EDITORIAL

Fulfillment of Hereditary Longevity

IN THESE DAYS of biomedical investigation and philosophical discussion regarding the key factors, desirability, and social implications of longevity, one is tempted to sort out the problems and the realities in this field as they relate to the care of individual patients. Vital statistics are of interest but not always helpful when applied to the individual patient.

The fact that the average life expectancy for the American male is given as approximately 68 years offers no assurance that the patient under consideration will reach that age, or looking at it differently, that he will be relieved of his physical and other burdens at that point. It is too rarely emphasized that those averages are derived from groups with widely varying expectancy and potential for longevity.

In the field of cardiovascular diseases much has been made of the cardinal acquired risk factors which affect the life expectancy of the individual: tobacco, hyperlipidemia, hypertension, obesity, stress, chronic fatigue, and many diseases including especially diabetes. The obvious implication of these findings is that avoiding or controlling these risk factors will prolong the life of the individual. To a certain extent that is true — but to what degree? What is the potential longevity for that individual if all these factors are removed? Observant physicians have long known that the possibilities for long life are not equal among families. For example, the author is familiar with one family with a history of longevity stretching far beyond the average for each historical period during 14 generations in this country. In the immediate preceding generations no ancestor has died before reaching the age of 85. One lived to 105, another to 103 years of active life until near the end of their lives. The hereditary potential for longevity in this family can hardly be considered as comparable with that in another family in which the father, mother, and four sons all were under the age of 55 (one at 31) when they died from myocardial infarctions. Further examples of each type of family can be found in any sizable population group.

Therefore it may be useful to adopt the concept that each individual is born with an hereditary endowment for his maximum longevity. The corollary would be that in the light of our present knowledge, he cannot extend his span beyond that designated time.

The opposite statement is not true, however. The risk factors which he acquires during his life subtract from the maximum potential available to him. Actuarial figures have been presented that suggest that heavy smokers live six to eight years less than nonsmokers — people with hyperlipidemia, obesity, uncontrolled hypertension, and type A (high stress) personalities all have some reductions in their expected life span as compared to national patterns. Multiple risk factors in a single individual have the most significant effect in shortening life. Diabetes mellitus and hereditary hyperlipidemia and hypertension frequently enter into the life span code in fetal life and these individuals are born with a shortened longevity potential. Unfortunately (or perhaps fortunately), the family history does not predict with certainty the fate of each individual in the family. What we do to ourselves, and catastrophic events of individual, national and international history may override the expectations based on hereditary endowment.

The family with the rather unusual longevity mentioned above presents a life pattern that is of interest. They came to the Village of Nieuw Amsterdam in 1630 and have lived in small towns or suburbs since. They came from substantial middle-class stock mixtures of the Dutch, English with a touch (for a little humor) of Irish people. They worked steadily as farmers or artisans well beyond the present widely adopted mandatory retirement age at physical tasks. Their wives were active with the duties of farmers' or artisans' wives, mostly without servants. Their lives were regulated, following the old adage of "early to bed early to rise . . . " with plenty of sleep. In recent generations where the history is known in detail, only one was a confirmed smoker (3 cigars a day), and one might have been considered a liberal consumer of John Barleycorns' products (a habit acquired during the Civil War and continued until his death at age 88). None in recent generations have had diabetes mellitus, cancer, hypertension, myocardial infarction, or strokes. Lipid studies were not available. The stress they encountered was that usual in families and small communities and therefore minimal in terms of present life. The exceptions were active participation in the fighting of the Revolutionary and Civil Wars. They all were active until their last year or so of life when deterioration based presumably on generalized atherosclerosis occurred. Most then just went to sleep. Therefore with the minimum of acquired risk factors affecting them they had a good chance to approach their maximum longevity potential and most did so.

The short-lived family mentioned knew less about their past family history but the two generations studied had been subjected to the stress of persecution and dislocation during...
World War II. They were tense, nervous individuals most of whom smoked heavily until they began to realize the risk. The third generation became extremely concerned about their own longevity in the light of their heredity. If all acquired risk factors were minimized in this generation, potential longevity would be difficult to predict.

This editorial is offered to suggest that the most important and basic factor in determining the maximum potential longevity is the hereditary factor and that this should be studied in greater depth in all future statistical analyses dealing with longevity. Whenever possible the family longevity history should be developed in detail. This consideration requires greater emphasis in future publications regarding longevity statistics — and physicians should bear it in mind when evaluating the life pattern and expectancy of their patients. How this information is used in discussion with an individual patient or family would have to be decided by the physician.

This discussion emphasizes an important facet in evaluating cardiovascular mortality, but in no way diminishes the importance of the well-known acquired risk factors by which human beings subtract years from their natural endowments.

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