PROCEEDINGS OF THE BRITISH CARDIAC SOCIETY

The Autumn Meeting of the British Cardiac Society was held at the Middlesex Hospital on Friday, October 27, 1961. The President, Evan Bedford, took the Chair at 9.30 a.m. during Private Business before handing over to the Chairman, Bruce Perry. 128 members and 30 visitors were present.

PRIVATE BUSINESS

1. The minutes of the Annual General Meeting, having been published in the Journal (1961, 23, 457) were taken as read and confirmed.
2. The Joint Meeting with the Thoracic Society is to be held at the Wolfson Institute, Hammersmith Hospital, on Friday, March 2, 1962. The subject to be discussed will be Pulmonary Hypertension, with invited speakers. This will be followed by short papers in the afternoon. After the meeting the Societies will dine together at the Savoy Hotel.
3. Members who wish to submit papers to the Fourth World Congress of Cardiology should submit abstracts of 200 words to the Secretary of the British Cardiac Society, by April 1, 1962, and those selected will be forwarded to Mexico.

After the Scientific meeting the Society dined together at the Savoy Hotel with Evan Bedford in the Chair. Bedford proposed the health of the guests who included Lord Evans, Mr. H. Moore, Mr. C. F. Cooper, and Dr. Harley Williams (members of the Founding Committee of the British Heart Foundation) and Sir Brian Windeyer. Campbell made a presentation on behalf of the Society to Mounsey on his retirement as Secretary.

SCIENTIFIC BUSINESS

RADIOLOGICAL CONTRAST STUDIES OF THE LEFT HEART

By A. Hollman and R. E. Steiner

Eighty patients with various congenital and acquired heart lesions have been studied by left ventricular angiocardiology, aortography of the ascending aorta and simultaneous pressure recordings.

In adults the majority have been examined by the percutaneous transfemoral approach using an Odman catheter. A few were examined by catheterization from the radial artery after dissection and some by direct contrast injection into the left ventricle with a Bjork needle.

The indications for the choice of the approach will be discussed.

In rheumatic mitral incompetence the degree of reflux was assessed by the opacification of the left atrium and the assessment of left atrial and left ventricular size. Aortic incompetence was assessed by the degree of reflux from the aorta into the left ventricle. In left ventricular outflow tract obstruction the site of the stenosis (valvular, sub-valvular, muscular) and exact anatomy was studied.

In congenital heart disease these techniques were used to assess mitral incompetence complicating a septal defect, to demonstrate ventricular septal defects and anomalies of the great vessels and their anatomical relationship to the left and right side of the heart.

THE DIAGNOSIS OF LEFT ATRIAL MYXOMA

By V. R. Bloom, C. A. Stanfield, H. H. Bentall (all introduced), J. F. Goodwin and R. E. Steiner

Four patients with myxoma of the left atrium are described. The diagnosis was made in life in all, and the tumour was successfully removed in the three patients who came to operation. All patients presented with signs suggesting mitral valve disease with variable murmurs; severe pulmonary hypertension due to left atrial hypertension; fever; anaemia and loss of weight. Notable features were elevated serum globulins and erythrocyte sedimentation rates in all, and clubbing of the fingers in three. Phonocardiology showed a widely split first heart sound, possibly due to delayed filling of the left ventricle. Radiography demonstrated changes of pulmonary arterial and venous hypertension in all patients and pulmonary infarction in
three, while angiocardiography revealed a lobulated filling defect in the left atrium which moved down into
the left ventricle. Obstruction of the right lower pulmonary veins was also present. Cardiac catheterization
confirmed the high pulmonary venous and arterial pressures.
Following removal of a pedunculated tumour arising from the region of the fossa ovalis all three patients
improved dramatically, and the serum proteins returned to normal.
It is considered that in a patient with severe pulmonary hypertension and signs resembling those of mitral
valve disease, features suggesting a general system disease, and mimicking subacute bacterial endocarditis,
are more important in the diagnosis of left atrial myxoma than the usually accepted symptoms of postural
syncope, systemic embolism, atrial fibrillation and heart failure.

