ABSTRACTS OF CARDIOLOGY

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Effects of Restriction of Dietary Fat and Cholesterol upon Serum Lipids and Lipoproteins in Patients with Hypertension. F. T. HATCH, L. L. ABELL, and F. E. KENDALL. *Amer. J. Med.*, 19, 48-60, July, 1955.

Working at the Goldwater Memorial Hospital (Columbia University), New York, the authors have taken advantage of the therapeutic use of the Kempner rice diet in the treatment of hypertension to study the effects of the drastic reduction of fat (to 3 g. per day) and complete elimination of cholesterol intake which this diet entails on the levels of lipoprotein and neutral fat in the serum.

During the control period the serum lipid levels in these hypertensive patients differed little from those in a series of healthy ambulatory subjects. Only during the administration of the unmodified Kempner diet was there a statistically significant reduction in the mean blood cholesterol level, and then by only 15%, that is, not below the normal range of values. Investigation of the behaviour of the different groups of serum lipoproteins showed no significant alteration in the concentration of the S_f 12-20 lipoprotein fractions, but a statistically significant increase (nearly double) in the concentration of the S_f 20-100 fractions during the period on the rice diet. All the changes seemed to depend on the restriction of fat rather than on the elimination of cholesterol, but even on the diet severely reduced in fat content some patients showed a lipæmia, with significant increase in the serum neutral fat content.

[These results suggest that simple dietary measures are unlikely to be of much help in the prevention or treatment of atheroma. Virtual elimination of fat from the diet produces only a small reduction in the serum lipid level.]

P. Hugh-Jones

Paradoxical Action of Glyceryl Trinitrate (Nitroglycerin) in Coronary Patients. H. I. RUSSEK, K. F. URBACH, and B. L. ZOHMAN. *J. Amer. med. Ass.*, 158, 1017-1021, July 23, 1955.

An investigation is reported from the United States Public Health Service Hospital, Staten Island, New York, of the effect of glyceryl trinitrate in 158 patients with coronary arterial disease who showed consistently positive changes in the electrocardiogram (ECG) following standard exercise (Master two-step test). Arterial hypertension was present in about 40% of the patients; 22 had had acute myocardial infarction and 51 complained of angina. The patients were given 0.4 mg. of glyceryl trinitrate 5 minutes before starting the Master two-step test. A normal response to the test was obtained in 105 patients, while 26 showed an improved response; 16 of these 131 patients, however, showed less dramatic improvement or even an abnormal response after receiving larger doses (0.6 to 1.2 mg.) of glyceryl trinitrate. No improvement in the ECG was observed in 11 patients, although 5 responded favourably to larger

doses. In 16 cases there were more marked abnormalities in the ECG after exercise when glyceryl trinitrate was given than when it was not.

K. G. Lowe

Angina Pectoris Induced by Fat Ingestion in Patients with Coronary Artery Disease. Ballistocardiographic and Electrocardiographic Findings. P. T. KUO and C. R. JOYNER. *J. Amer. med. Ass.*, 158, 1008-1013, July 23, 1955.

To determine whether post-prandial lipæmia actually precipitates the syndrome of angina pectoris, 14 patients with coronary arterial insufficiency were given a fatty meal consisting of sweetened cream flavoured with cocoa (0.6 g. butter fat per lb. (1.3 g. per kg.) body weight). The turbidity of the plasma was taken as an index of post-prandial lipæmia. Typical attacks of angina were experienced by 6 of the patients; one of these with idiopathic hyperlipæmia had severe pain on 4 separate occasions about 3 hours after the fatty meal when lipæmia was maximum; in the other 5 patients maximum lipæmia and anginal attacks occurred about 4½ to 5 hours after the fatty meal. Some of the attacks were terminated by administration of glyceryl trinitrate and some by intravenous injection of small doses of heparin.

K. G. Lowe

A Three to Seven Year Postoperative Evaluation of 76 Patients with Severe Hypertension Treated by Thoracolumbar Sympathectomy. H. A. ZINTEL, A. M. SELLERS, W. A. JEFFERS, J. A. MACKIE, J. H. HAFKENSCHIEL, and M. A. LINDAUER. *Surg. Gynec. Obstet.*, 101, 48-54, July, 1955.

