

ABSTRACTS OF CARDIOLOGY

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Atrial Septal Defects in Children. An Angiocardiographic Study. J. LIND and C. WEGELIUS. *Circulation (N.Y.)*, 7, 819-829, June, 1953.

Angiocardiography has hitherto been considered of relatively little value in the diagnosis of atrial septal defect, which, according to Taussig, is the congenital cardiac abnormality most frequently seen in medical practice and the one least often diagnosed correctly. By the use of synchronous exposure of films in two planes (10 to 12 exposures per second in left and right anterior oblique views) precisely timed in the cardiac cycle by simultaneous electrocardiography, the authors have been able to visualize an atrial septal defect in 30 of 150 patients with suspected congenital heart disease.

During angiocardiographic studies made on fetuses of 12 to 22 weeks within half a minute of delivery by Cæsarean section, the authors found that the opaque material injected via the umbilical vein could be followed directly through the ductus venosus into the right atrium, the stream dividing into a large left stream passing through the foramen ovale and a small right stream. In normal infants this patency cannot be demonstrated after the 6th day of life. In infants with asphyxia neonatorum, angiocardiography may demonstrate a prenatal type of circulation, with most of the blood being directed from the inferior vena cava into the left atrium.

Where atrial septal defect is suspected in infants and young children, it is recommended that the opaque material be injected via a malleolar vein. The patency is demonstrated during auricular diastole, a momentary reversal of shunt apparently occurring at this phase as the right auricle fills more quickly than the left. During auricular systole the caval orifices are functionally closed and a shunt reversal is less likely. In most cases the left anterior oblique view gives some information about the location of the defect, and recognition of its size makes it possible to exclude simple patency of the foramen ovale or small, clinically unimportant defects. *T. Semple*

Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Blood Vessels. The Criteria Committee of the New York Heart Association Inc. New York Heart Association Inc., 1953. 5th Edition. Pp. 359. Fig. 51.

Cardiology has expanded much since the first edition of this work appeared in 1929, enabling a great deal of new interest and many fresh illustrations to be included in this fifth edition. The sections on roentgenology, electrocardiography, and pathology have been re-written, and a new chapter added on peripheral vascular disease. The book is compiled by The Criteria Committee of the

New York Heart Association, with Dr. H. E. B. Pardee as Chairman, and their hope is that further standardization of nomenclature will improve and clarify expression and understanding in cardiovascular disorders. Examples are to be found in their suggested terminology of heart sounds, "essential polyangiitis" for periarteritis nodosa, and "cardiac insufficiency" for cardiac failure. A useful academic reference book. *J. L. Lovibond*

Physiology Therapy for Obstructive Vascular Disease. ISAAC STARR, M.D., Modern Medical Monographs, No. 6. New York: Grune & Stratton, 1953. Pp. 38.

The author's approach to his subject chosen for the George E. Brown Memorial Lecture for 1952, is deliberately informal. In an essentially personal narrative of past experience in this field he advocates a wider use of the simple histamine skin test in grading peripheral vascular disease. Bed posture, he suggests, should be dictated by the patient's judgment; post-prandial vasodilatation may be utilized in treatment by prescribing frequent feeds. Sympathectomy has its limitations, but other therapeutic measures have been worth considering, such as oxygen perfusions of the skin or dessication of the limb, and dry treatment either by iontophoresis or by inter-arterial catheter. His comments are often interesting and stimulating. *J. L. Lovibond*

Embolic Occlusion of Patent Foramen Ovale. A Syndrome Occurring in Pulmonary Embolism. G. B. ELLIOTT and R. E. BEAMISH. *Circulation (N.Y.)*, 8, 394-402, 1953.

Two cases of pulmonary infarction with atypical clinical manifestations were recently encountered; at necropsy a thrombus was found passing through a patent foramen ovale. This the present authors describe as embolic occlusion of a patent foramen ovale as distinct from "paradoxical embolism".

They summarize 48 cases, particularly the 29 reported since 1926. The clinical sequence is described as extensive pulmonary embolism followed by decompression shunt between the right and left atria. This may lead to a variable but brief period of improvement, but should the patent foramen ovale become blocked by a further embolus the patient dies suddenly of an acute cor pulmonale. *James W. Brown*

Anatomic Variations in the Tetralogy of Fallot. T. G. BAFFES, F. R. JOHNSON, W. J. POTTS, and S. GIBSON. *Amer. Heart J.*, 46, 657-669, Nov., 1953.

