ABSTRACTS OF CARDIOLOGY


A review of previous work on the coronary circulation, e.g. various factors affecting coronary flow, the nervous control and the pharmacology of the coronary circulation, and the coronary blood flow in disease. Because of the lack of methods suitable for application to man or even to intact animals, the coronary circulation has been studied mainly on isolated animal hearts or heart-lung preparations. The results so far are therefore mainly of academic interest. The authors point out that differences in anatomy and physiology of the coronary vessels among various species as well as among individuals of the same species have not hitherto been adequately stressed. Discretion must be used in applying information derived from artificial preparations to the intact animal, from species to species and even among individuals of the same species. Conclusions with regard to human coronary physiology have been drawn freely from animal experiment.

R. T. Grant


In a preliminary report on the significance of cardiac murmurs in infancy the author records observations on 630 ostensibly healthy children examined at the ages of about 6 weeks, 3, 6, 9, and 12 months, and thereafter at 6-monthly intervals, most of them for about 3 years. Regular 6-monthly radiographic examinations were made in all children. Thirty-two (5%) had murmurs which were classified according to the age when first noticed and are described as transient, temporary, or persistent. No diastolic murmurs were observed. Of the 32 murmurs 23 were not detected until after the child was 9 months old. There was a relatively greater number of transient murmurs among infants observed in the early weeks of life. Six out of 8 murmurs appearing at the age of 18 months remained permanent. With the exception of 2 cases, no associated symptoms or signs could be observed. No correlation between clinical findings and radiographic appearances could be established. The results are as yet too few to allow any conclusions to be drawn.

H. Herlinger


Aberrant right subclavian artery is the most common congenital anomaly of the aortic arch. In such cases the right subclavian artery emerges from the extreme left side of the aortic arch, posteriorly and to the left of the origin of the left subclavian. The aberrant vessel runs obliquely upwards and to the right, usually passing behind the esophagus as it crosses the midline. This anomaly is often accompanied by other congenital anomalies of the large vessels at the base of the heart. Five cases of this syndrome are reported; 3 were accompanied by a patent ductus arteriosus, 1 by a tetralogy of Fallot, and 1 by a cardiac anomaly of uncertain nature. The radiographic features of anomalous right subclavian artery and of patent ductus arteriosus are reviewed and the value of a barium “swallow” during the radioscopie examination of the heart is stressed.

A. Orley


Thrombotic obliteration of the aortic bifurcation must not be confused with the well-known “saddle embolism.” Important features are said to be (1) sexual disturbances—poor erection and ultimate impotence; (2) intermittent claudication due to fatigue in the limbs rather than to actual pain; (3) symmetrical atrophy and pallor of both legs; (4) no pulses at groins or below; (5) no oscillometric readings in lower limbs; (6) ultimately gangrene. Aortography may be used to confirm the diagnosis.

Treatment is aimed at: (1) Excision of the thrombotic segment to prevent spread of clot and production of vasoconstrictor impulses. (2) Improvement of collateral circulation in the lumbar region by high lumbar ganglionectomy. In good-risk patients this should be accomplished by excision of the thrombosed aortic segment and obliterated branches through a left iliac incision. Left lumbar ganglionectomy is performed at the same time, and upper right lumbar ganglionectomy at a later stage. If the condition is due to thromboangiitis obliterans unilateral adrenalectomy is advised. In poor-risk patients ganglionectomy should be performed first and aortectomy later if the patient’s condition will allow.

J. B. Kinmonth


From Johns Hopkins University, the author reviews the common anomalies of the aorta, classifying them and commenting on some, with particular reference to 2 cases of a previously unreported anomaly, that of left aortic arch with right descending aorta.

He differentiates between right aortic arch with right descending aorta and right aortic arch with retroesophageal aorta (right and left). He describes the
double aortic arch and comments on the common variations in the subclavian artery. He then presents, in great detail, his cases of the new anomaly. Each patient had been considered to have the tetralogy of Fallot, and both were candidates for the Blalock-Taussig operation.

