Modern Treatment

Volume 7 Number 1 January 1970

TREATMENT OF CARDIAC ARRHYTHMIAS

Guest Editor
NOBLE O. FOWLER, M.D.

原书缺页

原书缺页

Modern Treatment

Volume 7 Number 1 January 1970

TREATMENT OF CARDIAC ARRHYTHMIAS

Guest Editor
NOBLE O. FOWLER, M.D.

Medical Department
HARPER & ROW

Modern Treatment

A BIMONTHLY PUBLICATION

Library of Congress Catalog Card No. 70-106953.

Second-class postage paid at New York, New York. Published bimonthly by Medical Department • Harper & Row, Publishers, Inc., 49 East 33rd Street, New York, N. Y. 10016. Subscription: $20.00 per year.

Contributors

ROBERT J. ADOLPH, M.D.

Associate Professor of Medicine, Department of Internal Medicine, University of Cincinnati College of Medicine; Associate Director, Cardiac Research Laboratory, Cincinnati General Hospital, Cincinnati, Ohio

TE-CHUAN CHOU, M.D.

Associate Professor of Medicine, Department of Internal Medicine, University of Cincinnati College of Medicine, Cincinnati, Ohio

GENE F. CONWAY, M.D.

Chief, Cardiology Section, Cincinnati Veterans Administration Hospital; Associate Professor of Medicine, Department of Internal Medicine, University of Cincinnati College of Medicine; Attending Physician, Cincinnati General Hospital, Cincinnati, Ohio

LEONARD S. DREIFUS, M.D.

Associate Clinical Professor of Medicine, Section of Cardiology, Department of Medicine, Hahnemann Medical College, Philadelphia, Pennsylvania; Director, Cardiovascular Institute, Deborah Hospital, Browns Mills, New Jersey

NOBLE O. FOWLER, M.D.

Professor of Medicine, Department of Internal Medicine, University of Cincinnati College of Medicine; Director, Cardiac Research Laboratory, Cincinnati General Hospital, Cincinnati, Ohio

DONALD C. HARRISON, M.D.

Chief, Cardiology Division and Associate Professor of Medicine, Stanford University School of Medicine; Chief of Cardiology, Stanford University Hospital, Stanford, California

JOHN C. HOLMES, M.D.

Associate Professor of Medicine, Department of Internal Medicine, University of Cincinnati College of Medicine; Attending Physician, Cincinnati General Hospital, Cincinnati, Ohio

JOHNSON McGUIRE, M.D.

Professor of Medicine, Department of Internal Medicine, University of Cincinnati College of Medicine; Director, Cardiac Laboratory, Cincinnati General Hospital, Cincinnati, Ohio

Contents

Volume 7 Number 1 January 1970

SYMPOSIUM ON THE TREATMENT OF CARDIAC ARRHYTHMIAS

NOBLE O. FOWLER, M.D., Guest Editor

(continued)

原书缺页

原书缺页

Foreword

THIS SYMPOSIUM DEALS WITH THE TREATMENT of the cardiac arrhythmias which are commonly encountered in clinical practice. Proper treatment depends upon the correct identification of the arrhythmia; hence, each author has devoted space to a discussion of diagnosis before proceeding with a description of treatment.

In the first article, we emphasize the importance of determining the etiologic background of the arrhythmia; it is apparent that paroxysmal atrial tachycardia caused by digitalis will require a different management than when it is related to hypoxia and a disturbance of acid-base balance in a patient with chronic obstructive lung disease. In the discussion of sinus bradycardia, it is pointed out that syncope may be caused by supraventricular bradycardia as well as by complete A-V block. In the description of sinus tachycardia, we emphasize that in most instances one must find the underlying cause; usually cardiac drugs are not required. Dr. McGuire deals with the problem of managing the commonest of the arrhythmias: premature cardiac contractions. It may be extremely difficult to determine whether or not any treatment is required in some instances. Dr. Chou deals with the role of drugs, vagal stimulation, and electric shock in the treatment of atrial and junctional tachycardia.

In the article concerning atrial fibrillation, we emphasize the settings in which an attempt to revert the arrhythmia is probably not desirable. Atrial flutter most often appears with 2:1 A-V conduction as a regular tachycardia with a ventricular rate near 150 per minute. We describe the steps in diagnosis and the roles of digitalis, atrial pacing, D.C. shock, and quinidine in therapy. The diagnosis of ventricular tachycardia is often difficult; the steps in diagnosis are stated. The prevention of recurrences is often more challenging than the original reversion to a sinus mechanism.