THE TREATMENT OF CONGENITAL AORTIC STENOSIS IN CHILDHOOD
By R. S. Jones (introduced by John Hay)
The clinical and electrocardiographic features of a series of children with congenital aortic stenosis are
presented and the indications for surgical treatment discussed.
Left ventricular pressures were measured by percutaneous ventricular puncture in thirty-nine children
with uncomplicated congenital aortic stenosis. Twenty-five with systolic gradients over 60 mm. Hg were
subjected to operation using cardiac bypass. In eighteen the stenosis was valvular, in three subvalvular, in
two both valvular and subvalvular and in two it was supravalvular. No operative procedure was carried
out to correct the latter condition. There were two post-operative deaths.
Electrocardiograms of thirty-nine children taken over a period of years have been analysed and a survey
of the changes occurring during childhood between three and eighteen years is presented. Significant
abnormalities of the QRS complex and T wave occurred with increasing frequency after ten years of age in
those with systolic gradients of over 60 mm. Hg. The indications for and results of operation are discussed
in terms of the clinical and electrocardiographic evidence presented.

THE LEFT VENTRICULAR IMPULSE IN HYPERTENSIVE HEART DISEASE
By Lawrence Beilin (introduced), and Patrick Mouney
A new instrument for recording the apical impulse which records displacement by means of a photo-
electric cell is described.
Using this impulse recorder, the apical impulse of 25 patients with hypertension and of 18 healthy control
subjects has been studied. The hypertensive patients were divisible into four groups, those with radiological
and electrocardiographic evidence of marked left ventricular hypertrophy, those with moderate hypertrophy,
those with borderline hypertrophy, and those without hypertrophy. In patients with marked and moderate
hypertrophy, the salient abnormality of the apical impulse was its prolongation in time up to, or beyond, the
second heart sound, and this was found even in the absence of displacement of the apex beat or increased
amplitude of pulsation, which were only seen in the larger hearts with marked hypertrophy. Patients with
borderline hypertrophy showed prolongation of the apical impulse in some, but a normal impulse in others.
Patients without hypertrophy had an entirely normal impulse in position, amplitude, and in the form of the
tracing.
It is concluded that prolongation of the apical impulse up to, or beyond, the second heart sound is a
sensitive and reliable guide to the presence of left ventricular hypertrophy in hypertension.

ATRIAL SEPTAL DEFECT, SECUNDUM TYPE: A REVIEW OF 250 CASES SURGICALLY TREATED
By E. M. M. Besterman
In a series of 440 consecutive cases of atrial septal defect, 381 were diagnosed as of secundum type, and
250 of these have been operated on under hypothermia at the Middlesex Hospital.
The value of physical signs, radiology, angiocardiography, electrocardiography, and catheterization in
diagnosis is assessed.
The indications for and contra-indications to surgical treatment are discussed especially in relation to
complications such as pulmonary hypertension, mitral stenosis, pulmonary stenosis and anomalous pul-
monary veins.
The operative mortality and post-operative morbidity are described and related to the various complica-
tions mentioned. The results of surgical treatment are assessed in regard to clinical improvement, and to
changes in physical signs, electrocardiogram, and radiological findings.
THE ATRIO-VENTRICULAR (OSTIUM PRIMUM) TYPE OF ATRIAL SEPTAL DEFECT: 
DIAGNOSIS AND SURGICAL TREATMENT

By M. J. Goldberg (introduced by Evan Bedford)

In a series of 463 consecutive cases of atrial septal defect, 64 (14%) were diagnosed as having primum type defects, and in 36 of them treated surgically the diagnosis was confirmed.

The clinical, electrocardiographic, radiological and hemodynamic findings in these 35 proven cases are summarized and the diagnosis is discussed. The clinical signs were characteristic in 80 per cent, the electrocardiographic in 92 per cent, and the vector cardiogram in 97 per cent of cases.

The anatomical findings at operation, and in some cases at necropsy, are described, and the results of surgical treatment are analysed. The main operative complication was complete heart block in six cases, in three of which it was transient. The indications for operation are discussed.

TRANS-SEPTAL LEFT HEART CATHETERIZATION

By B. L. Miller and W. E. Medd (introduced by Raymond Daley)

We have employed the technique of trans-septal left heart catheterization with modifications in 65 patients and have evaluated our results with emphasis on the rate of success, safety and diagnostic value of the procedure.