The first, a 7-year-old white female gave a history of cyanosis from early infancy and extreme dyspnea on the slightest activity. Radioscopy of the esophagus showed: (1) indentation of the left margin by the aortic arch, establishing the fact that a left-sided arch existed; (2) absence of any vascular or cardiac shadow to the left of the barium column between the aortic knuckle and the upper left border of the heart; (3) descent of the esophagus far to the left of the midline. At operation the course of the aorta was demonstrated, but no anastomosis was performed as the pressure in the pulmonary artery was considered too great. The second, an 11-year-old white male, had had cyanosis from the age of 1. Radiographs had the same characteristics as in Case 1. An anastomosis was performed, but the course of the aorta could not be clearly demonstrated, though by inference this case appears to have been one of left aortic arch with a right descending aorta.

Morag L. Insley


This paper reviews the methods of interrupting the afferent pain fibres from the heart in cases of angina pectoris, and presents the clinical results in 83 cases.

The methods available are: (1) Paravertebral injection of procaine followed by 95% ethyl alcohol around the upper four thoracic sympathetic ganglia. (2) Sympathetic ganglionectomy. The stellate and upper three thoracic ganglia are resected extrapleurally on one side only, the other side being dealt with later if necessary. (3) Posterior rhizotomy. The upper four thoracic posterior spinal nerve roots are sectioned on both sides.

This is undoubtedly the most effective way of cutting off all afferent impulses from the heart at one operation, but it is a major and time-consuming operation and carries the risk of ischaemic transverse myelitis.

Surgical treatment should be reserved for those whose pain, after adequate observation, cannot be controlled effectively on a medical regime, and especially for angina decubitus. Patients with good cardiac reserve and bilateral pain are suitable for laminectomy and thoracic root section. For patients in whom the risk is slightly greater, with unilateral pain, thoracic ganglionectomy is preferred. Where the risk is very great, paravertebral block with alcohol is the only possible routine.

Clinical results in 75 patients treated with paravertebral alcohol block are reviewed; 56% were completely relieved of pain; in 21% partial relief only was obtained; 8% died as a direct result; 10% developed severe intercostal neuralgia. Of the group in whom initial results were good there was recurrence of pain due to recovery of nerve conduction in 19% after periods varying from 2 months to 5 years. Eight cases have been treated by left-sided thoracic ganglionectomy.

Complete relief of pain on the denervated side was obtained in all. There was 1 death (from empyema). In 1 case there was slight recurrence of pain after 6 years, due to nerve regeneration. One patient was treated by posterior root section with complete relief.

Although the number of cases is not large enough to be statistically significant, results show that prognosis as regards life in cases of severe angina is not altered by cardiac denervation. In angina decubitus with loss of sleep, worry, and threatened drug addiction relief from pain and anxiety has been effective. After complete division of all afferent nerves the place of anginal pain as a warning signal is taken by constriction or oppression referred to the suprasternal notch, and painless dyspnea. Occasionally a pain referred to the jaw of the same side becomes evident; the mechanism of this is not understood. The authors consider that thoracic ganglionectomy should be the operation of choice whenever possible.

F. B. Cockett


Doubt is cast upon the value of estimations of the vital capacity, circulation time, venous pressure, and body weight as indications of the extent of cardiac reserve in patients who have been safely brought through a phase of congestive heart failure. It would appear that a careful evaluation of symptoms and clinical signs is a better guide. Patients who have been relieved of congestive heart failure, even with regular sinus rhythm, should always be placed upon maintenance courses of digitalis leaf. The present study of 104 patients shows that patients given such maintenance doses are much less likely to relapse than are similar patients not given maintenance doses. A suggested maintenance dose is 0·1 to 0·3 g. of digitalis leaf daily.

G. F. Walker


In a series of cases of persistent paroxysmal auricular tachycardia, the tachycardia ceased abruptly within 40 minutes after the intravenous injection of 0·8 mg. "lanatoside C." No toxic reactions or undesirable side-effects occurred.

R. T. Grant


This is a brief single case report of a 29-year-old man with developmental anomalies and hypoplasia of the vascular system, who showed severe hypertension (300/150 mm.) and cardiac failure (heart weighing 560 g.), although the histological changes in the kidneys were very slight. The right subclavian and right common carotid arteries showed recanalization following complete obliteration. No changes were noted in the fundi, and the Wassermann reaction was negative. Comparison is made with the results of experimental occlusion of renal arteries.