In an attempt to determine the relative merits and dangers of a direct approach to the pulmonary valve

with infundibular resection and of creation of a shunt between the subclavian and pulmonary arteries in the treatment of Fallot's tetralogy, 350 post-mortem specimens showing congenital deformities of the heart from a collection made at the Children's Memorial Hospital, Chicago, were critically reviewed and 42 selected which fulfilled the criteria of tetralogy of Fallot. There were 12 with pulmonary atresia, in 4 of which the pulmonary arterial segment was adequate for a shunt operation. Of the remaining 30 hearts, all had infundibular stenosis, and 10 had valvular stenosis as well. The amount of overriding was less than 25% in 5 cases, between 25 and 50% in 18 cases, and over 50% in 7 cases.

In 8 instances (27%), the stenosis was caused by a thin fibro-muscular band at the lower bulbar orifice and could have been relieved by infundibular resection. In the other 22 cases, however, infundibular resection would have been a formidable procedure. The various kinds of stenosis encountered were classified: the commonest was tubular and involved the whole infundibulum. The authors admit that hearts fixed in formalin may give a false impression of their physiological behaviour; they also point out that the great majority of the hearts studied came from children under 3 years of age, whereas most previously published studies of a similar nature in which the findings have differed from theirs have been carried out on older children and adults.

Paul Wood

Mechanical and Myocardial Factors in Chronic Constrictive Pericarditis. R. M. HARVEY, M. I. FERRER, R. T. CATHCART, D. W. RICHARDS, and A. COURNAND. *Circulation (N. Y.)*, 8, 695-707, Nov., 1953.

Detailed studies, including cardiac catheterization, on 5 patients with constrictive pericarditis showed there to be important variations from the uniform clinical and physiological picture usually accepted as characteristic of this disease, in which the mechanical effects of an inelastic pericardium are considered to be the salient factor. Although the mechanical factor was in fact the dominant one in the first case, closer study of the pressures suggested that the distensibility characteristic of the pericardium replaced that of the individual chambers. In the second case it was demonstrated that the hæmodynamic abnormalities associated with constrictive pericarditis may exist in the absence of any clinical signs of congestion, and in the third an extensively calcified pericardium was found unaccompanied by signs of congestion. In the fourth case, in which the hæmodynamic findings were mostly typical of constrictive pericarditis, the favourable results obtained with digoxin emphasized the importance of myocardial failure in this disease; the role played by an inelastic pericardium was not fully elucidated in this case. In the fifth case many of the signs of congestion were found to be reversible under treatment with rest, digitalis, and diuretics.

A. Schott

Acute Idiopathic Pericarditis. E. M. GOYETTE. *Ann. intern. Med.*, 39, 1032-1044, Nov., 1953.

The author describes 28 cases of acute idiopathic pericarditis. The ages of the patients ranged from 18 to 63, but only 4 were over 50. In 17 cases there was a history

of a preceding upper respiratory infection. The onset was abrupt in 19, less acute in 8, and insidious in one. Pain, which was the presenting symptom in all cases, was localized in the mid-chest in 17, occurring in all parts of the left chest in the remainder. It was intermittent in character and often intensified by respiration. A pericardial rub was heard in 23 cases seen at an early stage of the illness; this persisted for days or months, and in some cases disappeared only to return a few days later. Radiological examination showed enlargement of the heart shadow in 6 cases, there being considerable pericardial effusion in 2. An associated pleural effusion was noted in 2 cases. Pericardial fluid, which was examined in 4 cases, contained many cells, 80 to 95% of which were lymphocytes. Pericardial biopsy in one case showed non-specific inflammatory changes. Characteristic changes were observed in the electrocardiogram (ECG) in all but one case.

The illness lasted from a few days to 4 months, averaging 3 to 4 weeks. One patient had two attacks. The author draws attention to the importance of the differential diagnosis from myocardial infarction, which was originally diagnosed in 22 of the 28 cases. The main distinguishing features of pericarditis are the absence of shock, the occurrence of a pericardial rub, fever, and leucocytosis at the onset of the pain, accompanied by changes in the ECG. Antibiotic therapy was without any effect on the course of the disease in the cases described.

