ABSTRACTS OF CARDIOLOGY


Congenital and acquired heart disease, as well as pulmonary disease produce significant changes in the size and configuration of the pulmonary artery and its branches which can best be studied by means of angiocardiography. Dilatation of the pulmonary artery can be demonstrated in cases of congenital aneurysm and septal defect, being particularly marked in Lutembacher’s syndrome. In cases of patent ductus arteriosus, the widening is well demonstrated, as also is the retrograde flow coincident with aortic filling. Angiocardiography is of particular value in differentiating Eisenmenger’s syndrome from the tetralogy of Fallot. In the former, the dilated pulmonary artery is visible; in the latter, if visualized at all, it is small. In cases of pulmonary stenosis the exact location of the narrowing may be demonstrated, the artery distal to the obstruction being found on occasion to be dilated.

In cases of acquired disease of the aortic valve no significant changes are demonstrated in the pulmonary artery in the absence of cardiac failure. In acquired mitral disease elongation of the outflow tract is seen, sometimes associated with dilatation of the pulmonary trunk. Syphilitic aneurysms can also be well demonstrated. It is suggested that the diagnosis of cor pulmonale can be made far in advance of the appearance of cyanosis by the angiocardiographic demonstration of elongation of the pulmonary outflow tract followed by moderate dilatation of the bed of the pulmonary trunk.

L. G. Blair

Diagnostic Use of Tetrathyammonium Chloride (Etamon) in Obstructive Arterial Disease of the Extremities. J. FARR and J. DOUPE. Canad. J. Res. (E) 27, 4–9, Feb., 1949.

Tetrathyammonium chloride (“etamon”) paralyses autonomic ganglia and produces hypotension and peripheral vasodilatation. The effects of the intravenous injection of “etamon” in doses of 300 to 500 mg. were compared with reflex thermal vasodilatation in 14 subjects, of whom 3 were normal and 11 had peripheral vascular disease. In no case did “etamon” produce the higher digital skin temperature, and the mean maximum skin temperature after “etamon” was 5° to 6° C. lower than after body heating. The authors conclude that “etamon” is not a reliable agent for testing the power of dilatation of the peripheral circulation.

A. S. Dixon


Angiocardiography with 70% “diodrast” was attempted in 74 patients with congenital heart disease. These patients were selected from a much larger group, because in them the investigation might have been expected to provide a more exact diagnosis or to demonstrate the course of a particular blood vessel. Without local analgesia or exposure of the vein, a trocar either 17/10 or 25/10 in size was pushed into the external jugular vein (this vein was chosen as being accessible and giving direct access to the heart and great vessels) and 15 to 70 ml. of diodrast in a dosage of 1 ml. per kg. of body weight was injected.

Five illustrative cases submitted to the investigation
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are discussed. The authors regard angiocardiography as a laborious method, not dangerous, and of decided value in the pre-operative investigation of congenital heart disease.

H. E. Holling


The authors report in three articles the results of a year’s work at the “blue baby” centre of the Broussais Hospital. The first deals with 200 cases of Fallot’s tetralogy. Operative results are analysed and the diagnosis and treatment discussed. The second describes 29 cases of Eisenmenger’s complex, and points out that angiocardiography is the most important diagnostic procedure in such cases. The third article groups all cases with dilatation, in whole or in part, of the pulmonary artery or its branches. The authors conclude that, where the pulmonary artery arises from the centre of the base of the heart, angiocardiography furnishes the sole evidence of its enlargement.

A. S. Dixon


The purpose of this study was to compare the CR, CL, CF, and V leads recorded in identical precordial positions in health and in certain abnormal states: posterior-wall infarction, emphysema, and non-specific electrocardiographic abnormalities. Examples of four types of electrocardiogram are presented to show that the difference between these leads may be great enough to affect the interpretation. In most cases, however, it probably makes little difference whether the indifferent electrode is placed on the right arm, left arm, left leg, or is attached to the central terminal.