This report from the University of Pennsylvania Hospital, Philadelphia, forms part of a larger programme whose ultimate aim is to compare the results of sympathectomy alone with those obtained by combined adrenalectomy and sympathectomy in the treatment of severe arterial hypertension. In the present paper the effect of sympathectomy alone is considered. Between 1947 and 1951 76 patients underwent 152 operations with only one operative death, an operative mortality of 0.6% and a patient mortality of 1.3%. All the patients had severe hypertension, about half of them fulfilling the criteria of Smithwick's Group IV. The follow-up period ranged from 3 to 7 years.

Survival-rate curves are presented in graphs for both series, and show that in each grade of disease operation conferred a considerable increase in survival time. The mortality for men in the follow-up period (49%) was almost three times that for women (18%). Of the 76 patients, 53 were alive at the time of the report. In over half (55%) of them the blood pressure was below 180/110 mm. Hg, the average reduction obtained in these survivors being 40/25 mm. Hg. Other analyses presented in tables show that renal function was not

improved by operation, whereas the electrocardiographic findings and heart size sometimes were. Congestive heart failure, angina pectoris, and headache usually did not return after operation.

C. J. Longland

Correlation of Pulmonary Arteriolar Resistance with Pulmonary Vascular Changes in Patients with Mitral Stenosis before and after Valvulotomy. F. GOODALE, G. SANCHEZ, A. L. FRIEDLICH, J. G. SCANNELL, and G. S. MYERS. *New Engl. J. Med.*, **252**, 979-983, June 9, 1955.

It has been suggested by some workers that in the treatment of mitral stenosis severe pulmonary changes, in the form of alveolar fibrosis and intimal fibrosis in the small blood vessels, vitiate or even preclude the beneficial effects of valvotomy. The present authors take a more optimistic view, and at Massachusetts General Hospital have operated successfully in all types of case. In this paper they correlate the results of operation with the histological changes found in a biopsy specimen in each of 50 cases. The "pulmonary arteriolar resistance" was calculated in all cases before operation, and again some 5 to 28 months after operation in 16 of them. The area of the mitral orifice was also measured and the biopsy specimen taken from the anterior border of the left upper lobe of the lung.

In all but one of the 16 patients studied post-operatively there was a fall in pulmonary arterial pressure, and in all but 2 (in whom it had been very low) there was a fall in arteriolar resistance. The authors conclude that the poor correlation between the severity of the preoperative pulmonary resistance and the pathological changes in the lung indicates that vasoconstriction is an important factor in producing pulmonary hypertension in mitral stenosis. They consider that in most cases the increased pulmonary resistance is reversible and hence that relief of the stenosis by valvotomy should be undertaken whatever the severity of the preoperative hypertension.

Donald McDonald

Dynamics of the Circulation in Aortic Valvular Disease. R. GORLIN, I. K. R. McMILLAN, W. E. MEDD, M. B. MATTHEWS, and R. DALEY. *Amer. J. Med.*, **18**, 855-870, June, 1955.

The authors have studied, at St. Thomas's Hospital, London, the dynamics of the circulation in 24 cases of aortic valvular disease, in 9 of which the effects of stenosis were preponderant, in 5 those of regurgitation, and in 10 there was evidence of both stenosis and regurgitation. The patients were studied both clinically and by cardiac catheterization; in 3 cases the aortic valve was also studied post mortem during simulated action produced by attaching to the heart a specially designed pump [not described in the paper]. Pressure gradients across the valves were then determined, cinéphotographs of the valve in action taken, and the area of the valve orifice measured. The method of differentiation of the predominantly stenotic cases from those showing mainly regurgitation was based on the heart sounds, the brachial arterial pressure tracing, and fluoroscopy of the heart, the criteria adopted being shown.

