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Analysis of the Association between Intestinal Microflora and Long-lived Elderly People

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ABSTRACT

The intestinal microbiota is the cornerstone of the human intestinal microecosystem and plays an unnegligible role in the growth and health maintenance of the human body. In recent years, many studies have been committed to exploring the potential connection of gut flora and the elderly population. The changes of gut flora are affected by various factors such as age increase, disease, medication, living habits, nutritional structure, and the intestinal flora is expected to be applied to the comprehensive evaluation of elderly health and longevity in the future. Based on this, the research progress of the general elderly and its related influencing factors.

1. Introduction

Microbes symbiotic with human body play an important role in the metabolic activities of human body, and the common pain coding of human innate genes and gut flora is involved in the completion of human metabolism. It is extremely difficult to change the metabolic characteristics by changing human genes, but the change of gut flora genes is specific and ethical. Therefore, the human intestinal flora has become the focus of research in health and longevity, prevention and solution of diseases. There are a gastrointestinal tract of tens of thousands of intestinal bacteria symbiotic with the human body. They significantly affect the absorption and metabolism of nutrients, human immune regulation, and the spread of intestinal infectious diseases, which will then significantly affect human health and life span. The gut flora is a special organ of the human body, constantly changing with age, dietary structure and environmental factors. Therefore, the intestinal microecological communities of long-lived elderly people may have unique characteristics and can provide a reference for exploring the intrinsic mechanisms of longevity.

2. Characteristics of the Intestinal Flora of the General Elderly Population

Regarding the composition of the elderly intestinal flora, the academic classification basis and results now differ at the genus level, but the bacterial phyla classification

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level results are more consistent [1-3]. The levels of the gut flora are mainly Bacterioides (Bacteroidetes) and Firmicutes (Firmetes), which constitute the vast majority of the human gut microbiota. In contrast to the adult gut microbiota, most older populations had higher gut Bacteroidetes content than phylum Firmetes. Different schools of theories have different opinions, and the mainstream theory in the scientific community believes that the elderly gut flora is Bacteroides (Bacteroides), Plucella type (Prevotella) are common and play an important metabolic role in the elderly population. Bacteroides types are generally coborn in the digestive and respiratory tract of humans and animals. He can break down the protein or glucose in the gut, produce acids to promote absorption, and a few species can also produce dark black pigment. The molecular content of G+C is more than half in DNA. A recent study on European Journal of Nutrition, classifying the gut flora of 99 healthy individuals based on the Prevotella / Bacteroides ratio, found that ratios did not affect the metabolic response to barley kernel bread but could be beneficial for metabolic regulation of the host [4,5].

3. Characteristics of the Intestinal Flora of Long-living Elderly People

Long-lived populations are the best model to reveal the relationship between complex human and environmental interactions and aging health, where natural long-lived populations may help explore the symbiotic states and associations of more realistic host and flora. Longevity flora research mainly involves four countries: Italy, Japan, South Korea and China. The main differences between longevity flora research in China and other countries are that most of the longevity population specimens collected in China are from natural longevity population specimens, while the elderly groups in other developed countries are from advanced groups under high-end medical care, and the number of groups is inconsistent, so the results of longevity flora research vary greatly. The intestinal flora of Clostridium_XlVa, Ruminococcaceae and centenarians in Dujiangyan and Ya'an considered the composition of Akkermansia as significant characteristic vectors of longevity traits, and the Chao coefficient and OTU number of centenarians were higher than in the adult group. However, Faecalibacterium and Akkermansia abundance in Chinese Bama centenarians were smaller than younger controls, and Escherichia and Methanobrevibacter abundance were higher than young controls. In addition, studies have confirmed that the centenarians' intestinal butyrate bacteria are mainly Anaerotruncus colihominis and F.prausnitzi and other populations are mostly of Rumi nococcusobeum,Roseburiaintestinalis et al. [6] .