Of the 65 patients in whom we have attempted trans-septal left atrial puncture we have been successful in 54, or 83 per cent. Of the last 30 cases of the series this figure arises to 90 per cent. Causes of failure include inability to advance the catheter into the inferior vena cava and inability to engage the atrial septum with the needle.

Rather than simply recording pressures through the lumen of the needle, our present technique involves advancing the catheter over the needle into the left atrium. This was successful in all of the 32 patients in whom it was attempted. With the needle removed the patient can exercise with both legs while the left atrial pressure is being measured. It has also proved easy to introduce the catheter into the left ventricle from the left atrium (12 successes out of 12 attempts) and since the catheter is large it was possible to obtain pressure curves which were not over-damped, and to do selective left heart angiography in the 10 cases in which it was indicated.

There has been no mortality nor significant morbidity to the procedure in our hands.
We feel that this technique is the most generally applicable method of left heart catheterization.

REPEAT CATHETERIZATION STUDIES IN PATIENTS WITH A VENTRICULAR SEPTAL DEFECT 
AND PULMONARY HYPERTENSION

By G. Howitt and E. G. Wade

Eight children with ventricular septal defects were first catheterized at age 2 to 15 years. They all had a left-to-right shunt, raised total pulmonary resistance index (TPRI) and pulmonary hypertension (systolic pressure > 63 mm. Hg). They were recatheterized after an interval varying between 3 and 7 years.

In 3 patients there was little change in the hemodynamics and the pulmonary artery pressure was unchanged. In 2 there was a considerable fall in TPRI and pulmonary artery pressure. In 1 there was a rise in TPRI and pulmonary artery pressure; the pulmonary flow index was unchanged. In 2 the right ventricular pressure was unchanged but the pulmonary artery pressure fell considerably due to the development of infundibular pulmonary stenosis. In one case the fall in pulmonary resistance more than offset the right ventricular outflow tract hindrance to flow and the pulmonary/systemic flow ratio was increased. In addition 2 patients who initially had a ventricular septal defect, infundibular pulmonary stenosis and a left-to-right shunt were recatheterized after an interval and showed no change.

These findings are of importance in helping to decide at what age surgical treatment should be carried out in patients with this type of defect.

THE EARLY DESCRIPTIONS OF AORTIC INCOMPETENCE

By Risteárd Mulcahy

Sir Dominic Corrigan's classical contribution which was published in the Edinburgh Medical and Surgical Journal in 1832 is considered the first complete account of aortic incompetence. The details of this paper are analysed by the author and an attempt is made to establish the value of Corrigan's contribution. The author attempts to separate Corrigan's original observations from those details in his paper.
which had been described by earlier workers. In acknowledging this earlier work the author refers to publications by William Cowper (1705), Raymond Vieuussens (1715), J. B. Morgagni (1761), Thomas Hodgkin (1828), and James Hope (1831) amongst others.

The author makes a brief reference to a controversy which took place between James Hope and Dominic Corrigan. Finally he refers to the original sources and the exact definition of such well known physical signs as the waterhammer pulse, the Corrigan pulse, and Duroziez' murmur.

THE MEASUREMENT OF LOCAL VEINous FLOW BY AN INDICATOR DYE DIILUTION METHOD

By Thomas Bruce, Ivor Gabe (both introduced), and John Shillingford

A method has been evolved for the measurement of segmental venous flow by a continuous, local, indicator dilution technique using a double lumen catheter with a spray injection tip. Its accuracy has been tested in vitro and the limitations of the method in man investigated. The results show it to be a safe and reproducible method for the measurement of flow in any of the veins of man which can be reached by a cardiac catheter. Examples of the calculated flows in various parts of the venous system under different conditions are given.

PARIOSYMSAL CEREBRAL ISCHEMIA IN RHEUMATIC HEART DISEASE

By J. P. P. Stock, E. C. Hutchinson, R. G. Baker, and N. Dale (the last three introduced)

A survey of 320 patients with rheumatic heart disease was carried out to determine the nature and incidence of neurological disturbances. Forty-five patients (14%) had had cerebral embolic episodes. An unexpected finding, however, was that 84 of the patients (26%) gave a history of transient recurrent neurological symptoms which could not reasonably be attributed to emboli. The symptoms included monocular or binocular visual loss, diplopia, vertigo, "drop seizures" and sensory or motor loss of the limbs or face. The attacks in fact are closely similar to cerebro-vascular insufficiency from other causes. There is a definite correlation between the attacks and the severity of the cardiac lesion. They are commonly related to exertion and disappear after successful mitral valvotomy. Occasional precipitating factors include disturbance of rhythm, pregnancy and intercurrent respiratory infections. In approximately half the patients the attacks constitute a considerable disability. We have regarded them as due to paroxysmal cerebral ischaemia.

