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Risk factors and preventive measures related to osteo porosis inthe elderly

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Abstract: *The aging situation in China is becoming more and more serious, which has become a major social problem. The prevalence of osteoporosis and other common diseases of the elderly is increasing year by year. It is predicted that by 2050, the number of osteoporosis fractures in China will reach 5.99 million, and the corresponding medical expenditure will reach 174.5 billion yuan [1]. It is of great social significance to study the risk factors and preventive measures of osteoporosis, which can better allocate social resources and play a guiding role in decision-making in the field of public health. This study not only brings good news to patients with osteoporosis, relieving their pain, but also promotes the supplement of relevant medical literature and the progress of medical technology, and provides a guarantee for the elderly at the clinical stage.*

Keywords: *osteoporosis; Risk factors; Preventive measures*

1. The introduction

Osteoporosis is a kind of metabolic bone disease, mainly due to the loss and decrease of bone mass[1], the destruction of bone microstructure and the increase of bone brittleness, leading to patients prone to fracture of systemic metabolic bone disease. Osteoporosis can occur in different genders and at any age, but is more common in postmenopausal women and older men. According to etiology can be divided into primary and secondary two kinds. From the perspective of traditional Chinese medicine, primary osteoporosis is classified as "bone withering", "bone drying", "bone bizu" and other categories, and is related to the spleen and kidney. In recent years, under the background of population aging, the prevalence of osteoporosis shows an increasing trend year by year, this phenomenon should be paid attention to, and make related research, to this increasingly serious situation for in-depth understanding. During the development of osteoporosis, the balance of bone salt metabolism, the destruction of bone trabecular density or structure, or the proliferation and repair level of bone interstitial cells, all of these will become the influencing factors of osteoporosis. In older people, the ability of the kidneys to reabsorb calcium and phosphorus decreases with age, leading to lower levels of calcium salt deposition in the body, leading to the development of osteoporosis.

2. Risk factors for osteoporosis

The harm of osteoporosis is specific fracture, spinal deformation, pain three symptoms, not only for the elderly patients bring great pain in body and mind, but also increase the heavy economic burden of the family. With the increase of age, the bone remodeling in the middle-aged and elderly is in a negative balance. On the one hand, the mechanism is due to the increased absorption of osteoclasts. On the other hand, there is a loss of bone mass due to a decline in the function of osteoblasts.[2] Risk factors affecting osteoporosis are comprehensively mentioned in the following, in the hope of educating the elderly and providing theoretical guidance and basis for clinical work.

2.1 Low bone density

Due to the lack of activity and insufficient calcium supplementation, the patient's bone density is

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reduced, and the symptoms such as leg weakness occur, which in turn leads to osteoporosis, which can make the patient lose height or hunch over a long period of time. Osteoporosis reduces the organic matter and inorganic substance of bone, resulting in a large number of bone loss, resulting in bone trabecula thinning or fracture. Osteoporosis and thinning are prone to fracture, which damages the normal bone structure and reduces the overall mechanical strength of bone, and increases the risk of fracture in patients [3].This is the pathological factor leading to osteoporosis, in the clinic should pay special attention to, with the help of modern sophisticated instruments to make accurate detection.

2.2 Bad lifestyle

The unreasonable diet structure causes the vitamin and the calcium intake to decrease; Long-term heavy alcohol intake will inhibit calcium and VD uptake and activation, inhibit bone formation, resulting in bone loss and osteoporosis [4].During this phase of unbalanced bone remodeling, the toxic effects of alcohol become dose-dependent, and this imbalance ultimately reduces bone mass and increases the risk of osteoporosis. In addition, there are also harms brought by tobacco. The mechanism of smoking's influence on bone metabolism is still not clear, but more and more evidences show that smoking affects osteoblasts' osteogenesis, which leads to osteoporosis [5].Lack of exercise is also a major factor leading to osteoporosis. Exercise has a stimulating effect on human bones, which plays an enhanced role in the formation and growth of bones by stimulating the activity of bone cells. Smoking lowers body weight, estrogen levels, and impair strength and balance. Smokers are twice as likely to suffer hip fractures as nonsmokers, and most of this increased risk disappears with cessation [6].

2.3 Genetic factors

Osteoporosis, like other diseases, is influenced by genetic factors. Molecular epidemiology survey found that the incidence of osteoporosis and fractures with vitamin D receptor and estrogen receptor gene polymorphism is related to, because of influenced by genetic factors, different people of the vitamin D receptor and estrogen receptor of phenotype may be different, thus to external factors and drug treatment show different responses. Heredity will play a crucial role in the fact that different people in the same environment will show different outcomes, The gene-determined physiological performance cannot be reversed by will. The product of ALOX12 activity, namely 12-hydroperoxy-phthalate (12-HPETE), acts as an endogenous ligand of peroxisome proliferator-activated receptor (PPARs), which can inhibit the formation of osteoclasts. It also promotes the synthesis of fats from bone marrow mesenchymal stem (MCSs).Activation of ALOX12 leads to upregulation of the PPAR pathway, which subsequently reduces osteoblast generation and BMD decline[7].

