure, and artificially reducing the blood pressure did not produce the syndromes. In six of the cases, a fresh platelet-fibrin thrombus was found at necropsy on the luminal surface of a fibrous, fatty nodule in the internal carotid artery; in each of these patients, the last clinical episode had occurred within the preceding 7 weeks. In six other patients, no fresh thrombus was found on the luminal surface of the internal carotid artery; in each of these patients the last episode had occurred 7 weeks or more prior to examination of the internal carotid artery. The authors concluded that many instances of transient retinal and cerebral ischemia are probably due to emboli arising from mural thrombi in the internal carotid arteries and that a similar etiology may be responsible for isolated central retinal artery occlusion. A further hypothesis is that these emboli may be so unstable that they may disintegrate and restore the circulation. The histologic evaluation of the nodules in the internal carotid artery was compatible with the concept that these nodules may have enlarged secondary to progressive mural thrombosis and that these ultimately became organized and incorporated into the intima of the arterial wall.

KARPMAN

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In this paper the authors thoroughly reviewed the historical and pathologic aspects of the neurovascular syndromes of the upper extremities and presented four case reports of cervical ribs in which occlusion of the main arteries to the limb occurred on the side where the cervical rib was located. The arterial occlusive processes in these four patients clinically resembled embolic phenomenon and, in two patients, the operative findings confirmed this observation. The subclavian artery was dilated to form a fusiform aneurysm distal to the insertion of the scalenus anterior muscle in three of four cases. The subclavian artery was opened surgically in three patients and was found to contain a fresh thrombus superimposed on an older thrombus; in addition, the media was hypertrophied and edematous; the adventitia was thickened and very vascular, and inflammatory cells infiltrated the entire area of the subclavian artery where the mural thrombi were found. Organization of these mural thrombi produced cushions of cellular intimal thickening but no fatty changes were demonstrated.

The authors hypothesized that transient attacks of ischemia with loss of pulses in one of the patients may have been due to emboli which were friable and which fragmented easily and subsequently disappeared. The authors concluded that from the clinical point of view, the most dramatic consequence of mural thrombi was their detachment as emboli. They noted that one type of embolus often was quite large and capable of blocking arteries the size of the brachial artery; this variety of embolus was found to be relatively stable and was composed mainly of fibrin. A second type of embolus tended to be unstable and often produced an occlusion until the thrombus disintegrated, after which the circulation was re-established.

KARPMAN


The important acute vascular lesions of the eye are thrombosis of the central vein of the retina; occlusion of the central artery; temporal arteritis (in about 50 per cent of cases this causes occlusion of the central artery of the retina or of the optic nerve); and isolated lesions of the axial vessels of the optic nerve, resulting in "vascular pseudopapillitis." The author discusses his own experience and reviews the literature. In venous thrombosis he recommends simultaneous administration of anticoagulant drugs (initially heparin) and of fibrinolysis. If these are started early enough, there is improvement in about one third of the cases; however, complete healing is exceptional. The use of vasodilator drugs for treatment of embolism of the central artery of the retina is of no value. Treatment of the vascular pseudopapillitis due to either arteriosclerosis or temporal arteritis is also discouraging. However, corticosteroid drugs, if given early, serve to prevent involvement of the second eye in temporal arteritis.

marshall


This is a review and assessment of the experience with external cardiac resuscitation during a 2½-year interval at the Victoria Infirmary, Glasgow. Standard technics of external cardiac compression, electrical defibrillation (A.C.), artificial respiration and drug administration, including epinephrine and sodium bicarbonate were employed. The group was selected in that resuscitation procedure was limited to instances of sudden electrical death, and to patients with a good coronary prognostic score. Of 24 medical patients subjected to resuscitative measures, eight left the hospital in good condition, while an additional seven regained consciousness but died within 48 hours. Sixteen of the patients had established myocardial infarctions, and, of these, six left the hospital, and four died after regaining consciousness. Direct internal defibrillation was employed in three of the successfully treated patients, twice after external shock had been unsuccessful. In the authors' hands, external countershock was successful only twice. A precordial blow restored the circulation in three instances before an electrocardiogram could be recorded. Spontaneous reversion of ventricular fibrillation in the course of external cardiac compression was observed five times. External resuscitative measures failed when airway obstruction prevented adequate oxygenation, when bizarre ventricular complexes preceded the arrest, and when ventricular rupture occurred after infarction. Treatment was also unsuccessful when myocardial damage was severe, and when circulatory arrest was precipitated by asystole rather than by ventricular fibrillation.

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