4. Analysis of Related Factors Influencing the Gut Flora in the Elderly Population

4.1 Effect of Age on the Gut Flora

Elderly flora with age showed enhanced heterogeneity and short-term stability in individual, which gradually changed with age with no significant temporal segmentation points. Gut flora heterogeneity in older groups refers to the large difference of specific flora among individuals. 187 elderly gut flora sequencing shows Bacteroidetes composition of 3%~92%; 7% ~ 94% Firmicutes; Proteobacteria content of 11%~23%, much above average content. This heterogeneity reflects the large difference in health status of older individuals [7-12]. Similar to adults, the intestinal flora of older individuals is more stable in the short term. For example, the magnitude of intestinal flora change within 3 months is still smaller than the inter-individual flora difference of [13]. To sum up, the intestinal flora with different races, number and clustering method clustering units, but the change law is generally: the young core flora with aging and with intestinal small abundance flora proliferation to form a new old core flora, so the overall core flora in the gut is not big, individual core flora alternately.

4.2 Relationship between Chronic Diseases for the Elderly and Intestinal Flora

4.2.1 The Relationship between Senile Weakness and Intestinal Flora

At present, elderly debilitating is mainly through exercise and dietary nutrition interventions, in which "diet-flora-debilitating" constitutes three elements of the interaction, in which flora can be used as a marker of early debilitating assessment. Deuation was found negatively correlated with flora α diversity, and Eubacteriumdolichum and Eggerthellalenta may be risk factors for the debilitating state, while Faecalibacterium prausnitzii is its protective factor Similar to the above studies, the number of Lactobacillus decreased 25-fold, and the content of Bacteroides/Prevotella and Faecalibacterium prausnitzii also decreased with the debilitating state.

4.2.2 The Relationship between Chronic Diseases and Gut Flora

Chronic elderly diseases include cardiovascular disease, diabetes, chronic obstructive pulmonary disease, etc. Elderly people often coexist with multiple chronic diseases and take multiple drugs, which has a great impact

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on the intestinal flora. Therefore, there is no flora research on chronic diseases in the elderly. It has been shown that one of the risk triggers of atherosclerosis may be trimethlamamine oxide (Trimethylamine-Noxide,TMAO) produced after metabolism of intestinal flora. Type 2 diabetes may be related to [14] in intestinal short chain fatty acids and secondary bile acid fermentation flora. The study of the elderly chronic bacteria group remains to be carried out, among which the strong individual heterogeneity and mixed multiple drugs in the elderly will be the biggest bottleneck of the later research.

4.2.3 Relationship between Senile Mycopenia and Gut Microbiota

Myyoenia is increased protein consumption and decreased anabolism, resulting in decreased muscle content, reduced activity and accompanied by physiological weakness to form. There is no direct evidence for the association of myosenia and intestinal microflora, and both muscle strength and fatigue were found to improve 13 weeks after intervention with prebiotic formula in people over 60 years. At present, there is a lack of muscle measurement incision suitable for Chinese population in the diagnosis of saryosis. Therefore, the diagnostic method of intestinal flora as a marker will supplement the diagnosis criteria of saryosis from the side [15-17].

4.3 Relationship between Health and Longevity and Intestinal Flora

In terms of delaying aging, probiotics and their surface molecules in the intestinal flora, such as lipophosphowall acid, can enhance the vitality of the antioxidant system, improve immune function, and relatively inhibit the expression of genes related to aging, and then play the effect of delaying aging. AnanthaswamyA with isolated from intestinal fermentation of intestinal bacteria in healthy mice to natural aging mice continuous lavage for a month, after extracting mouse serum, liver and brain tissue and determine the content of related superoxidase and peroxidase, found that HC group anti-aging index are significantly improved, the results show that lactic acid bacteria has antioxidant activity, can increase cell activity, delay aging [18-21]. Healthy intestinal flora has important functions in promoting material metabolism, enhancing immune barrier, preventing and controlling diseases and delaying aging, among which the anti-aging function of intestinal probiotics is attracting more attention.

The intestinal flora maintains human homeostasis and prevention of disease by regulating absorption and metabolism, but a single intestinal flora can not play the function of promoting longevity and health. The function of the intestinal flora in promoting healthy life depends on the diversity of the intestinal microflora, structural stability and balance. Since we can adjust the intestinal flora of the human body through scientific means, so that the intestinal flora becomes the “physiological control center” that we can go to operate and regulate. As a special organ of the human body, the function of the intestinal flora profoundly affects the human health and the occurrence of disease, and coordinates the life span of the human body.Future studies should combine more intestinal flora and long-lived elderly people, and then explore the more accurate internal connection between intestinal flora and human health and longevity, so as to provide a theoretical basis for life extension and health promotion.

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