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Boston University School of Medicine, Boston, Massachusetts (U.S.A.)

Coffee and Cardiovascular Disease*)

T. R. Dawber

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As a result of a number of epidemiologic studies certain host and environmental factors have been linked with the subsequent development of coronary heart disease, stroke and peripheral vascular disease, all manifestations of underlying arteriosclerosis. One of the major environmental factors which epidemiologists must investigate is the dietary intake of the subjects under study.

Epidemiologic studies of cardiovascular disease have related fat and cholesterol in the diet to the level of cholesterol in the blood and thus possibly to arteriosclerotic changes in the arterial walls and the resultant diseases referred to. Other factors in the diet have been suggested, including coffee consumption.

The major reason for considering coffee is because of its caffeine content and the known effect which caffeine has on the cardiovascular system. Caffeine and thus coffee produce an increase in pulse rate, slight rise in blood pressure and myocardial irritability as evidenced by the frequency of premature beats.

In 1949 the newly established National Heart Institute of the U.S. Public Health Service decided to conduct a long-term prospective epidemiologic study of coronary heart disease. This was established in Framingham, Massachusetts, U.S.A., in January 1950. Since then this study has been observing a population of 5,209 men and women age 30–59 in 1950 to determine the development of coronary heart disease, stroke and peripheral vascular disease. In addition to the incidence of these diseases a number of host and environmental characteristics of the population has been recorded. The relationship of these characteristics, e.g. coffee consumption, to development of disease can thus be determined. Since the entire population is involved there is no bias of selection such as might occur in retrospective studies.

In the Framingham Study the determination of coffee drinking habits was made at the fourth biennial examination, six years after the initial examination was performed. At present the follow-up is complete for 18 years of observation which permits 12 years of observation in terms of coffee consumption. Subjects were questioned regarding coffee consumption in terms of their usual intake (in cups) during a 24-hour period.

Results

The average daily coffee consumption in the Framingham population was 2.84 cups for men and 3.00 cups for women. There was a slight de-

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crease with age. As might be expected, coffee drinking was a popular practice varying only from a low of 87.3 per cent of females in the 65–69 year age group to a high of 95.2 per cent of men in the 35–39 year age group.

When deaths from all causes occurring over the 12-year observation period were examined it was found that there was a relative increase in risk of death with increasing coffee consumption. Because of this relationship it was necessary to determine whether coffee consumption might be associated with any other factors which could account for the increased death rate. When coffee consumption was compared with other factors measured in the Study the only important relationship found was that associated with cigarette smoking.

The average number of cigarettes smoked by non-coffee drinking men was 8.7/day. This rose steadily to 21.8 cigarettes/day for men drinking seven or more cups of coffee daily. When the known positive effect of cigarette smoking on death from all causes is accounted for, *no* apparent risk of coffee consumption at any level observed could be found.

No statistically significant relationship between coffee consumption and coronary heart disease, myocardial infarction, sudden death, angina pectoris and total CHD deaths could be found in either men or women.

Discussion

Some studies have suggested that only very high consumption of coffee is dangerous. Since only a small percentage of the subjects in this study consumed more than six cups per day, the observations presented do not rule out the possible harmful effects of excessive coffee intake (e.g. 20–30 cups per day). The failure to observe any gradient in effect is certainly against an assumption of any effect even with high coffee consumption.

It should also be pointed out that the non-effect of coffee drinking on the development of disease in apparently healthy people does not preclude a possible harmful effect on the course of existing arteriosclerosis heart disease. This aspect of the problem deserves further study since it has a more immediate bearing on medical practice.

The data presented may be taken as assurance that coffee consumption by the general public in the customary amounts is not associated with any higher risk of death or of the development of arteriosclerotic disease than might be expected had coffee not been included in the diet.

Those of us who are concerned with the relationship of varieties of life style to death and disease have a responsibility to call attention to any aspects of life style which may affect the individual adversely. We also have a responsibility to inform the public about the relative safety of practices which make life more enjoyable. Coffee drinking is one of these and should be so recognized.

Author's address:

Th. R. Dawber, M.D., M.P.H., Professor of Medicine, Boston University School of Medicine, Boston, Massachusetts (U.S.A.)