The authors showed that symptoms due to pure

stenosis appear when the area of the aortic-valve orifice is less than 0.5 sq. cm., and those due to combined stenosis and incompetence when the area is less than 1.5 sq. cm. Indirect assessment of the left ventricular pressure and pressure gradient across the valve in aortic stenosis suggests that these values are 200 to 250 mm. and 100 to 150 mm. Hg respectively. In cases both of stenosis and of incompetence the left ventricular stroke work was increased, but evidence of left ventricular failure was seen only on exercise, when an increase in the pulmonary capillary diastolic pressure occurred. The volume of regurgitation is reduced by an increase in heart rate, for then the diastolic period is shortened.

H. E. Holling

The Wide Patent Ductus Arteriosus. G. J. AITKEN. *Glasg. med. J.*, **36**, 175-186, June, 1955.

Among 98 patients with patent ductus arteriosus investigated at the Royal Infirmary, Glasgow, 18 were considered to have features characteristic of a wide ductus transmitting a large shunt from aorta to pulmonary artery. The large size of the ductus was confirmed at operation in all of the 16 patients so far subjected to surgery. The clinical features characteristic of a wide ductus were as follows: (1) a history of a marked degree of dyspnoea and of serious respiratory infections in childhood; (2) a pulmonary "systolic-diastolic" murmur instead of the usual Gibson (machinery) murmur [their distinction is not very clear]; (3) a widely disseminated systolic element in the murmur and thrill, which could be felt in the suprasternal notch; (4) a higher pulse pressure than usual; and (5) an apical diastolic murmur in more than half the group. In most of these cases also the left atrium was enlarged.

J. A. Cosh

Surgical Closure of Interatrial Septal Defects by Circumclusion. [In English]. T. SØNDERGAARD, H. GØTZSCHE, P. OTTOSEN, and J. SCHULTZ. *Acta chir. scand.*, **109**, 188-196, July 23, 1955.

After a concise review of the methods devised by various previous workers for closing interatrial defects the authors describe in detail their own method and present a report on 6 patients successfully treated at the Kommune-hospital, Aarhus, Denmark. Essentially, the method consists in blunt dissection into, and development of, the cleavage plane which is present between the muscular walls of the right and left atria and which is filled with loose connective tissue. When this is completed the right index finger is inserted into the right atrium through the auricle and the extent of the defect explored. A curved blunt probe is placed at the upper end of the cleavage and, with very slight pressure, is guided along the lower edge of the defect until it appears at the lower end in the pad of fat situated between the atria and the coronary sinus. An oiled silk No. 10 suture is then secured to the tip of the probe and gently pulled back along the groove as the probe is withdrawn, the two free ends of the suture being tied over a piece of gelatin sponge at the lower end of the cleavage. As the suture is pulled tight the right index finger in the right atrium feels the defect becoming smaller and smaller and finally closing ("circumclusion").

The ages of the 6 patients subjected to this operation ranged from 4 to 33 years. All were improved by the operation, and subsequent cardiac catheterization in 4 of them revealed complete closure of the defect, with normal intracardial pressures.

C. A. Jackson

The Physiological and Clinical Changes following Closure of Atrial Septal Defects by Atrio-septo-pxy. H. GOLDBERG and D. F. DOWNING. *Amer. Heart J.*, **49**, 862-879, June, 1955.

To study the effect on cardiac haemodynamics of closure of an atrial septal defect, cardiac catheterization was carried out at Hahnemann Hospital, Philadelphia, before and after the performance of atrio-septo-pxy (suture of the right atrial wall to the margin of the defect) on 14 patients with this anomaly. Diagnosis was confirmed in all cases by cardiac catheterization and determination of the blood oxygen saturation; in only 2 cases was the catheter passed through the defect. Before operation all 14 patients had increased pulmonary blood flow, ranging from 6.2 to 31 litres per minute (1.4 to 8.7 times the systemic blood flow), and all had an intracardiac shunt from left to right, ranging from 3.0 to 27.6 litres per minute. In only 3 patients was the arterial oxygen saturation reduced, and none was cyanosed. In 8 cases there was pulmonary arterial hypertension but only 3 showed increased pulmonary resistance.