2.4 Obesity

Weight stimulates bone formation and bone formation and provides mechanical loading to the bones. Can cause osteoarthritis, diabetic osteoarthrosis and gouty osteoarthrosis, is an important risk factor of osteoarthritis. Obesity will increase the burden of the joint surface, accelerate the abrasion, and make the joint surface aging in advance, and then cause deformation arthritis.

2.5 Racial factors

Our country has a vast territory and a large population. The large population in different territories shows the characteristics of multi-nationalities. Various factors, such as different dietary structures and closely related daily behavior habits, may have negative effects on bone. Domestic has yet to see China's ethnic minorities and han nationality population in some affect bone metabolism hormone receptor (vitamin D receptor gene, estrogen receptor gene, calcitonin receptor gene, etc.) genotypes and polymorphism existence difference, speculated that bone mass between ethnic differences may be related to ethnic minority region distribution, lifestyle and eating habits[8] are concerned, The specific reasons need further study and discussion. Regularity and proper work won't produce more serious damage to human body, however black and white reverse disordered work can harm airframe in accumulate over a long period of time, especially the night shift state that does not sleep endlessly. Night shifts can lead to hormonal disruptions, as well as altered production of certain hormones such as melatonin and sex hormones, and low levels of these hormones can affect bone density and reduce bone mass. Relevant studies have shown that insufficient secretion and synthesis of hormones, especially melatonin, will lead to dynamic imbalance between osteogenesis and osteoclasts, resulting in

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osteoporosis.

2.6 Gender

The difference between men and women is also evident in the incidence of osteoporosis, with the amount of bone mineral decreasing from the age of 40 to the age of 40 for women, but not until the age of 50 for men. It is worth mentioning that whether menstruation is also closely related to bone mineral quantity for women. Women who go into menopause earlier are relatively more likely to develop osteoporosis. Through the data obtained from these studies, we can carry out specific measures and targeted treatment for different osteoporosis patients, so that the disease can be rapidly controlled, the bone density can be improved as soon as possible, the elderly patients can feel at ease as soon as possible, and the mood can be calmed in the treatment, which is conducive to the improvement of the disease[9].

3. Preventive measures

"Huangdi Neijing" has a cloud: the upper attack to cure the disease, not to cure the disease, this is also called. Preventing osteoporosis before disease is the wisdom left to us by our predecessors. Therefore, preventive measures for osteoporosis are good news for the elderly and necessary to enjoy their old age. The implementation of preventive measures will provide appropriate and specific guidance for the elderly with osteoporosis risks, so as to ensure the quality of life of the elderly and to live a comfortable and secure life in daily life. The importance of preventive measures is self-evident, the body of the potential risk factors in the premise of conscious gradually reduce, even can completely disappear, have a far-reaching impact on the health of the body. And for the later life to lay a good foundation, close to the "unity of nature and man" state.

3.1 Health education on osteoporosis

Health education is given priority to with guidance and knowledge propaganda, osteoporosis related health care knowledge through lectures, leaflets, television transmitted to the elderly, help them form the consciousness of keep bones healthy, in the process of education to carry out gradually set up about the idea of a healthy lifestyle, and in the later daily gradually to correct previous bad habits. The ultimate goal is to reduce or eliminate the risk factors associated with osteoporosis, so as to improve the quality of life and their own health, and have a healthy old age. The education modes include the establishment of osteoporosis clinic, the establishment of osteoporosis education group, the establishment of osteoporosis health management database, and the follow-up of patients. The contents of education include general knowledge of osteoporosis, prevention knowledge, diet therapy, exercise therapy, drug knowledge, prevention and treatment of complications such as fractures, self-monitoring and management, diagnosis of osteoporosis, etc. Application of theoretical teaching and operation demonstration and patients' own statements; The forms of education are one-to-one education, group education, health education club, etc.

3.2 Reasonable dietary nutrition

The principle of diet: low fat, low salt, high calcium, high fiber and adequate protein. To reduce the intake of acidic food, healthy and reasonable dietary structure to ensure the balanced intake of nutrition, promote the absorption of calcium, calcium metabolism balance, improve the body resistance. Daily diet is a very important link in the formation of a good lifestyle and the prevention of osteoporosis. A balanced diet that is adequate in calcium, low in salt, moderate in protein, and rich in vitamins provides the key micronutrients (vitamins and minerals) as well as macronutrients (protein, fat, and carbohydrates) to provide bone with the building materials and energy needed to renew it. Daily diet as a direct source of nutrition for the body, there has always been a "disease from the mouth into the mouth", for osteoporosis patients, no matter how much attention to diet is too much, which is directly related to the nutritional level of the body and the conditions of sustainable growth[10].