Dr. Chou deals with the extremely important topic of digitalis-induced arrhythmias. It has been estimated that 10–20 per cent of patients being digitalized may develop some toxic reaction to the drug; in many, an arrhythmia is the first evidence of toxicity. Dr. Adolph deals with the treatment of A-V block, and emphasizes the differences between the emergency management and the long-term therapy. A knotty question is whether or not to employ cardiac pacing

in the management of chronic complete A-V block in the absence of symptoms. Dr. Harrison details his extensive experience with propranolol in the management of cardiac arrhythmias. Many of us have been reluctant to administer this drug intravenously because of the danger of cardiac arrest or pulmonary edema. Perhaps we should reconsider our position after reading Dr. Harrison's experiences. Dr. Conway reports on his extensive experience with the arrhythmias of acute cardiac infarction and confirms the general impression of the value of Xylocaine (lidocaine) in the prevention and treatment of ventricular arrhythmias. Dr. Dreifus places in perspective the value of D.C. shock in the treatment of cardiac arrhythmias. He emphasizes its value in the coronary care unit and confirms its limitations in the reversion of atrial fibrillation to a sinus mechanism. Dr. Holmes closes the symposium with a timely discussion of cardiac resuscitation, stressing the value of early cardiac massage and adequate ventilation, supplemented by D.C. shock, correction of acidosis, and the use of drugs when needed. At present, it is hoped that the need for resuscitative procedures in the coronary care unit can be greatly reduced by the prompt recognition and early treatment of those varieties of ventricular premature beats which presage ventricular tachycardia or fibrillation.

NOBLE O. FOWLER, M.D.

Modern Treatment of Cardiac Arrhythmias: A Perspective

NOBLE O. FOWLER, M.D.

From the Cardiac Research Laboratory, Cincinnati General Hospital, and the Department of Medicine, University of Cincinnati College of Medicine, Cincinnati, Ohio

IN 1964, DRS. J. W HURST AND R. C. SCHLANT served as Guest Editors for a symposium in *Modern Treatment* entitled, "Treatment of Cardiac Arrhythmias." In that presentation, 50 years of progress in the treatment of cardiac arrhythmias were reviewed. Though only 5 years have elapsed since the symposium in 1964, a number of significant advances in the diagnosis, understanding and treatment of cardiac arrhythmias have taken place.

RECENT ADVANCES IN DIAGNOSIS AND TREATMENT

In many complex cardiac arrhythmias, neither bedside physical diagnosis, nor the standard 12-lead electrocardiogram will unravel the diagnostic problem. The identification of the mechanism of atrial activity, as evidenced by the P wave, fibrillary waves, or flutter waves in the electrocardiogram, is essential to the interpretation of disorders of the heart beat. It has been shown that right atrial electrocardiographic leads (right atrial electrograms) which display the pattern of atrial depolarization at considerable amplitude are useful and practical for this purpose (21). These recordings may be obtained with an inexpensive teflon-coated platinum-tipped wire electrode, which is inserted percutaneously into the antecubital vein and threaded into the right atrium. Often this can be accomplished at the bedside without the need for cardiac fluoroscopy.

Within the last 5 years, there have been a number of significant advances in treatment of cardiac arrhythmias. New drugs have been developed and old ones have been found to have new uses. Among these are: diphenylhydantoin (Dilantin) (14), bretylium (2), lidocaine (Xylocaine) (13), and the beta-sympathetic receptor blocking agents, such as propranolol (11,15,18,19,20), and sotalol (16). Drs. Hurst

and Schlant described the then newly developed method of direct-current electrical shock for the management of many of the tachyarrhythmias and for ventricular fibrillation. The ensuing 5 years have further defined the usefulness and limitations of this major advance. Additional progress has been made in the application of electrical current to the management of disorders of the heart beat. Atrial tachycardia and atrial flutter, refractory to drug therapy, may at times be terminated by atrial pacing (12). At times atrial pacing at slightly above the normal rate is successful in capturing the atrial mechanism thus rendering the atrial musculature refractory to the next impulse from the ectopic pacemaker, and terminating the paroxysm. In other instances, pacing the atrium at rates above 400 per minute may terminate atrial flutter (10). Competitive atrial pacing, by capturing the ventricles, may be useful in the differentiation of ventricular tachycardia from supraventricular tachycardia with aberrant intraventricular conduction (7). In patients with symptomatic complete atrioventricular block, development of demand ventricular pacemakers has improved their management by reducing the risk of competing ventricular rhythms, one arising from intermittent A-V conduction, and the other from the electronic pacemaker (14). Further understanding of the mechanism of the Wolff-Parkinson-White syndrome or the preexcitation syndrome has been gained (8), and it has been shown that the paroxysmal supraventricular tachycardias associated with this syndrome may on occasion be treated either by interrupting the anomalous pathway (3), or by surgical production of complete A-V block and then pacing the ventricles electronically (6).

Many cardiac arrhythmias are repetitive. Ventricular tachycardia, for example, may be reverted to a normal sinus mechanism by either electric shock or lidocaine, but then recur again and again. If recurrences are persistent, not controllable by drugs, pacing the ventricles electronically, at rate slightly above 100 per minute (5), perhaps combined with antiarrhythmic drugs, may solve the problem. Similar management by electronic pacemaking may be applied to the therapy of recurrent supraventricular tachycardia (4).

As Drs. Hurst and Schlant pointed out, cardiac arrhythmias do not necessarily imply heart disease. Further, not all disorders of the heart beat require treatment. In many others the treatment consists of withdrawing a drug, combating a disorder of metabolism, or changing the life pattern, rather than in the administration of a new drug. As physicians, we prefer to see that patients have a normal sinus cardiac mechanism, with a heart rate of 60–90 per minute. When we find heart rates which are slower or faster, we become concerned;