DIET AND ATHEROSCLEROSIS

A presentation of the evidence for and against the concept that the fat content of the average present-day North American or northern European diet is a significant factor in atherogenesis has been published by the Nutrition Committee of the American Heart Association.* Entitled "Atherosclerosis and the Fat Content of the Diet," this review finds that existing evidence does not justify recommendations for drastic changes in the amount or type of fats consumed by the general public as a means of preventing atherosclerosis or its sequelae. The report adds, however, that the evidence, incriminating diet as an environmental factor in atherogenesis, is strong enough to warrant early, thorough and uncompromising investigation.

Noting that atherosclerosis in all probability has no single cause, the report states that factors presently implicated include heredity, anatomy of the blood vessel wall, arterial blood pressure, diet, lipid content of the blood, sex and many others. Because animal experiments have shown that atherosclerosis, similar to, but not identical with the human type, can be produced in a variety of animals by dietary variations, the attention of clinicians has tended to focus on the possible dietary factors (as, of course, has that of the lay public).

A basic criticism of this approach, the authors hold, is that most experimental studies have been concerned with concentrations of serum cholesterol, serum lipid or serum lipoprotein, and not with "the real nub of the problem," *atheroma* and *infarction,* whether myocardial or cerebral. Infarction is not generally produced in experimental animals despite the extensive and severe atherosclerosis that has been produced. Compelling evidence is thus lacking from the experimental data that treatment of hypocholesterolemia by dietary means significantly lessens the chances of myocardial infarction. At best, there is an association of statistical value, but this is not an obligatory association, either in small groups or (much less so) in an individual, according to the authors.

Another basic criticism concerns the association frequently drawn between hyperlipemia and dietary fat intake. Although the equation of *atherosclerosis* with *hyperlipemia* is presumably valid, other parameters such as total caloric intake, relative rate of caloric expenditure, true obesity and exercise, are not easily disentangled from the problem of excessive fat intake.

On the other hand, the facts that obesity is a nutritional failure, caused by consuming more calories than expended, that dietary fats are the most concentrated source of calories, providing some 40 to 45 per cent of the daily intake, suggest that many should consume fewer calories.

For most, the authors hold, this will mean eating less fat. Diets providing 25 to 30 per cent of the calories from fat "can still provide palatable meals for our accustomed tastes."

Much attention is given in the report to data derived from population studies. These are often cited to support the view that coronary disease has increased alarmingly in the past generation or two in countries like the United States with high living standards, including high fat consumption.

Concerning prevalence, the authors say: "No one questions the remarkable increase in the *reported* number of cases," but they note that this rise may be due largely to artifacts such as changes made in 1949 in the International List of Causes of Death, acceptance of broader concepts of coronary disease among physicians filling out death certificates, wider use of the electrocardiogram in confirming clinical diagnosis (as well as, of course, the aging of the population).

One of the major problems under discussion, according to the authors, is whether there has been a marked change in the American diet during the past generation or two — a period in which the incidence of coronary atherosclerosis may have increased. Are Americans actually eating more fats than formerly? A clear-cut answer is not available. Studies made among college students during the 1890's indicated that 36 to 44 per cent of calories eaten by these groups came from fats, a ratio similar to that found today. Current Army rations have a fat content almost identical with that of rations served troops on the western outposts during the late 1880's. Moreover, data on the dietary habits of peoples are difficult to analyze. Food availability in a country — such as government estimates of retail food stock — is not the same as food consumption; data on food waste, for example, are not usually reliable. The collection of tremendous amounts of fat from kitchen waste during World War II is cited as an indication of the degree of loss from this one source alone.

Regarding the often-quoted experience of European countries experiencing food and fat shortages during World War II, the authors cite studies that question the conclusion of a concomitant drop in the death rate from arteriosclerotic heart disease. In Britain, for example, cardiovascular mortality declined before fat ra-

* Page, I. H.; Stare, F. J.; Corcoran, A. C.; Pollack, H.; Wilkinson, C. F. Circulation, August 1957; J.A.M.A. Aug. 31, 1957.

tioning was instituted in 1939, but resumed an upward trend in 1943 despite the fact that fat rationing continued and was even intensified in 1947. Similarly in Norway, apparent mortality from cardiovascular disease tended to decrease *before* wartime shortages became acute.

