ABSTRACTS
Editor: RALPH E. SMITH, M.D.

Abstracts

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BLOOD COAGULATION AND THROMBOEMBOLISM


This paper represents the experience with prophylactic anticoagulation therapy prior to mitral valvotomy at the Postgraduate Medical School, London. The 114 patients who received anticoagulants were considered in two groups: 96 patients in whom therapy was continued through the operative and into the postoperative period, and 18 patients in whom therapy was discontinued some days prior to the operation. Among the 41 patients of the former group whose anticoagulation was "adequate" (prothrombin time of 20 to 30 seconds for more than 2 weeks before surgery), no embolic episode was recorded. In contrast four embolic episodes were noted among the 55 patients of the first group whose therapy was considered "inadequate." In fact when anticoagulants "inadequate" in amount or duration are administered, the incidence of embolism (7.2%) was similar to that among 261 patients not receiving anticoagulants at all (9.5%). But the embolic process was less severe in the four patients who suffered embolism while on "inadequate" anticoagulant therapy than in the patients whose therapy had been interrupted. In this group of 18, whose anticoagulants had been discontinued suddenly several days before operation, 27.7% had an embolus and two had severe thrombophlebitis, a higher percentage of complications than in the untreated group. The incidence of excessive bleeding in patients undergoing first or second valvotomies was little greater in those patients given anticoagulants than it was in those not so treated. It is concluded that preoperative anticoagulant treatment is a safe and effective method of preventing systemic or pulmonary embolism and venous thrombosis in patients undergoing mitral valvotomy.

March


Three cases of thrombosis of the right internal jugular vein in patients with congestive heart failure are reported. Two of the patients had atrial fibrillation and the third had persistent tachycardia. The etiology of the heart disease was different. An underlying neoplasm was not demonstrated in any of the cases. The thrombosis spontaneously resolved in two of the patients while the third expired shortly after the diagnosis was made.

Feder

CONGENITAL ANOMALIES


Clinical and pathological features of 32 cases of mitral atresia were reviewed. Mitral atresia usually is accompanied by other abnormalities of
the heart or great vessels or both. These include aortic valve atresia, transposition of the great vessels, malformations of the aortic arch, pulmonary valvar or subvalvar stenosis, and common ventricle. An anatomic classification is made based on (1) the interrelation of the great vessels, (2) abnormalities of other left-sided structures, and (3) the state of the ventricular septum. Group 1 consists of cases of normally arranged great vessels (24 cases) and hypoplasia of the left-sided structures including aortic valvar atresia (type A) or hypoplasia (type B). Group 2 patients have transposition of the great vessels with a common ventricle (type A) or with two ventricles (type B). The clinical course is shorter in the former than in the latter group. Selective angiography, particularly from the left atrium, is a reliable method for the clinical diagnosis of mitral atresia.


Clinical, radiological, electrocardiographic, and hemodynamic features of 323 patients with proven interatrial communications were carefully assessed. There were 110 males and 213 females. The numbers seen in the first through the seventh decades were 58, 97, 68, 39, 28, 27, and six. The most common symptom was shortness of breath which became more severe in the later decades and was invariably present in those over 40 years old. Palpitation and atypical precordial pain were also frequent in older patients. The left parasternal systolic murmur was more intense in the very young (related to the very high levels of pulmonary blood flow) and in the older adults (related to distention of the main pulmonary artery); it was less intense in those of intermediate age. Accentuation of the pulmonary component of the second heart sound was heard in some patients in each of the decades. Tricuspid diastolic murmurs, due to high rates of flow across the tricuspid valve, were relatively common in children, while diastolic murmurs due to pulmonary valve regurgitation were most often heard in the older groups. Radiological signs, including generalized cardiac enlargement, enlargement of the pulmonary arteries, and pulsatile expansion of the arteries became more prominent with the passage of time. The common electrocardiographic feature of incomplete bundle-branch block became modified in about 20% of those aged 30 years or more through the development of a systolic overload pattern or of complete right bundle-branch block. Hemodynamic features included a gradual decrease in pulmonary blood flow (related to surface area) and a gradual increase in mean pulmonary artery pressure and in pulmonary vascular resistance as decade followed decade. Complications which aggravated the other effects of the defects included frequent infections of the respiratory tract, pulmonary emboli, and arrhythmias (of which atrial fibrillation was by far the most common). The authors believe from their extensive experience that the life expectancy for patients with atrial sepal defect may have been underestimated by previous authors, and that the mean age at death of untreated patients may be as high as 50 years.

