SUMMARY OF CURRENT THERAPY

The Exercise Apexcardiogram in Angina Pectoris: Its Possible Usefulness in Diagnosis and Therapy*

E. GREY DIMOND, M.D. AND A. BENCHIMOL, M.D.
La Jolla, California

Separate workers utilizing several instrumental approaches have studied precordial vibrations and have identified various alterations in patients with angina pectoris. We have studied particularly the low frequency (0.1 to 20 cycles per second) displacement vibrations at the apex: the apexcardiogram. In ischemic heart disease and especially after effort, we have noted almost uniformly (70 of 76 patients), the occurrence of a large vibration due to atrial thrust at the apex.

By simultaneous recording of the left ventricular pressure curve and the apexcardiogram, we have documented that this large atrial component of the apexcardiogram is directly reflecting a rise in the end-diastolic left ventricular pressure. In data obtained at rest, after exercise, before and after nitroglycerin, before and after venous tourniquets, we have found a proportional relationship between the amplitude of the atrial component and the degree of elevation of end-diastolic left ventricular pressure. Other investigators have confirmed the rise in end-diastolic left ventricular pressure in the presence of angina pectoris.

From these experiences we make the following suggestions:

1. In patients with angina pectoris, there is, either at rest or upon exercise, dependent upon the severity of the ischemic heart disease, a rise in end-diastolic left ventricular pressure. We are referring particularly to angina pectoris, a manifestation of ischemic heart disease and not to left ventricular failure, systemic hypertension, or non-specific cardiomyopathies. We appreciate that abnormalities also occur in these conditions; however, we here are specificaly discussing the single entity of effort pain, identified as angina pectoris and not that condition which is usually described as left ventricular failure.

2. In patients in whom there is a clinical issue as to whether angina pectoris is present or not, the recording of the apexcardiogram at rest and after exercise and the expression of the amplitude of the atrial component as a ratio ("a" wave to the amplitude of the maximal movement of the apexcardiogram), may offer a simple, safe, useful test, surpassing the "yield" from the exercise electrocardiogram.

3. The immediate return of this abnormal atrial component to normal after nitroglycerin, offers a second means of confirming the presence of ischemic heart disease and at the same time, a means of judging the therapeutic effectiveness of medications for coronary insufficiency.

4. The fact that this indirect, precordial procedure has a direct relationship to the left ventricular end-diastolic pressure, may offer a safe, inexpensive, rapid, bloodless, reproducible method of documenting changes in end-diastolic left ventricular pressure and may thereby facilitate the evaluation of medical and surgical therapy, the evaluation of large population groups, and the improvement or deterioration of individuals with ischemic heart disease.

5. If a technique such as the apexcardiogram is used, it is essential to appreciate

*From the Institute for Cardiopulmonary Diseases, Scripps Clinic and Research Foundation. Supported by Grants: United States Public Health Service Grant H-5730, Timkin-Sturgis Cardiovascular Research Grant, and United States Public Health Service Grant HE-05375-0281.
that it is an indirect procedure, subject to artifacts and distortions by technique and that other improved methods will probably supersede it. Judicious use with cautious attention to technique and limitations seems indicated at present.

REFERENCES

OPEN HEART SURGERY

At the University of Michigan Medical Center, 600 patients have undergone correction of congenital or acquired intracardiac defects with a safe, easily controlled extracorporeal circulation employing a rotating disc oxygenator and moderate systemic hypothermia. Seventy-eight early and late deaths occurred in this group of patients. Among 311 patients with uncomplicated congenital abnormalities, there have been three operative deaths, a mortality rate of less than 1 per cent. One hundred eighty of these patients have been operated upon consecutively without a death. Early correction of most congenital intracardiac abnormalities can be accomplished safely. The authors believe that the threat to the patient's life from such lesions outweighs the risk of operation.


BRONCHOPULMONARY COMPLICATIONS SECONDARY TO ESOPHAGEAL PERISTALTIC DISTURBANCES

The authors studied the bronchopulmonary complications developed by 66 patients with aperistalsis of the esophagus (so-called megasphagus, achalasia of the cardia, cardiospasm). The most frequent complications were chronic bronchitis, pneumonia, tuberculosis, pleuritis, abscess and bronchiectasis. The duration of the disease and degree of dilatation of the esophagus were considered most important factors. Complications of that type were found in 40 per cent of the cases.