Postoperative studies showed that the left-to-right shunt had been eliminated in 11 cases, almost eliminated in one, moderately reduced in one, and unchanged in one. Associated with elimination of the shunt was a fall in pulmonary arterial pressure, though not always to normal levels. Elimination of the shunt was associated radiologically with a striking decrease in the pulmonary vascular markings and in the size of the cardiac silhouette.

K. G. Lowe

Cardiovascular Surgery — International Symposium.

Edited by Conrad R. Lam, M.D., foreword by Sir Russell Brock. Pp. xxix + 543. W. B. Saunders Company Ltd., London. Price 89s.

This volume contains the proceedings of the symposium on cardiovascular surgery held at the Henry Ford Hospital, Detroit, in March, 1955. There were 60 participants, many of them from countries outside the United States, and by means of papers and panel discussions the whole field of cardiovascular surgery, with the exception of the surgery of coronary disease, was covered. This volume gives an excellent account of the results achieved and work in progress on the surgery of congenital heart disease, mitral and aortic valvular disease, aneurysms and occlusive disease of the aorta. Recent work on the closure of atrial septal defects, controlled cross-circulation for direct vision intracardiac surgery, cardiac arrest, and hypothermia are also included. There are sections on diagnostic techniques and physiological studies. Apart from its obvious importance to the cardiac surgeon, this book will be of great interest to the cardiologist responsible for the selection of patients for cardiac surgery.

Graham Hayward

Intracardial Surgery with the Aid of a Mechanical Pump-oxygenator System (Gibbon Type): Report of eight Cases.

J. W. KIRKLIN, J. W. DUSHANE, R. T. PATRICK, D. E. DONALD, P. S. HETZET, H. G. HARSHBARGER, and E. H. WOOD. *Proc. Mayo Clin.*, **30**, 201-206, May 18, 1955.

A mechanical pump-oxygenator system was employed at the Mayo Clinic during intracardiac surgery on 8 patients aged 4 months to 11 years with the following congenital cardiac lesions: ventricular septal defect (4 cases), atrial septal defect (1), a common atrio-ventricular canal (2), and Fallot's tetralogy (1). Severe pulmonary hypertension was present in all the cases except the last. Very careful selection of patients for this type of operation is necessary and the criteria for this are outlined.

Four of the 8 patients survived and were well at the time of the report. One died during operation, possibly from an inadequate circulating blood volume, but the remaining 3 deaths occurred postoperatively and did not appear to be related to the perfusion process.

J. A. Cosh

Klinische Elektrokardiographie. VON DR. M. HOLZ-MANN, Zürich. 3., erweiterte und verbesserte Auflage, 1955. XII, 688 Seiten, 303 Abbildungen, 1 farbige Tafel, Gr.-8°, Ganzleinen DM 80. GEORG THIEME VERLAG.

The third edition of Clinical Electrocardiography is some forty pages longer than the second, but has the same number of illustrations. The plan of the book is, in general, much the same as before. The standard three leads still are prominently to the fore, and are often the only curves shown. It is time this changed, and more selective illustrations were used. The theory of circus movement is still conspicuous, Prinzmetal receiving a few lines at the end of the section. The curves of ventricular hypertrophy need rather more modern discussion. The cardiograms throughout are clear and adequate. The discussion is sound and conservative. There is little about treatment, but hardly enough if it is to come in at all. Altogether a sound and satisfactory book, which deals with all aspects of the subject very adequately.

Terence East

Das postthrombotische Syndrom. TH. HALSE. 1954.

Verlag Dietrich Steinkopff, Darmstadt. 114 pages. 34 illustrations.

The Post-thrombotic Syndrome is a monograph that deals with the pathogenesis, diagnosis, treatment, and avoidance of the consequences of acute thrombosis of the veins in the legs. The first part contains observations on the importance of these diseases from the point of view of social medicine, and shows how much disability has resulted in the past. The use of the antithrombotic remedies in acute phases has vastly reduced the invalidism. The anatomy and physiology are well reviewed. There are good photographs of phlebograms. These show how useful they can be in demonstrating the importance of deep vein thrombosis. This little book is a sound and interesting review of a subject often neglected as dull and disappointing.

Terence East