**CONGESTIVE HEART FAILURE**


In five patients with clinical and x-ray evidence of pulmonary edema there was a prompt increase in urine flow and sodium excretion after an intravenous dose of 50 mg of ethacrynic acid. The effect reached its zenith in 30 minutes, and a mean volume of 605 ml of urine was excreted during the first 2 hours. Thus ethacrynic acid is a useful ancillary form of treatment in acute pulmonary edema.

**CORONARY ARTERY AND CORONARY HEART DISEASE**


The syndrome of mitral regurgitation following myocardial infarction is described in 20 patients under the designation, "papillary mitral regurgitation." The anatomic basis of the disorder is the failure of the papillary muscles to function normally in the mitral closure mechanism following their involvement in a subendocardial or transmural infarct. The diagnosis is suggested by the appearance of a typical pansystolic murmur following myocardial infarction, and by progressing enlargement of the left atrium. It is further supported by the absence of a previous history of heart murmur or valvar calcium. The murmur is not different in detail from other pansystolic murmurs of mitral insufficiency, and a prominent third sound is often present. Although the disease may be present in a relatively mild form compatible with long survival, increasing severity.
of congestive heart failure and the appearance of episodes of acute pulmonary edema necessitated frequent admissions to the hospital in the majority of patients. Ventricular aneurysm, bacterial endocarditis, and arterial embolization were other complications. In patients with the severe form of the disease, mitral valve replacement is indicated, particularly when it can be shown that the deterioration is due to mitral insufficiency as such.

MARCH


Fifty-two patients with refractory angina pectoris were treated by bilateral upper thoracic sympathectomy: 28 became free from pain or had increased effort tolerance, 14 had some decrease in the severity of their pain, six were not improved, and four died at or soon after operation. It was thought that effort tolerance was increased not by masking pain but by improving myocardial performance.

KALMANSOHN


Fourteen cases of dissecting aneurysm of the aorta are reviewed and four new cases are described. Twelve patients were women of whom six had recently completed pregnancies—all six of these had dissection of the left coronary artery. Three dissecting aneurysms were in patients with severe pulmonary disease and two in men who had engaged in arduous physical activity. One patient's dissection could be explained on the basis of a congenital abnormality, one on the basis of arachnodactyly.

KALMANSOHN


Nitroglycerin (0.5 mg sublingually) was administered to 19 patients with coronary artery disease. At rest in the horizontal position, without exception arterial pressure fell and a pulse rate increased slightly. The cardiac output declined in 14 patients and the stroke volume decreased in all 19. The blood pressure declines paralleled the fall in cardiac output, so major changes in systemic vascular resistance did not occur. When severe coronary insufficiency was present, these changes in cardiac output were quantitatively greater than in a comparable group of normal subjects. Similar changes occurred during exercise in the supine position. Twelve patients were subjected to exercise in the sitting position. Here again, nitroglycerin increased the pulse rate and greatly reduced the stroke volume. Arterial pressure was only slightly decreased. This again suggests that the principal effect of the drug at rest and during exercise is on the stroke volume and output and is evidence against a mechanism of arteriolar dilatation. In fact, the present data are more consonant with evidence suggesting that the most important mechanism of action of nitroglycerin is to diminish venous tone. Reduction in venous tone would be more pronounced in the vertical position, and this, in fact, was observed. Finally, the present results support the view that nitroglycerin relieves angina pectoris by reducing the work of the heart.