C. Bruce Perry

Cardiac Surgery under Hypothermia. C. P. BAILEY, B. A. COOKSON, D. F. DOWNING, and W. B. NEPTUNE. *J. thorac. Surg.*, 27, 73-95, Jan., 1954.

In this paper the authors discuss the rationale of hypothermia, stating that at low temperatures the demands of the body for oxygen are small and that myocardial activity is depressed.

They then discuss the indications for hypothermia in cardiac surgery, giving it as their opinion that it is preferable to any heart-lung apparatus which has so far been devised. They consider that only by use of cooling can large inter-atrial septal defects be properly repaired, and narrate some of their experiences with hypothermia in this condition. In describing some of the many methods by which hypothermia can be produced they state that they consider the procedure has only a limited application—apart from inter-atrial septal defects, cooling is called for only in the case of infants with a severe degree of congenital cyanosis where a prolonged interruption of the blood supply to the vital centres may be necessary and as a means of permitting open surgery on the right side of the heart. The contraindications to hypothermia are listed as: severe myocardial damage, acquired heart disease, and left-sided lesions requiring an open technique.

J. R. Belcher

The Diuretic Action of Potassium Associated with a Low-sodium Diet in the Treatment of Cardiac Œdema. G. MEZZASALMA and C. BRENTANO. *Osped. maggiore*, 41, 353-368, Aug., 1953.

The authors, having observed that the sodium content of œdema fluid is high and its potassium content low,

deduce from this that in cases of congestive heart failure there is a potassium-sodium imbalance. They suggest that in such patients the intracellular level of potassium is low, and that oral administration of potassium salts restores this level to normal, with resulting mobilization of sodium and excretion of oedema fluid.

They have tested this hypothesis in 10 selected cases of congestive heart failure in which routine therapy had proved ineffective, giving a mixture of potassium salts by mouth. In each case diuresis occurred and there was a fall in weight as the oedema resolved; the diuresis was maintained for some days after cessation of administration of potassium. No toxic effects were observed and no deleterious change took place in the electrocardiogram of any of the patients.

D. Weitzman

The Action of Procainamide on Auricular Arrhythmias.

N. BOYADJIAN and F. VAN DOOREN. *Arch. Mal. Cœur*, 46, 941-948, Oct., 1953.

Stable auricular fibrillation was produced in 20 dogs by Scherf's method. In all cases permanent reversion to normal rhythm followed the intravenous injection of procainamide in doses of 10 to 15 mg. per kg. body weight. Such doses caused no electrocardiographic abnormalities, but when 2 dogs were given 2.5 and 3 g. of procainamide respectively intravenously, prolongation of the P-R interval follows, with intraventricular block and ventricular extrasystoles, and one dog died from ventricular fibrillation.

In the treatment of auricular arrhythmias in man the drug had little effect by mouth. Given intravenously in doses of 0.3 to 0.5 g. it effectively, though briefly, suppressed auricular extrasystoles in 3 cases. In doses of 0.5 to 1.3 g. it corrected auricular paroxysmal tachycardia in 3 cases and auricular paroxysmal fibrillation of recent onset in 2. It was ineffective in established cases of auricular fibrillation.

When given intravenously procainamide may cause hypotension: it should therefore be given at a rate no greater than 0.1 g. per minute, the patient being recumbent and a watch being kept on his blood pressure. When given intramuscularly the drug does not lower the blood pressure, and having successfully corrected paroxysmal auricular fibrillation in 2 cases with intramuscular injections totalling 2 and 3 g. respectively, the authors consider that the administration of procainamide by this route merits further study.

J. A. Cosh

L-Noradrenaline in Treatment of Shock in Cardiac Infarction.

K. SHIRLEY SMITH and A. GUZ. *Brit. med. J.*, 2, 1341-1345, Dec. 19, 1953.

The prolongation of the severe shock which usually accompanies cardiac infarction gravely influences the prognosis. The authors briefly review previous methods of treating such cases, and in view of the claim made by anaesthetists that the lævo-rotatory form of noradrenaline obviates serious falls of blood pressure during major operations, decided to try this substance in cardiogenic shock.