Another question often encountered is whether a change in type of fat eaten may be involved in the possible higher incidence of atherosclerosis. The proportion of animal and vegetable fats in the American diet has remained relatively constant, the authors say, citing U. S. Department of Agriculture tables that show a ratio of 70 per cent animal to 30 per cent vegetable fat available for human consumption both twenty years ago and today. While there has been an increase in consumption of hydrogenated fats, this is not held to have produced a drop in the intake of essential fatty acids. Increased saturation of fats induced by the hydrogenation of shortenings and margarines has been balanced by an increased consumption of other fats and oils, largely unsaturated and with a high content of essential fatty acids, and also by decreases in the use of butter and lard.

The report also calls attention to other common factors in human life which are atherogenic but not related to lipemia. Of these, the most common and best documented is arterial hypertension. Patients with severe hypertensive disease leading to atherosclerotic complications, fatal and nonfatal, have not been found to have a demonstrable association between the incidence of these complications and the levels of serum cholesterol or of the various lipoprotein fractions.

For the general public, the safest guide is "nutritional common sense," or the eating of a balanced, varied diet with caloric intake adjusted to overcome or prevent obesity. The fat content should be sufficient only to meet caloric needs and requirements for the essential fatty acids.

These recommendations do not rule out special dietary regimes for patients or individuals with strong family history of heart disease who are seen by their physicians with some regularity. In such cases, newer concepts of nutrition readily suggest various types of diet therapy which may prove useful to certain patients, and at the same time increase the body of data from which dietary recommendations may be made to the public at large.

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DIABETES IN TURKEY

The incidence of diabetes in Turkey, like its occurrence among the Arizona Indians,[1] is probably the same as it is in Europe and the United States. Joslin[1] gives no data on the occurrence of diabetes in Turkey, and no information appears to be available about the country as a whole. Aksan and Yalcin[2] in 1950 at the Nümune Hospital in Ankara reviewed the reported incidence of diabetes, which has increased steadily since 1928. This increase is due presumably to more diagnostic examinations in new hospitals combined with better national nutrition. Their[2] unpublished figures for the year 1956 show that among 16,323 patients admitted to this City Hospital, diabetes occurred in 0.76 per cent. These figures resemble Joslin's estimate for diabetes in the United States in 1946 (0.7 per cent). As far as large hospitals are concerned, the disease appears with the same frequency in both countries. Life insurance has not developed as it has in North America, and the valuable facts on the incidence and life expectancy of diabetic patients in insured populations is lacking in Turkey. In particular, this means that terminal vascular complications are poorly documented. However, for Turkey as a whole, failure to recognize diabetes is still a problem. This may be illustrated by the experience of the pediatric service at Nümune Hospital. In the last ten years, in a 200-bed children's ward, only ten diabetics had been seen without one single case of coma. When this was called to their attention, the staff agreed that most children with diabetic coma died at home, at least in the villages. Of course, the statistics and the improved diagnosis are continuing problems in every country.

Physicians in Turkey lack the aids which are available for diagnosis and treatment in this country. At the 800-bed University Hospital in Ankara, there was one dietitian with three helpers. She was unable to give any dietary instruction to outpatients. Even at their medical centers the preparation and use of diet lists is minimal. Moreover, no diet lists are prepared and distributed by pharamceutical houses, which have been so helpful in this country. The protein, fat and carbohydrate content of foods is available in Turkish,[2] but the information is seldom arranged as diets with convenient food exchange units. Translation into Turkish and mimeographing of selected diets of the

The Editors of this Journal, believing that wider knowledge of diabetes in all its aspects will be useful to students and practitioners of this subject, invited Dr. Lukens to summarize his impressions of the problems of this disorder as he encountered them on a recent prolonged visit to Turkey.