A. C. Lendrum

The most obscure thoracic lesions are those in the retrocardiac space where there is ample room and where consequently a lesion may reach considerable size before it causes clinical signs of compression. Retrocardiac shadows may be produced by lesions of the esophagus, stomach, lungs, spine, paravertebral tissues, and aorta. The author describes a diagnostic sign consisting of multiple convex lines within the cardiac shadow, indicating the presence of the stomach in the retrocardiac region. He also describes a simple double-contrast method (gas-distension of stomach and barium filling of esophagus) for the study of the cardio-esophageal junction and of the relation of the lower third of the esophagus to the stomach. Finally, the author asserts that a diagnosis of asymptomatic retrocardiac lesions may be made from observation of abnormal retrocardiac shadows in routine radiographs of the chest. A. Orley


Penicillin can now be expected to control the infection in about 90% of patients suffering from subacute bacterial endocarditis, but about 35% of these die of heart failure or other complications.

Early schemes of treatment showed that, at least with shorter courses of penicillin, such as a total of 5 million units, the duration of treatment was of greater importance than the amount of penicillin given daily. For this reason, in a later group of 158 previously untreated patients, the duration of treatment was established at 28 days—of 17 who received 100,000 units daily, 7 relapsed or died of infection; of 83 receiving 250,000 units daily 13 relapsed; and of 58 who received 500,000 units daily 4 relapsed. Only occasionally can failure be explained as due to a highly resistant organism, but when the coefficient of resistance of the organism is more than about 8, it is important to give larger doses, possibly over an extended period.

Of 42 patients who had relapsed after a long course of treatment, 59% again relapsed or died infected. Acquired resistance to penicillin is seldom an important factor in this high incidence of failure; it may be that these patients belong to a naturally resistant group or that the infecting organisms are buried in avascular tissue. A course of 2 million units a day for 8 weeks is suggested for patients who have relapsed. Relapses seldom occur more than a month after treatment, but a small risk remains even after a year or more of good health. It is sound practice to remove foci of infection, particularly in the teeth, while the patient is receiving penicillin. The majority of deaths occurred either during treatment or soon after its completion. Heart failure caused 40% of the deaths and was a major factor in another 16%. At necropsy apparently living organisms were found in the heart valves of one-third of those whose infection, according to the usual clinical criteria, had been controlled.

In prognosis the nature of the initial endocardial lesion is of slight importance; the highest death rate was found in combined aortic and mitral lesions, and the lowest in septal defects. Evidence of heart failure is much more significant; in a group of patients where this was absent 36-4% died; of those with moderate failure 75% died, and of those who had severe heart failure when treatment was started all died. Of those recently infected 34% died, while of those infected for 6 months or more over 60% died. The state of nutrition is another significant factor; this emphasizes the need for an adequate calorie intake as with other prolonged fevers. Only in the group over 50 should age influence the prognosis. T. Semple


The author carried out frequently repeated determinations of prothrombin level in 64 cases of acute coronary occlusion and in 657 controls free from coronary disease, and found significant hypoprothrombinemia in the coronary cases—that is, with a level below 70% of normal. This stage is considered as heralding an episode of bleeding in general, and of coronary subintimal hemorrhage in particular, thus precipitating coronary thrombosis. The frequent relation between gall-bladder disease and coronary disease, with the known hypoprothrombinemia in the former, is commented upon.

