

Importance of Prevention of Osteoporosis (Asthi Kshaya) During Old Age**Dr. Mallikarjun Vishwanath Biradar**

Bams Md (Agadtantra),(Muhs Nasik)
Medical Officer At
Primary Health Centre Ashta Kasar Tq. Lohara
Dist. Dharasiv Maharashtra.

Dr. Rakhee G. Varnale

Associate Professor ,
Department Of Kriya Sharir ,
Dhanwantari Ayurveda Medical College Udgir.

Abstract:

Ageing is a continuous process, which begins with conception and ends with the death. Charak has mentioned the growth period that is up to 30 yrs after that the growth of individual stops and aging start to continue. Ayurveda also gives attention towards the psychosomatic approach of Ayu by describing the Hitayu, Dukhayu, Ahitaya and Sukhayu with the description of total span of life.

According to Ayurveda, the Jara (aging) is a natural phenomenon like hunger thirst and sleep. Sushruta mentions a group of naturally occurring diseases named Svabhava Bala Roga, which includes Kshuta, Pipasa, Nidra, Jara and Mrityu.

Dhatu does the function of dhaarana of shareera in general. Among the saptha dhathus the asthi dhatu is the one which is blessed with the function of shareera dharana. Asthi dhatu gives a profile to the body and protects the imperative organs. Man without Asthi dhatu would have been a nebulous bolus of soft tissues.

Any disturbance in the equilibrium of the dhatus leads to vishamata (abnormalities) in the sharira. This vishamata is of two types viz., vrudhhi and kshaya. Asthi dhatu kshaya is a commonest but very serious condition seen in older population. Asthi kshaya (Osteopenia and Osteoporosis) has become one of the major health hazards that cripple millions of lives. Epidemiology worldwide is alarming to the scholars of the medical faculty.

Key Words: Asthi Dhatu, Jeernavaya, Osteoporosis, Old Age, Geriatrics.

Facts & Statistics:

Osteoporosis is a so-called "silent" disease with no obvious signs or symptoms. Often the first sign of the disease is a potentially debilitating fracture.

According to the Osteoporosis fact sheet of International Osteoporosis Foundation, 1 out of 8 males and 1 out of 3 females in India suffer from Osteoporosis, making India one of the largest affected countries in the world. According to the experts the numbers of Osteoporosis patients are projected to reach 36 million by 2013. Studies have also revealed that Osteoporosis is generally under diagnosed and under treated in Asia especially China and India.

- The most common fractures due to osteoporosis occur in the hip and vertebrae.
- Hip fractures have a mortality rate between 12 and 20 percent after six months, and affect women more often than men by a ratio of nearly three to one. Hip fractures severely compromise a person's quality of life.

Functions of Asthi Dhatu.

In sushruta sutra sthana (5/21-23), the function of Asthi dhatu is explained as, inner part called 'saara' of tree holds it upright, human stays upright

due to Asthidhatu. When body deteriorates, skin, soft tissue gets destroyed but Asthi never get destroyed, since they are 'saara' portion. Asthi get tightly bound by Mamsadhatu and with the help of 'Sira' and 'Snayu' they keep body upright without deteriorating or falling off.

According to the principle of Ashrayaashrayeebhava, as explained in Ashtanga Hruday sutrsthana (11/26), When there is Vata vrudhhi then always there is Asthi dhatu kshaya. Because, both are inversely proportional to each other. Hence Asthi kshaya is a commonest condition affecting the older population and the same has been stated by Acharya charak in vimana sthana 8/122 while explaining about life span.

Jeerna Vaya (Old Age):

Etymologically, the term Jara has been derived from Panini's Sanskrit root "Jrush vayohanau" this term is indicative of loss in period of life span.

The paribhasha of jara is given as, "Jeernayanti anayo angaani iti Jaraa" (gurubalaprabodhika teeka, amarakosha). It means Degeneration of bodily organs.

Acharya Charaka, explains about jeerna vaya (old age) as follows-

“ Ataha param heeyamaanadhaatveendriya bala veerya paurusha paraakrama grahana dhaarana smarana vachana vignanam bhrashyamanadhaatugunam vaayudhaatupraayam kramena jeernamuchyate aavarshashatam” (cha.vi 8/122).

It means during old age i.e.60years to 100years, there is diminution (kshaya) of dhatus, indriya, bala, veerya, paurusha, paraakrama, grahana, dhaarana, smarana, vachana, vigyan. There is gradual diminution in the qualities of the dhatus and dominance of vata during this age.

Chakrapani commenting on this stated as after 60 years gradual diminution of Dhātu, Indriya etc is seen.

The last phase of life span has been referred as Jara. It is described as a natural and inevitable processes as well as natural disease. Other terms that may be correlated with old age are Jirna, Jiran, Jaran, Vrddhata. In this stage Dhātu, virya, indriya bala and utsaha decrease day by day. Alopecia wrinkling of whole body, cough, breathlessness are general symptoms and ultimately with the failure of all activities. Aging is a slow and continuous process, which affects various organs or tissues at different time. An individual loses different values in different decades of life in a sequence manner.

The cause of aging is not described clearly in Ayurveda however some point can be considered in its regard. Charak has mentioned the theory of natural destructions (Swabhaoparamavada). There is a causative factor for the manifestation of being but no cause is needed for their cessation, some of the view that inhalation of being is caused by the non effectiveness of the causative factor.

