Telomere is a biomarker for longevity in Japan – part 2

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Abstract

When we discuss advances in longevity research during lectures and seminars, the question of the deciding factor for longevity often comes up. Even without looking at examples of research in molecular biology research, it is obvious to most that genetics play a major factor in longevity.

The longest-lived human recorded was a French woman named Jeanne Calment, who died at age 122. All her family was long-lived. The quest for the identification of longevity genes by studying centenarian families has been explored for a decade, but no bona-fide longevity gene was identified.

The environmental factors influencing the lifespan of human beings, such as nutrition, physical exercise, and mental relaxation play an important role in the determination of an individual lifespan. The mortality rates of lifestyle-related diseases such as heart disease, stroke, and cancer becoming getting higher and higher in Japan as well as in western countries where much of the population is graying.

The preventive measures for lifestyle-related diseases such as nutritional intervention or regular physical exercise should be introduced for further extension of the healthy lifespan.

Caloric restriction in experimental animals has been shown to extend the lifespan of animals with the decreased frequency of age-related diseases.

Regular physical exercise stimulates the adipose tissues to secrete beneficial adipose hormones, such as adiponectin that suppress the progression of atherosclerosis and insulin resistance in type II DM and metabolic syndrome. In my presentation, I will focus on the Japanese-style diets, physical exercises, and challenging spirit towards life, of the people living in the Nagano prefecture village, which were enrolled in the study.

Interestingly, the telomere length of the people in this village is significantly longer than the people living in other parts of Japan. The reason is, in my opinion, the fact that these villagers live in a pristine environment, at high altitude, having the walk up and down the slopes every day, thus doing a very healthy exercise without them even knowing. Most of them are involved in agriculture, mainly growing apples and grapes, as well as growing their own organic vegetables and gardening. The stress level of daily life is close to zero. The water source is clean springs coming off the top of the mountains; the air is clean and full of minus ions coming off the surrounding forests. These environmental factors may play an important role in the extension of healthy lifespan in longevity village in Japan.