A. Brown


In 14 of 27 cases of lateral infarction verified at necropsy the infarct was mainly basal (high lateral infarct). In these the findings with precordial leads were seldom distinctive, and changes might be limited to V3 and V4. Lead aVL was abnormal in 11 cases.

In 11 cases the apical third of the lateral wall was infarcted. In 8 changes were found in V5 and V6, as well as in lead aVL, which were strongly suggestive or diagnostic of infarction. In 2 a marked depression of the R–S'T junction was found in leads V4 and V5 as described by Wolferth and Wood. In these cases the infarct affected principally the middle portion of the wall, the sub-epicardial zone being spared. In 2 cases the infarct involved the middle third of the lateral wall. Both infarcts were small and sub-endocardial. The electrocardiographical changes were those described by Wolferth and Wood.

It is concluded that in order to diagnose a lateral infarct that is not mainly apical it is necessary to employ additional precordial leads in the 3rd intercostal space.

C. W. C. Bain


Irregularities in heart action are commonly noted whenever the heart is handled at operation; and it is a matter of even greater significance where the damaged human heart has to be considered. The common irregularities are ventricular extrasystoles, tachycardia, fibrillation, and complete disorganization.

The author carried out experiments on animals in which he applied procaine locally to the surface, infiltrated the heart muscle with 2% procaine, injected the same drug both intravenously and directly into the interventricular septum and gave intravenous injections of quinidine. The direct injection of procaine into the myocardium and intravenous injection of quinidine were the only methods that had any practical application.

The author has operated on 8 patients with mitral stenosis. Pre-operative quinidine was given. When the pericardium was opened 5 to 20 mL of 2% procaine was poured over the heart, and the site selected for introducing the valvulotome was infiltrated with 5 to 15 mL of 1% procaine. In some of the patients auricular fibrillation was present before operation, and it was noted that local stimulation of the heart produced irregularities until the procaine solution had infiltrated the muscle. The author had the impression that this reduction of excessive stimulation was of great value. Of the 8 patients 2 died after operation.

T. Holmes Sellors


The development of chest surgery has led to the recognition of numerous reflex reactions to intrathoracic manipulation. Efforts have been made to reduce the incidence of these by the intravenous injection of procaine, which abolishes certain arrhythmias, and by vagal block. The authors describe the reflex disturbances observed during a variety of intrathoracic operations, as
demonstrated by blood pressure and electrocardiographic records.

Manipulation of the pericardium caused marked changes of cardiac rhythm—particularly from ventricular premature beats, often of multifocal origin—and incision of the pleura also produced a variety of rhythm disturbances. Interference with the vagus nerve at the hilum of the lung resulted in bradycardia in some cases, and dissection of the vagus was accompanied in one case by a profound fall in blood pressure followed by a rise to well above the initial level. These reactions occurred in spite of procaine injections into the vagus and into the pulmonary plexus. Rib scraping and intercostal-nerve stimulation also induced reflex rhythm changes. The effects of changes of position were also of great importance; turning a patient on to the healthy side, even before the pleura was opened, resulted in a fall in blood pressure from 140 to 80 mm. Hg. Such procedures were even more deleterious when combined with the application of a chest elevator, which adds to the mechanical constriction of the chest contents, so that a "tamponade" effect may be produced.

The authors recommend that patients should be placed in the correct operative position from the outset, anesthesia and other preliminary procedures being carried out with the patient in that position. Local infiltration of sensitive areas with procaine is also recommended.

