Literature Briefs

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Briefs were submitted by Drs. J. Adriani, C. M. Ballinger, R. B. Boettner, R. Bickwell, P. P. Bosomworth, D. R. Buechel, M. T. Clarke, D. Duncalf, J. E. Eckenhoff, N. Greene, M. Helrich, G. Hohmann, J. Jacoby, E. M. Kavan, H. Linde, F. C. McPartland, W. H. Mannheimer, J. W. Pender, R. E. Ponath, A. D. Randall, H. S. Roe, E. W. Robinson, L. J. Saidman, P. H. Sechzer, and E. A. Talmage. Briefs appearing elsewhere in this issue are part of this column. Abstracts of Russian and Japanese literature were obtained from Excerpta Medica Foundation.

ARRHYTHMIAS It has been known since 1958 that adrenergic blockade of the heart by surgical or chemical (drug) means can modify digitalis induced ventricular arrhythmias. Dichlorisoproterenol (DCI) was the first beta-adrenergic blocking agent studied for this purpose. It effectively reversed ventricular arrhythmias but, because of potent sympathomimetic side effects, it has not been used clinically. Pronethalol and other beta blocking agents without sympathomimetic effects have been found to have anti-arrhythmic properties. The mechanism for this anti-arrhythmic effect may not be in the beta blocking properties of the agents. Digitalis is known to cause an efflux of potassium from the myocardial cells which may lead to ventricular arrhythmias. Quinidine, procaine amide and pronethalol reduce potassium loss in dogs and may stabilize the heart by this mechanism. The anti-arrhythmiac effect of pronethalol was studied in 24 dogs (5 dogs pretreated with reserpine, 5 with guanethidine and 6 with promethalol). Pretreatment with any of these agents did not prevent the appearance of ventricular arrhythmias when the dogs were challenged with acethylstrophanthidin. The arrhythmias were effectively reversed in all the animals with pronethalol. However, the dosage necessary to reverse the arrhythmias, 2.5 mg./kg., was about ten times that which produced effective beta-adrenergic blockade as established by response to tyramine. Subsequent work has shown that the dextro-isomer of pronethalol was equally effective as the levo-isomer used in this study in reversing digitalis induced arrhythmias although it has only one-fortieth the beta-adrenergic activity of the levo-isomer. (*Arocsty, J. M., and Cohen, J.: The Effects of a Beta-Adrenergic Blocking Agent Pronethalol on Digitalis Induced Ventricular Arrhythmias, Amer. Heart J. 71: 503 (April) 1966.*)

Reviewer's comment: Other work (*Benfey and Varma: Brit. J. Pharmacol. 26: 3, 1966*) confirms the impression that the antifibrillatory action of pronethalol and propranolol (a beta blocker 10 times as potent as pronethalol) is due to properties not directly related to beta-blockade.

CARDIOVERSION A significantly greater number of patients in whom the pre cardioversion ECG reflects digitalis overdosage will manifest post cardioversion ventricular arrhythmias. The proposed mechanism for the above is that the electrical shock affects myocardial membranes resulting in a loss of intracellular potassium. When a critical loss has occurred, toxic effects of the cardiac bound glycoside ensue. To decrease the risk attending cardioversion it is recommended that: (a) digoxin be discontinued for 24 hours prior to cardioversion; (b) longer acting drugs be discontinued for two days; (c) cardioversion be postponed if the pre cardioversion ECG shows signs of digitalis toxicity or if hypokalemia is present; (d) the least energy needed for cardioversion be employed by starting with 25–50 watt seconds. If serious ectopic ventricular beats are encountered, they may be abolished by intravenous lidocaine 50 mg., procaine amide 100 mg., diphenyl hydantoin 100 mg.