3.3 Early diagnosis and detection

For the elderly groups at high risk, it is more important to nip it in the bud, regularly conduct bone mineral density tests, and timely detect and control the symptoms of osteoporosis. This also coincides

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with the so-called "cure of disease" in traditional Chinese medicine. Even when the disease occurs, it can minimize the negative impact and reduce the physical discomfort and economic burden for the elderly patients. After knowing the diagnosis result, can adjust the lifestyle and diet according to this diagnosis result. Osteoporosis is found in the process of detection when a little budding, early use of medical means for diagnosis and treatment. It is necessary to carry out periodic detection on the elderly osteoporosis group, so as to achieve early detection and early treatment, reduce the pain of patients and reduce the cost of medical treatment.

3.4 To prevent accidents

Broken bones are the biggest risk for people with osteoporosis, and walking or other daily carelessness can cause it Causing the elderly to become bedridden. Therefore, attention should be paid to the details of life to prevent fracture. Children of elderly patients with osteoporosis should be reminded of their inappropriate behavior and corrected in time to reduce or preferably avoid the occurrence of accidents. The most important or the elderly group of self-protection awareness, squat back to straight, avoid weight lifting; Don't put debris on the ground; Bathroom, stairs to have anti-skid measures; Corridors and corridors should have enough lighting; The cabinet or light switch that places the object should not be set too high, so as not to increase the difficulty of fetching and using. The old people walk can use crutch or hand stick, use to eliminate the muscle force of abductor muscle, reduce hip joint bearing, prevent fall.

Moderate exercise. Aerobic exercise, traditional health exercise, low intensity resistance strength training and low intensity impact exercise as a supplement. Regular, rhythmic exercise can help reduce the signs of aging, reduce fat content and control weight. It is also of great significance to the bones, which can increase the strength of the bones, reduce the risk of fracture, and promote bone formation. Scientific and reasonable outdoor exercise can promote the body to produce vitamin D and improve the body's bone calcification while receiving sunlight. It increases bone density, improves bone remodeling, increases muscle strength and endurance, improves joint flexibility, improves gait and balance, improves body shape, and reduces the incidence of falls and fractures. Exercise methods include weight training, resistance training, postural training, low-intensity aerobic training, balance training, and flexibility and range of motion exercises. However, whatever method you use, you should follow the principle of individualization and use the method that suits you. TCM also puts forward the theoretical viewpoint of "Three Reasons for Condition". According to seasonal solar terms, area and the human body health, gender, age of formulating appropriate control measures, highly agree with movement of the role of traditional Chinese medicine, "plain question ·ancient naive theory" put forward "and" work, "fatigue and tireless" point of view, and emphasizes the activity union, encourage people in action combined with the body's muscles and bones, the coordinated development of local and systemic.

4. Summary

Osteoporotic fractures in the elderly are characterized by slow healing, low healing rate, low traumatic force, high mortality and high teratogenicity. Being in bed for a long time can also cause complications such as heart and lung failure, urinary tract infections, bedsores and phlebitis. Therefore, it is of great clinical significance to strengthen the prevention and prognosis of senile osteoporotic fracture[11].

Osteoporosis has become a major problem that cannot be ignored in the aging society, and the quality of life and health of the elderly population will be seriously affected. Should sound the alarm bell of osteoporosis, remind people to pay attention to the harm of osteoporosis. In a sense, osteoporosis as a hidden disease is often overlooked. Therefore, timely and effective dissemination of osteoporosis related information is particularly important, this practice will enhance the prevention awareness of the elderly group, reduce or eliminate the negative effects of osteoporosis. Early screening of high-risk groups of osteoporosis is a very important part of osteoporosis prevention and treatment. Identifying osteoporosis and identifying the risk factors of fracture and fall can help to identify high-risk groups and make early diagnosis. Actively taking the corresponding non-drug intervention measures to prevent osteoporosis can achieve the purpose of delaying the development of osteoporosi[s][12].In conclusion, osteoporosis patients in the elderly group should change their lifestyle, strengthen the understanding of osteoporosis related medical knowledge, and stay away from those risk factors that may lead to osteoporosis. Combined with the trend of population aging, the high prevalence of osteoporosis will inevitably arouse the attention of all sectors of society, and it will gradually

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become a commonplace topic, and gradually become the mainstream in the discussion of all sectors.

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