Editorial

Aging, Malnutrition, and Hormones

The processes of aging are intimately concerned with nutrition. Good nutrition slows and poor nutrition accelerates the processes of physiologic aging. There are many controlled scientific studies and much clinical observation to support this concept.

In starvation actual aging processes in tissues become apparent. Malnourished or starved persons may rapidly assume the appearance of advancing years; the hair may lose its color and become thin, the skin wrinkled and inelastic. Sexual functions wane, and bone, muscle, and vital glands and organs may develop microscopic and chemical changes typical of so-called senile degeneration. In prolonged nutritive failure from any cause—whether inadequate intake, failure of absorption or utilization, excessive elimination or abnormal loss, or increased metabolism and toxic destruction—actual aging of tissues as well as apparent aging may take place. In extreme cases of anorexia nervosa the rapid development of practically all the attributes of senility may be striking, and may in fact result in death. Much emphasis has of late been quite properly placed upon the higher death rates attributable to obesity. Equal emphasis should be directed to the evidence that optimum nutrition (which includes the concept of avoiding corpulence) prolongs life.

Elderly persons suffer from nutritive deficiency often because of the frequency with which economic, psychological, and organic problems beset them. In the higher decades one must be on guard not to accept degenerative changes as the inevitable erosion of the years. Often generation, growth, and repair are still possible, often *de*generation can be retarded—by improvement in nutrition. One of the great advances in modern medicine is the recognition that many changes which were previously thought to be inescapable consequences of advancing years are reversible or preventable, or at least postponable.

Actually a new meaning of senescence has arisen. It now means the degeneration of advanced age, but we do not accept it as the unavoidable accompaniment of longevity.

Endocrine factors probably will receive more attention in the future as they relate to nutrition and aging. Pituitary cachexia (Simmonds' disease) may produce the perfect picture of premature senility—here nutritive failure is a consequence of hormonal failure. Accelerated endocrine catabolic processes (e.g., the osteoporosis of vertebrae and other bones of Cushing's syndrome) may closely simulate the changes associated with aging which are usually called senile osteoporosis. The chief mechanism seems to be the loss of a good protein matrix in the bone. Here again nutritive processes are important—restoration of protein storage may make the bones apparently younger and stronger.

Loss of anabolic hormonal influences may cause apparent aging even in the very young, for example in the rare condition called progeria, in certain dwarfs with pituitary failure.

The gonadal hormones are anabolic and their loss in older persons may be one of the causes of senescence. Premature loss of estrogen or testosterone is known to cause fine wrinkling, loss of hair, and other overt manifestations of aging. Recent experimental studies suggest that hormone therapy may retard senescence.

Nutrition and hormones, closely interrelated, may provide the means for man's further experiments into the benefits of longevity.

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