In 6 such cases the method was used when the systolic blood pressure was progressively falling or had remained

below 80 mm. Hg for 24 hours, especially if there was also oliguria or a very low pulse-pressure; 2 of the patients were pulseless when the infusion was begun. To a litre of 5% dextrose solution or of 4.3% dextrose in 0.18% saline (not normal saline, to avoid excess of sodium ions), 4 ml. of a 1-in-1,000 L-noradrenaline bitartrate solution was added, giving a concentration of the drug of 4 µg. per ml. This was given as an intravenous drip infusion, the rate being adjusted as indicated by frequent readings of the blood pressure, the aim being to keep the systolic pressure between 100 and 110 mm. Hg. Where it was necessary to give large doses the concentration of L-noradrenaline was increased in order to maintain a reasonably slow rate of infusion; in one case the concentration was raised to 64 ml. per litre. The infusion was maintained over periods varying from 3 hours to 8 days; the process of discontinuation of the infusion had in some cases to be very gradual to avoid a dangerous fall in systolic pressure. Clinical improvement was immediately apparent in each case, with rise of systolic pressure and recovery of consciousness when this had been lost. Of the 6 patients, 2 who were shown at necropsy to have recent as well as old infarctions died within 4 days, but 4 recovered, although one of these died of congestive heart failure 4 months later; the other 3 patients were still well 6 to 13 months later.

The authors discuss the mode of action of the drug and the indications for its use, and compare their results with those reported in other cases treated similarly.

R. S. Stevens

Clinical Diagnosis of Pulmonary Hypertension in Patients with Mitral Stenosis.

W. WHITAKER. *Quart. J. Med.*, 23, 105-112, Jan., 1954.

The author has examined 25 patients with mitral stenosis in an attempt to determine whether correlation was close enough between the mean pulmonary arterial blood pressure and the clinical, electrocardiographic, and radiological signs to make possible a clinical evaluation of the degree of pulmonary hypertension. Pulmonary arterial pressures were measured by cardiac catheterization. Pulmonary hypertension was arbitrarily classed as "mild" in 7 patients with mean pulmonary arterial pressures less than 40 mm. Hg, "moderate" in 10 patients with pressures between 40 and 69 mm. Hg, and "severe" in 8 in whom pressures ranged from 70 to 108 mm. Hg.

Results showed that whereas hæmoptysis and nocturnal dyspnoea were more common in patients with moderate or severe pulmonary hypertension, little reliance could be placed on these symptoms alone in assessing the degree of hypertension. Prominent auricular waves in the jugular venous pulse were found to be a valuable sign of severe pulmonary hypertension in patients with sinus rhythm. The palpation of a systolic "lift" over the 2nd and 3rd left intercostal spaces was of little positive value in indicating the degree of pulmonary hypertension, since it was present in most of the patients in all three groups, but the finding of a palpable second heart sound was an important indication of severe or moderate pulmonary hypertension in patients with mitral stenosis.

A loud pulmonary second sound was to be heard in all but 2 of the patients and is considered to be an unreliable guide to the degree of pulmonary hypertension, but a loud second element of a duplicated second sound, heard in 3 of the severe and 4 of the moderate cases, is a definite, though inconstant, sign of severe or moderate pulmonary hypertension. A Graham Steell murmur was present in 7 of 8 patients with severe pulmonary hypertension, but owing to the difficulty of excluding aortic incompetence the value of this sign was considered doubtful. In the electrocardiogram the pattern of right ventricular hypertrophy in Lead V1 was found to be evidence of moderate or severe pulmonary hypertension. The degree of prominence of pulmonary arteries, which was demonstrable radiologically in 19 patients, was a good indication of the severity of pulmonary hypertension, though it may be difficult in some cases to exclude other concomitant cardiac lesions.

From this study the author concludes that the degree of pulmonary hypertension in patients with mitral stenosis can be estimated from the clinical, electrocardiographic, and radiological findings without resort to cardiac catheterization.

E. G. Rees

The Association between Hypoglycaemia and Myocardial Infarction. B. GANDEVIA. *Med. J. Aust.*, 1, 33-36, Jan. 9, 1954.