J. McMichael


Electrocardiographic studies were made on 175 children with congenital heart disease of the cyanotic type during performance of the Blalock–Tausig operation. By this method arrhythmias were detected in approximately 80% of the cases, whereas clinical methods demonstrated cardiac abnormalities only in 6%. Relatively few of these arrhythmias are of clinical significance. The main anesthetic agents were cyclopropane and ether. Morphine premedication tended to exaggerate the arrhythmias, but atropine had an opposite effect. The cardiac abnormalities that signify impending danger are discussed. Sinus tachycardia is not significant. By contrast, marked sinus or A–V nodal bradycardia is a herald of impending cardiac asystole. This bradycardia is associated with a rate below 50 and does not respond to the administration of atropine. Other abnormal manifestations of prognostic significance are complete A–V dissociation with idioventricular rhythm, ventricular tachycardia, complete bundle-branch block, important S–T deviation, and sinus arrest. Complete heart block and sinus arrest occurred only terminally and thus not early enough for prophylactic or therapeutic steps to be taken.

The most important factor that contributes to cardiac standstill is anoxemia. Other important factors included vagal stimulation, action of the anesthetic agent on the myocardium, decreased cardiac output with positive endotracheal pressure, adrenal-cortical insufficiency, and potassium inhibition.

If frequent ventricular premature systoles occur at operation cyclopropane should be stopped and anesthesia continued with ether and oxygen. In ectopic tachycardias the vagus is best stimulated by the intravenous injection of the purified glycoside of digitalis. Atropine should not be given as premedication to patients with a history of paroxysmal tachycardia. In bradycardia atropine produces a reversion to normal sinus rhythm or sinus tachycardia. If there be no response to atropine, a rate below 50 is a danger signal before the onset of terminal cardiac asystole. Steps to combat the underlying anoxemia include periodic inflation of the collapsed lung; it is important to combat the co-existing anoxæmia and to give cardiac stimulants, such as adrenaline. If cardiac dilatation and arrest occur cardiac massage and artificial respiration with a high concentration of oxygen should be undertaken at once. Intracardiac adrenalin is of questionable value, although ventricular fibrillation has not been observed among the patients studied in this series. The author seems to prefer the use of digitalis in maintaining normal cardiac contractions during anesthesia and operation.

A. I. Suchet-Kaye

Traitement Chirurgical de l'Hypertension Artérielle. MAURICE LUZUY and JEAN F. POURCE. Published by G. Doin and Co. of Paris. 160 pp., 58 f$. 500 fr.

This volume is composed mainly of the observations of one of the authors (M. L.) on the various forms of treatment of essential hypertension which he saw carried out in the United States. It is written in collaboration with a physician (J. P.) and gives a concise survey of the present knowledge on hypertension, and also goes into the physiopathological justification of surgical treatment.

The book is most useful for anybody interested in the treatment of hypertension, particularly surgeons contemplating operative attack on the disease. All the better-known methods are clearly described, and good illustrations make the various techniques easy to follow. Short chapters on renal and adrenal hypertension are included, and an assessment is made of the choice of the various surgical methods.

Frank D'Abreu


This book—a product of the Faculty of Medicine at Lille—has proved its popularity by the necessity for a third edition. The technique of operations upon the sympathetic nerve system, including infiltrations of the cervical ganglion, carotid sinus, the splanchnic, lumbar and hypogastric sympathetic systems, including surgical ablations of various portions of the sympathetic system are shortly and clearly described. Illustrations demonstrating the techniques of infiltrations and of operations are unusually clear and helpful.
The sections on lumbodorsal sympathectomy and on the surgical treatment of hypertension could well be enlarged, only the original Smithwick technique being described at any length.

The volume forms a useful book of reference for those taking up the surgery of the sympathetic nerve system.  

Frank D'Abreu


The authors of this monograph have integrated in one sequence of argument, mathematical analysis, technique and interpretation, the work carried on by them in this field during more than a decade and published in a series of papers in various journals. Many of their articles appeared during the war years in Swiss journals.

The sum of all the electromotive forces in the heart at any instant can be regarded as a vector of given magnitude and orientation in three-dimensional space. During the cardiac cycle the vector varies in magnitude and orientation continually from one instant to the next. In the conventional standard three leads, one is recording the projection on each lead in turn of the component of the vector in the frontal plane, as is familiar from the classical Einthoven triangle figure. In vectorcardiography the aim is to record the orientation in space and the magnitude of the vector continuously throughout the cardiac cycle.