Cases of coronary occlusion were treated with intramuscular doses of vitamin K (50 to 72 mg. every 6 to 8 hours) until the prothrombin level reached 100% of normal. Rapid cessation of pain under this regime was observed. In some cases prothrombin levels of 100% of normal were encountered immediately after the onset of the coronary occlusion, but in these cases a fall of from 30 to 50% below the first reading was encountered 6 to 8 hours later. The initial high level in these cases is regarded as a compensatory mechanism that becomes exhausted within a few hours. A mortality rate of 4% in this series is arrived at by excluding 8 patients dying before adequate treatment could be given and 3 whose treatment was considered inadequate. The author makes no attempt to reconcile his claims with those of workers who use heparin and dicoumarol. G. Schoenewald


In recent years venesection has been less used in the treatment of hypertension, and is now condemned by many authorities as dangerous. Angiospasm, angiospastic hemiplegia, and collapse are some of its dangers. Two cases are reported in which electrocardiographic findings are given before and after venesection in hypertensive patients with anginal symptoms. From these findings and from experimental data it is concluded that venesection may lead to acute coronary insufficiency by causing a sudden fall in aortic pressure. The prognosis in these cases is otherwise better than in patients who have anginal symptoms with a low blood pressure. Harold Jarvis

Tetraethylammonium bromide (T.E.A.B.) was given by slow intravenous injection in a 10% solution in doses of 0.3 to 0.5 g. (4 to 6 mg per kilo body weight). The effects were compared with those of "sodium amytal" in a preliminary group of 30 patients with essential hypertension. With T.E.A.B. the average fall in blood pressure was 58 mm. Hg systolic and 28 mm. diastolic; with sodium amytal it was 74 mm. and 35 mm., respectively. T.E.A.B. produced no ill effects, and its action was transient. Ten patients were operated on (removal of sympathetic chain and ganglia from D6 to L1), and in 7 cases pre-operative depression with T.E.A.B. agreed to within 10 mm. Hg with diastolic depression recorded 2 weeks after completion of the second stage of the operation. Sodium amytal gave similar agreement in 9 cases. Four patients were further investigated after operation, and in each case T.E.A.B. gave a level lower than that in the pre-operative test. Six patients with hypertensive heart failure were treated with T.E.A.B., some by intramuscular injection of 1 g. All patients showed temporary subjective improvement, often for some hours. Electrocardiograms showed no change, and no cardiac pain or infarction has been reported after injections. The speed and safety of the test with T.E.A.B. is not associated with an accuracy equal to that of the sodium amytal test, and this is attributed to the fact that the former drug produces only partial ganglionic paralysis, as indicated by its increased action after sympathectomy. The beneficial effects of T.E.A.B. in hypertensive heart failure are attributed to decrease in pulmonary congestion similar to that following venesection, and last 2 to 8 hours after intramuscular injection. Since venous pressure falls in hypertensive cases to an equal extent with or without failure, the fall is considered to be due to a lowering of peripheral resistance. The drug is thus of use in the emergency treatment of acute left ventricular failure or paroxysmal nocturnal dyspnea. In the treatment of chronic congestive failure the fall in urinary output which results from the lowering of blood pressure makes its use inadvisable at present. W. A. Bourne


The pericardial space in health is fairly lax and has an appreciable capacity for accumulating fluid without presenting the characteristic contours. When accumulation is rapid, the cardiac contours are obliterated and the spherical form with a short pedicle is seen. Slow accumulation of fluid gives time for some accommodation of the pericardium and then differentiation from cardiac dilatation may not be easy. The author has found Valsalva's test followed by forced expiration a useful means of differentiation. The dilated heart responds, first by becoming smaller, and then by notable increase in size with enlarged amplitude of pulsation. In the presence of a pericardial effusion there is little or no variation in size or visible behaviour. The bifurcation of the trachea may be a further useful index. In cases of dilatation, especially when the left auricle is enlarged, the bifurcation angle is widened from the normal 75 degrees to over 100 degrees. When enlargement of the heart shadow is due to fluid there is only slight widening, if any. A further useful point is that, in the latter condition, fluid tends to obscure the carina, while in cardiac dilatation the bifurcation is usually clearly visible. Pericarditis with effusion may displace the barium-filled oesophagus to a disproportionately slight extent and the curvature is wide and smooth. The dilated heart is likely to displace and impress the oesophagus more definitely, the impression being sharper and of a more localized nature. Kymography may give more precise evidence of the diminution in pulsation occasioned by fluid. A. M. Rackow