By studying two series of cases the author, at the Royal Melbourne Hospital, Melbourne, attempted to assess the frequency of the association between hypoglycaemia and myocardial infarction.

Of 50 consecutive patients with myocardial infarction, 6 had had an antecedent hypoglycaemic reaction at approximately the time of onset of the infarction. Five of the patients were diabetics who had been receiving insulin for some years, and the sixth had an islet-cell tumour of the pancreas.

Discussing the possible mechanism by which hypoglycaemia could cause cardiac infarction and anginal pain, the author suggests that they are most likely the result of a hyperdynamic circulatory state. A high-protein diet is recommended as a prophylactic in patients who have any anginal symptoms associated with hypoglycaemia. The importance of preventing hypoglycaemic reactions in elderly diabetic patients with a diminished cardiac reserve is emphasized and it is suggested that small doses of neostigmine should be given as a prophylactic in hypoglycaemic attacks.

J. Lister

Commissurotomy for Aortic Stenosis. C. P. BAILEY, H. E. BOLTON, W. L. JAMISON, and H. B. LARZELERE. *J. int. Coll. Surg.*, 20, 393-408, Oct., 1953.

After the mitral valve, the aortic valve is the most common site of rheumatic involvement. The method developed by the authors for the surgical relief of the stenosis by direct and forcible dilatation has been described elsewhere (Larzelere and Bailey, *J. thorac. Surg.*, 1953, 26, 31). By means of a transventricular approach, a guide is passed through the stenosed orifice and a special dilator is then passed over the guide and led into the opening.

The authors now record the use of this method in 77 cases of aortic stenosis, in more than half of which there were coexistent mitral lesions. The operation mortality was 15.6%, with an unexpectedly high proportion of fatalities among the patients with isolated aortic lesions (7 out of 35, compared with 5 deaths among 42 patients with combined lesions). In 7 cases aortic insufficiency resulted from, or was increased by, the operation.

In spite of these excellent pioneer results the authors are dissatisfied with the method and are critical of the transventricular approach because of technical difficulties and the possibility of damage to the soft left ventricular muscle. A retrograde approach has therefore been developed which permits palpation of the valve from above and allows the finger to be used in directing instruments through the stenosis. The retrograde method is probably the operation of choice in cases of isolated or pure aortic stenosis, but where mitral valvotomy has also to be undertaken the left transventricular approach to the aortic valve is more suitable.

T. Holmes Sellors

Complete Anomalous Pulmonary Venous Drainage. J. D. KEITH, R. D. ROWE, P. VLAD, and J. H. O'HANLEY. *Amer. J. Med.*, 16, 23-38, Jan., 1954.

The authors describe 14 cases of total anomalous pulmonary venous drainage into the right side of the heart, the diagnosis being confirmed post mortem in 13, and add these to 45 proved cases culled from the literature. The pulmonary veins drained into a left-sided superior vena cava in 43% of the 58 proved cases, into the coronary sinus in 19%, into the right atrium in 14%, into a right-sided superior vena cava in 12%, and in the remainder into the portal vein, ductus venosus, or superior vena cava and right atrium. Of the 58 patients, 47 (80%) died in the first year of life, and all the remainder before the age of 8 years, with the exception of one who survived to the age of 27.

Cyanosis was not significant in the cases studied by the authors, the arterial oxygen saturation ranging uniformly between 80 and 95%, with one exception in which it was 63%.

Paul Wood

Pulmonary Valvotomy. Results of Operation in Twenty-five Cases. G. H. HUMPHREYS, S. POWERS, H. FITZPATRICK, and B. M. LANMAN. *Surgery*, 35, 9-21, Jan., 1954.

The authors report their experience in 25 cases of pulmonary valvotomy performed by the Brock technique.

A pure valvular stenosis, without a septal defect, was present in 9 cases. In all but one of these there was a marked clinical improvement after operation. Valvular stenosis with an auricular septal defect was present in 5 cases; clinical results were "excellent" in 2, "good" in 2, and "questionable" in one case. Valvular stenosis with a ventricular septal defect was present in 11 cases. In this group there was a less striking fall in ventricular pressure after valvotomy, and the clinical improvement was rather variable and often disappointing.

R. L. Hurt