Using three-dimensional points of application for the electrodes, the action currents are led through amplifiers to a “split-beam” cathode-ray tube, permitting the simultaneous recording of leads in two planes at right angles to one another. The wanderings of the luminous spots on the two screens during a single cardiac cycle are recorded photographically. The path traced is always a loop, the form of which varies greatly in healthy and diseased hearts. By recording leads in these planes (horizontal, sagittal and frontal) the authors have succeeded by a laborious if ingenious method in reconstructing in pliable wire a three-dimensional model of the vector path—a “stereo-vectogram.”

The technical difficulties of the procedure are formidable. The electrical and photographic apparatus is complicated; the electrodes are not applied at random to the trunk, but to points selected after careful measurement from the cardiac centre; the patient must lie during the recording in a screened cage to avoid electrical interference. The authors estimate the time necessary for a recording as one hour, plus 1½ hours for enlargement and analysis of the vectograms. These technical considerations thus render this a method for research rather than for routine clinical work.

The unique properties of the vectocardiogram become apparent in the section of the monograph devoted to analysis and comparison with other leads. By analysis one can extract the curve of any desired electrocardiographic lead—standard, unipolar limb, or even unipolar precordial. The numerous examples figured show a very close correspondence.

There is a full discussion of the physical basis for this property, which is at once a confirmation of Wilson’s views on the nature of potential distribution in the body regarded as a conductor, and a refutation of current ideas on the nature of precordial or “semi-direct” leads.

Clearly written, well illustrated and printed, and with a full bibliography, the book is recommended for study by all interested in the basic problems of electrocardiography.

I. G. W. Hill

Measurements of Heart Output by Electrokymography.  
G. C. Ring, M. Balaban, and M. J. Oppenheimer.  

This is a preliminary account of a new electrokymographic method for the measurement of cardiac output. The antero-posterior thickness of the ventricles in systole and diastole is determined by measuring the amount of X-ray transmission in each phase and the heart output calculated according to a formula worked out by the authors. The advantage claimed for the new method is that subjective errors inherent in older techniques are eliminated. The results obtained in 31 subjects are compared with those obtained simultaneously by ballistocardiography.

A. I. Sachett-Kaye

The Action of Sodium Thiocyanate on Cardiac Output.  
Z. M. Baco, R. Charlier, E. Philippot, and P. Fischer.  

In view of the introduction of sodium thiocyanate for the treatment of hypertension in man, its effects on the heart were studied in dogs under chloralose anaesthesia. Cardiac output, as calculated from the Fick principle, was decreased by the intravenous injection of thiocyanate in 5 dogs out of 6. The heart rate was usually decreased but the arterial blood pressure did not change, indicating that vascular constriction had taken place. There was no obvious relation between dose and response. From these observations, together with others cited from the literature, it is concluded that thiocyanate exerts its action by increasing the response of the heart to vagal tone and, that this is effected through a sensitization of the heart muscle to potassium ions. Thiocyanate, therefore, weakens the heart and the authors point out the dangers of using such a drug in the treatment of hypertension. They also recommend calcium as an antidote to thiocyanate intoxication.

John R. Vane

A Study of Pericarditis in the Light of a Series Observed in Finland. I. Etiology and Pathogenesis of Exudative Pericarditis.  
M. Savilahti.  

In each of two series, one of 3,054 consecutive necropsies and one of 55,699 clinical reports, the author found 127 cases of serofibrinous or purulent pericarditis, the condition being discovered approximately 20 times oftener post mortem than during life. Purulent pulmonary and pleural conditions were commoner causes of the disease than were rheumatic fever and tuberculosis. In all groups, excluding the cases of
rheumatism, pericarditis was commoner in males by 3 to 2, and the average age of the patient was 30 years.