MARCH


There is still no consensus of opinion as to whether long-term anticoagulant therapy after myocardial infarction reduces either the incidence of recurrent infarction or the death rate. Previous studies have often been unsatisfactory because they lacked a control group of patients truly selected at random, or because of inadequate numbers. This report summarizes the latest results of the Veterans Administration study that was begun in 1957; it comprises data from patients admitted to the study up to November 1, 1965. Since women are rarely admitted to Veterans Administration hospitals the study was confined to men. Efforts were made to exclude those who were unreliable or incapable of cooperation. Other criteria for exclusion included the coexistence of severe congestive heart failure, congenital or valvar heart disease, severe hypertension, markedly impaired renal function, malignant disease, peptic ulceration, liver disease, diabetes mellitus requiring insulin, and hemorrhagic diathesis. Since some hospitals used more than one type of anticoagulant, the numbers in the control and treated groups were not identical. An attempt was made to keep the prothrombin time between 26 and 30 sec (control 12 to 14 sec). During the study, 69 of 359 control patients (19%) were readmitted because of a recurrent infarct, while 46 of 388 treated patients (12%) were admitted. Ninety-seven of 359 control
patients (27.0%) and 87 of 388 treated patients (22.4%) died of all causes. The difference in mortality rate is significant at the 1:20 but not at the 1:100 level. Since this study was undertaken, the results of three other major studies have become available. Bjerkelund found a significant reduction in mortality rate only for those treated patients less than 60 years of age and only during the first year of treatment. The results of the Medical Research Council approached borderline significance only for the younger patients during the first year of treatment. Harvald and associates found no difference in mortality rates between treated and untreated groups.

**MARSHALL**


Records of 140 patients having well-marked shock were found among 2,296 patients with myocardial infarction admitted to the Montreal General Hospital from 1952 through 1961. The annual incidence of this complication among persons with myocardial infarction decreased steadily from 11% in 1953 to 2% in 1961. Yet shock accounted for 17% of deaths due to infarction, as 83% of the patients having shock died. Treatment with norepinephrine in 95 individuals was followed by essentially the same mortality rate as when this agent was not used. Although the early use of norepinephrine may have accounted for the decreasing annual incidence of shock, the overall death rate from myocardial infarction did not change substantially during this decade. Autopsy studies in 31 patients dying in shock disclosed significantly fewer healed cardiac infarcts than were found in a comparable series of patients dying of infarction without shock.

**ROGERS**


A previous double-blind trial showed that pronethalol relieved the pain of angina pectoris. In the present study the effects of the more recently introduced beta-receptor blocking agent, propranolol (Inderal), were assessed. The dosage varied from 10 to 100 mg four times daily by mouth. All 14 patients tested had fewer attacks of angina, consumed fewer nitroglycerin tablets, and felt better ($P = 0.0001$). The authors did not note any significant increases in serum glutamicoxaloacetic transaminase or in blood urea levels during treatment, in contrast with previous reports. Side effects were few. Thus propranolol holds promise in the symptomatic management of angina pectoris. It should be used with caution, however, in those thought likely to develop heart failure.

**MARSHALL**


During 2 years all patients with acute myocardial infarction admitted to the hospital (except those with hemorrhagic tendencies) received anticoagulants, maintaining the blood prothrombin at 20 to 25% of normal. During the next 2 years none of the patients with acute myocardial infarction admitted to the hospital received anticoagulants. During the following period, anticoagulants were given on alternate months or to alternate patients. All other treatment was exactly the same. Patients dying within the first 2 days were excluded, as anticoagulant activity does not develop fully within this period. The 319 patients given anticoagulant treatment had a slightly higher incidence of the factors considered than the 431 patients not given it as follows: left ventricular failure, 39.5 versus 24.6%, total heart failure (3.7 versus 2.1%), shock, not including heparin reactions (2.8 versus 1.9%) extrasystoles (39 versus 33%), atrial fibrillation (13 versus 10%), pericarditis and pleuritis (14.7 versus 11.5%), bronchopneumonia (11.6 versus 10.0%). There was no difference in the incidence of late normalization of the electrocardiogram (10.7 versus 10.4%), while the following were slightly less common in the anticoagulated patients: total mortality (14.2 versus 16.7%), repeated precordial pain (19.7 versus 22%), recurrent infarction (0.3 versus 0.7%), cardiac rupture (0.9 versus 2.5%), A-V block (12.5 versus 16%), and thromboembolic complications (4.1 versus 9.5%). The duration of hospitalization, which was determined exclusively by the clinical condition, was longer in the anticoagulated patients (54.7 versus 46.3 days), and hemorrhagic complications occurred in 18.2%; these were mild and disappeared after temporary reduction or cessation of anticoagulation. It is concluded that, because of the additional inconvenience and risks of anticoagulant treatment, it should not be carried out routinely, but only in selected cases, especially if other thromboembolic manifestations have preceded myocardial infarction.