While the precise mechanism has not been determined, preliminary haemodynamic studies suggest that hyperventilation leading to reduced cerebral blood flow may be one factor.

EFFECT OF MECHANICAL HYPERVENTILATION ON THE PULMONARY CIRCULATION IN EMPHYSEMA

By J. J. Daly (introduced) and R. S. Duff

Cardiac output and pulmonary artery pressure were measured, at rest and after a period of intermittent positive pressure breathing with air, in a group of men with emphysema, the majority of whom had anoxia and hypercapnia. With hyperventilation there was a significant decrease in arterial pCO2 and pulmonary artery pressure, and an increase in cardiac output. The arterial oxygen saturation increased but did not reach normal levels in any subject. The results indicate that hypercapnia materially contributes to the pulmonary hypertension of emphysema.

PULMONARY HEMODYNAMICS IN PATIENTS WITH CHRONIC LUNG DISEASE

By John E. Cotes (introduced) and Arthur J. Thomas

Thirty-three cases of chronic lung disease have been assessed by clinical, lung function, and cardiac catheterization studies. All had some degree of emphysema. Thirteen cases had a non-industrial history, fourteen had worked in coal mines and six others had some other dust exposure. Thirteen had simple pneumoconiosis and two complicated pneumoconiosis.

In the electrocardiogram there was a change in the P-waves and QRS complex towards a pulmonary heart disease pattern in the more severely disabled group but the correlation in individual cases was not good. Independent radiological assessment provided unexpectedly good agreement with pulmonary haemodynamic findings.
For the group as a whole the mean pulmonary arterial pressure at rest is inversely related to the arterial oxygen tension but not to the disturbance of pulmonary function as estimated by the diffusing capacity or lung volume change. The respiratory variation in pulmonary arterial pressure is increased by comparison with other forms of pulmonary hypertension; this increase is related to impairment of the bellows function of the lungs.

The effect of 100 per cent oxygen during maximal exercise is to reduce pulse frequency, cardiac output and pulmonary arterial pressure in the few patients so far investigated under these conditions. The changes occur independently of any reduction in exercise ventilation and increase in exercise ability due to oxygen. Thus the use of portable oxygen equipment on exercise may reduce the load on the right ventricle in such patients.

Re-operation for Mitral Stenosis

By Clifton Lowther (introduced) and Richard Turner

Deterioration following initial improvement after mitral valvotomy may be due to a number of causes of which re-stenosis is the most frequent. Eighty-eight of the first 264 to be treated for severe mitral stenosis between four and ten years ago have now been subjected to a second operation, an overall incidence of 34 per cent. Re-stenosis was found in all but four cases.

The incidence of re-stenosis which was relatively low (5%) five years after the first valvotomy thereafter increased rapidly and is now over 70 per cent in the relatively small group followed for ten years. The average interval between operations was seven years.

The 84 cases having a second valvotomy have not differed from the remainder who did not require re-operation as regards the incidence of atrial fibrillation, cardiac enlargement, valvular calcification, associated mitral incompetence or aortic valve disease, and the ages of the two groups were similar.

Despite regular attendance at a follow-up clinic which provided the opportunity to detect early recurrence of symptoms, the valve orifice at the second operation was as small or smaller in more than half the cases. Re-stenosis was usually due to a combination of re-fusion of the cusp margins and progressive sclerosis of the valve. The extent of valvotomy achieved on the second occasion was often considerably greater owing to the use of the transventricular dilator.

Most patients requiring a second operation had incomplete first procedures and some also had very sclerotic valves. However, in our experience these observations apply almost equally to those who remained well and the actual cause for re-stenosis is obscure.

The operative mortality so far has been low (<2%) and the incidence of traumatic mitral incompetence and embolism has not been higher than on the first occasion.

The four errors of assessment when insignificant re-stenosis was found were attributed to associated aortic stenosis, active carditis or psychological factors.