From the classics, we can see that revered Acaryas had great observation of body changes occurring during old age. They clearly distinguished somatic changes (including pathological conditions) from psychic variations. Somatic changes (with pathological conditions) like Tvak Parusya, Slatha Sara, Slatha Mamsa, Slatha Sandhi, Slatha Asthi, Dhātu Kshaya, Indriyahani, Prabhahani, Agnisada, Kayasya Avanama, Vepathu, Khalitya, Vali, Palitya, Kasa and Swasa are clearly observed.

Psychological variations include Grahana - Dharana - Smarana - Vacana - Vijnana hani along with Paurusa - Parakrama - Utsaha Ksaya.

Concept Of Ageing:

1. The gradual structural changes that occur with the passage of time, that are not due to disease or accident and that eventually lead to death (D.P.M.Dictionary).

Geriatrics: A branch of Medicine dealing exclusively with the problems of ageing and the diseases of the elderly. It is derived from the Greek Root “ger-gero-geronto” meaning “old age” or “the aged”.

The term “Geriatrics” was coined in the U.S.A. by Dr.Ignatz Nascher in 1909.

AGING AND BONE TISSUE:

From birth through adolescence, more bone tissue is produced than is lost during bone remodeling. In young adults the rates of bone deposition and resorption are about the same. As the level of sex hormones diminishes during middle age, especially in women after menopause, a decrease in bone mass occurs because bone resorption by osteoclasts outpaces bone deposition by osteoblasts. In old age, loss of bone through resorption occurs more rapidly than bone gain. Because women’s bones generally are smaller and less massive than men’s bones to begin with, loss of bone mass in old age typically has a greater adverse effect in females. These factors contribute to the higher incidence of osteoporosis in females.

There are two principal effects of aging on bone tissue:

1.Loss of bone mass and brittleness. Loss of bone mass results from demineralization the loss of calcium and other minerals from bone extracellular matrix. This loss usually begins after age 30 in females, accelerates greatly around age 45 as levels of estrogens decrease, and continues until as much as 30% of the calcium in bones is lost by age 70.

Once bone loss begins in females, about 8% of bone mass is lost every 10 years. In males, calcium loss typically does not begin until after age 60, and about 3% of bone mass is lost every 10 years. The loss of calcium from bones is one of the problems in osteoporosis.

2.The second principal effect of aging on the skeletal system, brittleness, results from a decreased rate of protein synthesis.The organic part of bone extracellular matrix, mainly collagen fibers, gives bone its tensile strength. The loss of tensile strength causes the bones to become very brittle and susceptible to fracture. In some elderly people, collagen fiber synthesis slows, in part, due to diminished production of human growth hormone. In addition to increasing the

susceptibility to fractures, loss of bone mass also leads to deformity, pain, loss of height, and loss of teeth.

Osteopenia And Osteoporosis:

Osteopenia (penia – poverty) Reduced bone mass due to a decrease in the rate of bone synthesis to a level too low to compensate for normal bone resorption; any decrease in bone mass below normal. An example is osteoporosis.

Etymology of Osteoporosis:

“Osteon” is the greek word which means bone tissue and also the parent word for the term “Osteo” and “Porosus” a Latin word which means “full of pores”.

Definition of Osteoporosis:

The definition of osteoporosis was formed by the World Health Organization in the year 1994. World Health Organization (WHO) defined Osteoporosis operationally to be femoral neck Bone mineral density (BMD) value 2.5 standard deviations or more below the mean for normal young white women, or t-score of -2.5.

The risk factors and etiological factors of Osteoporosis are as follows:

Advanced age, History of fracture as an adult, History of fracture in an immediate relative, Low body mass index (BMI) < 19, Female gender, Caucasian race (White Americans of Asian origin), Menopause/Andropause, Surgical menopause (radical hysterectomy or oophorectomy in early age), Low calcium diet, Magnesium and vitamin-D deficiency, Smoking or tobacco in any form, Alcoholism, Lack of exercise (Sedentary life style), Astronauts (living in low gravity areas)

Symptoms of Osteoporosis:

Pain (due to fractures), Tenderness, General debility, Muscular weakness, Abdominal distension, Insomnia, Loss of appetite, Osteo-arthritis, Constipation and ileus, Kyphosis and Scoliosis.

Conclusion:

Bone loss is only partially reversible. Currently no treatment exists to reverse the established Osteoporosis. Prevention and early intervention can prevent osteoporosis in majority. This has lead to tremendous interest in Ayurvedic medicine. Keeping in view the severity of this disease, WHO (World Health Organization) has declared this decade from 2000 to 2010 as the ‘decade of Osteoporosis’. It is investing millions of dollars in the research projects undertaken to tackle Osteoporosis.

The theme of World Health Day 1999, in the International Year of Older Persons, ‘Active Ageing makes the difference’, recognizes that it is important

for older people to go on playing a role in society. Active Ageing involves every dimension of one's life: physical, mental, social and spiritual. Maintaining health and quality of life across the lifespan will do much towards building fulfilled lives, a harmonious, intergenerational community and a dynamic economy.

The major challenge is to understand and promote the factors that keep people healthy, as they grow older. Since health and well-being in older age are largely a result of experiences throughout the life span, work on Ageing and health has to take a holistic approach, involving other WHO programs, such as primary health care, gender analysis, non communicable disease, mental health and rehabilitation.

Hence considering all these points, one has to take precautions to maintain bone's health in order to avoid Osteoporosis and it's consequences during old age.

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