**LEPESCHKIN**

Circulation, Volume XXXIV, July 1966

Hemodynamic findings in four selected patients with systolic murmurs appearing after myocardial infarction or ischemia are presented with a view of demonstrating how cardiac catheterization and cinefluorography may be useful in the differential diagnosis of rupture of a papillary muscle, papillary muscle dysfunction, rupture of the interventricular septum, and acute left ventricular dilatation. In the case of rupture of the papillary muscle, the hemodynamic findings of massive mitral insufficiency by cinefluorography and indicator-dilution curves led to an attempt at surgical repair. This patient did not have pulmonary hypertension. A patient with rupture of the interventricular septum was catheterized 4 weeks after the acute infarct and had an oxygen "step up" of 5 vol% in the right ventricle as well as appropriate indicator-dilution curves. In the two patients with papillary muscle dysfunction mitral insufficiency was demonstrated by cinefluorography, and also by indicator-dilution curve in the one of these patients in whom it was done. Neither of these patients had severe congestive failure; both were able to return to work for a short time. This diagnosis was made retrospectively. The authors review the pertinent literature as part of their discussion and point out the importance of accurate diagnosis now that corrective surgery is theoretically possible.

Feder


The relationship between the degree of atherosclerosis of the coronary arteries and the presence of gross infarction of the myocardium was studied at necropsy in men aged 30 to 49 years, inclusive. Those with wasting diseases were excluded. Controls were men of the same ages whose hearts were free of gross myocardial lesions. Fourteen of 15 who had either a recent infarct or who had died of other causes but had gross scarring of the myocardium had severe coronary atherosclerosis. Only five of 60 with a grossly normal myocardium had severe coronary atherosclerosis.

Marshall


Twelve patients with typical stable angina pectoris were given dipyridamole, 50 mg three times daily for approximately 1 year. While five improved subjectively, only two tolerated treadmill effort better. Two deteriorated. It was concluded that dipyridamole therapy was of little benefit to patients having long-standing angina pectoris due to arteriosclerotic heart disease.

Rogers


The immediate mortality and 5-year survival rates were determined for 205 diabetic patients who were hospitalized in the New England Deaconess Hospital (Boston, Massachusetts) during the years 1954 to 1958. Death occurred within 2 months in 38% of 205 diabetic patients who were hospitalized during their initial acute myocardial infarction and in 54.7% of 53 diabetic patients who were hospitalized for repeated myocardial infarctions; the 5-year survival rates were 37.8 and 25.0% respectively. The overwhelming majority of those who survived the acute myocardial infarction subsequently died of vascular disease. An increased incidence of acute myocardial infarctions in female patients was noted in the present study. Age, duration of diabetes mellitus, and diabetic nephropathy before the myocardial infarction adversely affected both the immediate mortality and the 5-year survival whereas hypertension and peripheral vascular disease worsened the 5-year survival only. A history of angina pectoris prior to myocardial infarction had no effect on either the immediate mortality or the 5-year survival. Chest pain was found to be absent in 24.1% of the patients and a high incidence of shock and congestive heart failure occurred during the illness. Postoperative myocardial infarctions occurred in 8.9% of all of the cases, emphasizing again the risk that diabetes presents during surgery in view of the frequent vascular complications observed in these patients.

Karpman

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RALPH E. SMITH

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