Whereas tuberculous pericarditis was usually diagnosed correctly during life, in other conditions the clinical manifestations of the primary disease often overshadowed the pericarditis; in 80% of cases its presence had been unsuspected by the clinician, yet in many instances pericarditis was the most important necropsy finding. All cases of purulent pericarditis, for example, remained undiscovered until necropsy. No satisfactory conclusions could be drawn as regards the incidence of uremic pericarditis and pericarditis following cardiac infarction.

There was some evidence that inflammation reached the pericardium by continuity—from the myocardium in rheumatism and from the pleura in tuberculosis, and possibly in carcinoma. Pericarditis due to carcinoma was six times commoner with tumours of the lung than with growths elsewhere. One case of actinomycotic pericarditis is reported.


The histories of 5 cases of subacute bacterial endocarditis confined to the right side of the heart and the pulmonary artery are given, with tables showing the relevant findings in 36 reported cases.

In less than 4% of patients with subacute bacterial endocarditis the infection is confined to the right side of the heart, though in patients with a patent ductus arteriosus the infection may be confined to the ductus and the pulmonary artery. The four cardinal features of infective endocarditis—evidence of a valvular or congenital heart lesion (found in 73% of cases), fever (found in 100% of cases), embolic phenomena (found in 82% of cases) and a positive blood culture (found in 62% of cases)—are also present when the condition is confined to the right side of the heart, but blood cultures are more frequently sterile, and embolic phenomena in the systemic circulation are rarer, though pulmonary emboli may occur.


The authors describe an operation directed at relieving acute pulmonary edema in advanced mitral stenosis by deflecting blood from the pulmonary circuit, in which pressure is high, into systemic venous channels. It should be noted that in Lutembacher’s syndrome the severe mitral stenosis does not lead to lung edema or hemoptysis, since there is a shunt available in the inter-auricular defect, and the construction of an artificial inter-auricular channel has been attempted as a form of treatment and some successful results reported.

The operation devised by the authors consists in a right thoracotomy approach through which the azygos vein is dissected out and divided so that its central or cardiac end can conveniently be approximated to a pulmonary vein. The vessel selected is the branch of the inferior pulmonary vein which leads from the dorsal lobe or apex of the lower lobe. The two veins are anastomosed by means of a 4-mm.vitallium tube and when the clamps are released a back-flow from the pulmonary vessel into the azygos vein towards the superior vena cava is apparent. This operation has been performed on 5 patients, one dying shortly after operation. The remaining 4 have shown considerable improvement.

T. Holmes Sellors


On a basis of 6 well-reported cases and a brief survey of the literature the authors describe idiopathic migratory phlebitis affecting the visceral veins as a distinct clinical and pathological entity. The clinical manifestations caused by involvement of the veins in the heart, liver, lungs, and other viscera lead to most baffling and elusive bedside problems. The etiology and pathogenesis remain “completely unclear”. Hence there is no specific treatment.

G. F. Walker


Stellate-ganglion block was carried out in 16 patients suffering from intractable anginal pain. The improvement was considerable in 13 cases, slight in 2, and transient in 1; 5 patients were known to be still free from pain 3 to 9 months later. In 4 cases the procedure produced no change in the electrocardiogram; in the remaining 12 only minor changes in the ventricular complexes occurred.

J. R. Bignall


In cases of suspected coronary insufficiency, particularly in the younger age groups, where the history and electrocardiogram are inconclusive, further diagnostic information can be obtained from the exercise test or the angina test. The former is simpler and safer, and the authors report their results with the Master 2-step test in 151 patients, 43 of whom had definite or doubtful coronary insufficiency. Positive results related to the appearance on the electrocardiogram of ST deflections in two or more leads, T-wave changes in leads I, II, CF4, and CF5, widening of QRS, frequent extrasystoles, or A-V block. The onset of chest pain and breathlessness during the test was supportive positive evidence. The electrocardiogram sometimes does not alter until after the test, therefore a further recording should always be made during this latent period of 2 to 6 minutes. A negative response to the test does not exclude coronary disease.

J. L. Lovibond