Calcification in the membranous septum of the heart, sometimes associated with heart block, can be demonstrated radiologically. The authors' views are based on 61 patients who showed radiological calcification in the mitral or aortic rings; of these, 12 had some degree of heart block. In the left oblique view the mitral ring is projected in its most open form and the posterior limb, when calcified, clearly shown. The authors regard as evidence of probable septal involvement: (1) caudal extension of aortic ring calcification (see in 2 cases with heart block); (2) complete calcification of the mitral ring (see in 8 cases with heart block); (3) incomplete calcification of the mitral ring with an aggression of calcium at the medial end of the posterior limb (see in 2 cases of heart block). The last type was observed also in cases without heart block, and is considered to be a less specific sign than the first two. A. M. Rackow

This paper, based on a study of 50 unselected cases, is a plea for a wider use of quinidine sulphate. In the authors' view the only definite contraindications to its use are severe conduction defects, subacute bacterial endocarditis, and angina pectoris, previously relieved by the onset of fibrillation. All their patients were admitted to hospital and complete digitalization was effected before quinidine therapy was instituted. An average increase of 270 ml. in vital capacity followed return to normal rhythm in 18 patients, and an average decrease in venous pressure of 20 mm. of saline solution in 13 patients. The average decrease in circulatory time in 14 patients was 677 seconds. After a test dose of 0.2 g., quinidine was given every 4 hours day and night. The dosage began at 0.5 g. and was increased by 0.2 g. every 12 hours until normal sinus rhythm occurred, toxic symptoms appeared, or 0.8 g. was reached. Further increase of dosage was slow, usually by 0.1 g. per dose every 24 hours. After reversion to normal rhythm quinidine was given in the same dosage at 6-hour instead of 4-hour intervals.

In 35 patients for whom a satisfactory maintenance dosage was worked out, the average amount necessary for reversion was 0.45 g. every 4 hours, and the average maintenance dose was 0.28 g. every 6 hours. Sinus rhythm was restored in 44 patients, of whom 14 had maintained normal rhythm for from 4 months to 2 years, half of them being on maintenance doses of quinidine. In the 5 cases of thyrotoxic heart disease treatment was unsuccessful until hyperthyroidism had been corrected. Apart from the 2 patients under 20, best results were obtained in the 40-to-49-year age group, in rheumatic heart disease, and in those in whom the adequate 4-hourly dose did not exceed 0.3 g. It is claimed that restoration of normal rhythm may do much to prevent the development of a cardiac neurosis. Eleven of the 50 patients studied died, during the time of observation which was apparently a period of 2 years.

The authors consider that this study indicates that much larger doses of quinidine sulphate may safely be administered than has been thought practicable. [It is obvious (as in the 3 fatal cases quoted) that the range of patients treated was much wider than that considered suitable by most British cardiologists.]

Donald Hall


A shunt occurs in cases of auricular and ventricular septal defect, and in patency of the ductus arteriosus. These communications should have an effect on the circulation similar to that of a peripheral fistula, initiating an accessory circulation that requires a certain volume of blood to fill it. Theoretically this blood can be supplied by: (1) reduction of blood flow distal to the fistula, (2) increase in total blood volume, or (3) both.

Several investigators have found an increased blood volume in patients with arteriovenous fistula. The present authors contribute blood volume estimations (by the blue-dye method of Gibson and Evans) on normal children and patients with congenital heart disease. The latter were studied in three general groups: (1) patent ductus arteriosus; (2) cyanotic congenital heart disease, not including coarctation of the aorta or aortic stenosis, since abnormal shunts do not occur in these cases; (3) cyanotic congenital heart disease of varying type. In 13 patients with uncomplicated patent ductus the blood volume was elevated—considerably in 4, while 1 had a blood volume below the mean normal. In 7 of 8 instances where the blood volume was estimated before and after ligation there was a decrease in blood volume following surgery. The blood volume in cyanotic intracardiac arteriovenous shunts was elevated by a smaller amount. It is tempting to attribute this to the smaller volume of blood passing through the fistula, since in intracardiac shunts the flow is probably intermittent, while in extracardiac shunt the flow is continuous, though uneven. In the cyanotic type of congenital heart disease blood volume was greatly increased, the increased red cell volume being usually associated with diminished plasma volume. This resulted in a rise in viscosity.

M. Baber