THE CIRCULATORY RESPONSE TO SMOKING: THE EFFECT OF SMALL DOSES OF HEXAMETHONIUM AND OF MEPHENTERMINE ON THE PATTERN OF RESPONSE

CAROLINE BEDELL THOMAS, M.D., AND EDMOND A. MURPHY, M.D.
BALTIMORE, MD.

From the Department of Medicine, The Johns Hopkins University School of Medicine

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DURING a standard ballistocardiographic smoking test, many different types of circulatory response are found among healthy young adults.[1,2] Some subjects show hyperreactivity of the blood pressure, heart rate, or cardiac output in various combinations, while others with similar smoking habits show little change or even a negative response. The variations in circulatory reactivity undoubtedly reflect individual differences in homeostasis which may be of considerable importance, particularly in regard to susceptibility to future hypertension or coronary artery disease. In 1938, Herrell demonstrated that certain persons with "a tendency toward" hypertension showed dramatic rises of blood pressure after smoking a cigarette, and in the same year, Hines and Roth reported that the most marked elevation of blood pressure during a standard smoking test occurred among patients with essential hypertension.[3-5] We found that the degree of change in cardiac output in healthy medical students following smoking may be related to genetic factors.[1] Thus the offspring of hypertensive parents showed an exaggerated increase in cardiac output after one cigarette as well as a greater rise in blood pressure and heart rate when compared with the offspring of unaffected parents. On the other hand, the offspring of parents with coronary artery disease showed a more marked diminution in stroke volume and a much smaller increase in cardiac output after smoking than did the offspring of unaffected parents. Accordingly, differences in response to the smoking test may be of predictive value in regard to the development of hypertension or coronary disease at an early age, on the one hand, or as an index of longevity and relative freedom from cardiovascular disease on the other.

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Eight tables setting forth the detailed data and statistical analyses presented with this report have been omitted because of lack of space. These tables are available, from the authors, in mimeographed form to interested readers.