

PREVENTION AND MANAGEMENT OF OSTEOPOROSISDevangi Lashkari^{1*} Rajesh Gupta² Alankruta Dave³¹ PG Scholar Department of *Shalaya Tantra*, Dr.Saravepalli Radhakrishanan Raj. *Ayurved* University Jodhpur, Rajasthan.² HOD, Department of *Shalaya Tantra*, Dr.Saravepalli Radhakrishanan Raj. *Ayurved* University Jodhpur, Rajasthan.³ HOD, Department *Kayachikitsa* I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar.**ABSTRACT**

Living in the 21st century has its advantages but with fast and stressful life style comes disadvantages also .One disadvantage is having unhealthy diet and faulty life style .Around the world osteoporosis ,obesity and cardiovascular diseases are affecting the health status. Among the diseases osteoporosis is a growing public health problem world wide. It is often known as “The Silent Thief”. WHO (World health organization) is found that the fractures from osteoporosis are more common then heart attack, stroke and breast cancer combined. Due to its prevalence world wide, osteoporosis is considered as a serious public health concern. Currently it is estimated that over 200 Million people worldwide suffer from this disease. Modern drugs for the treatment of osteoporosis include calcium supplements and other medicines has its own side effects. Ayurveda recommends healthy life style through Aahara, Vihara, Aushadh, different kinds of karmas to prevent all kind of diseases .By following Ayurveda rules, one can prevent himself from osteoporosis (Asthi- majja kshaya).

Keywords- Life style disorders, osteoporosis(*Asthi- majja kshaya*) prevention and management.

INTRODUCTION

Osteoporosis has emerged as new challenge for Medical science. Osteoporosis term describes a group of bone disorders in which the absolute bone mass is less than normal Osteoporosis is defined as —a progressive systemic skeletal disease characterized by low bone mass and micro architectural deterioration of bone tissue with a consequent increase in bone fragility and susceptibility to fracture.¹Osteoporosis is often known as “the silent thief” because bone loss occurs without symptoms and is usually diagnosed when fracture occurs in situations where healthy people would not normally

have a fracture. At Some point Early detection and preventive treatment before fractures occur is the vital key to treating osteoporosis.² It is defined by the World Health Organization (WHO) criteria as a BMD T-score of 2.5 standard deviations (SD) or more below the average for young, healthy, premenopausal women [equating to a T-score of less than or equal to -2.5 (a normal T-score is greater than -1)]. Early detection and therapy is the basis for trying to prevent these complications.

Incidence:-osteoporosis has reached epidemic proportions in the 21st century, Currently it is estimated that over 200 million

people worldwide suffer from this disease.³ Urbanization and modernization has been associated with osteoporosis. In North ,Osteoporosis is most prevalent in urban populations. Women are more suffering than men.

Etiological factors:-

- Modern life:-(Sedentary habits with little exercise)
- Faulty diet:-people are taking more junk and fatty foods .Due to these diet habits,person can't get Vit.D₃, Calcium and other minerals which is helpful for bone health.
- Alcohol Consumption
- Emotional distress
- Hereditary
- Over activity
- Female gender
- Increasing age
- Menopause
- Weight:-Thin body build or excessive weight
- Nutrition and pregnancy:-One theory is that when children are under nourished in the womb of their mother, When become adults, if mother is osteoporotic the baby would be also osteoporotic.⁸

Classifications of osteoporosis

Signs and symptoms	<i>Lakshana</i>
Bone pain	<i>Asthi toda</i>
Continuous bone pain	<i>Asthi bheda</i>
Fractures	<i>Anga bhanga</i>
Extreme fatigue	<i>Srama</i>
Joint pain	<i>Sandhishoola</i>
Peridental disease	<i>Danta bhanga</i>
Hair loss	<i>Kesha patina</i>
Forward bending of spine	<i>Vinamana</i>
Weakness	<i>Bala kshaya</i>
Brittle and soft bones	<i>Asthi saushirya</i>
Difficulty in Walking	<i>SandhiSaithilya</i>

Diagnosis:

Osteoporosis is a silent disease, until a fracture is sustained.

- Acute pain in middle to low thoracic region or high lumber regions.

Primary

(1) Post menopausal: type I (it occurs within 15 to 20 years after the onset of menopause.⁴)

(2) Age related: type II (A long history of calcium deficiency is largely responsible for this condition, which is called senile osteoporosis because it occurs in patients over the age of 70.)^{5,6}

Secondary

- Endocrine - Thyrotoxicosis, Pituitary insufficiency, Athletic amenorrhoea
- Drugs – Corticosteroids, Long term heparin use, Anticonvulsant drugs
- Inherited-Osteogenesis imperfect, Homocystinuria
- Nutritional -Anorexia nervosa, Alcoholism, Malabsorption syndrome
- Immobility-General (lack of weight bearing exercises), Local (e.g., hemiplegia, fracture)
- Other (rare)- Chronic hepatic disease, Pregnancy.⁷

Signs and symptoms of Osteoporosis:- Being a osteopenic may not cause many noticeable problems. However, Once you are Osteoporotic you may develop symptoms that mentioned below:-

- The onset of pain is sudden and patient indicates exact moment of its beginning and specific site i.e. vertebral level where the pain originated.

- Pain in above mentioned regions while at rest or during routine daily activity is the earliest symptom of osteoporosis.
- Spinal movement is severely restricted. Pain intensifies with movements – sitting or standing and is relieved considerably with bed rest in fully recumbent position.
- Even coughing, sneezing and straining exacerbate pain.
- Incremental loss in height and mild thoracic kyphosis may be evident.

Clinical findings:

- In early stages, patients exhibit marked discomfort on sitting and standing.
- Spinal movements considerably reduced, with more restriction in flexion than in extension.
- Thoracic kyphosis may be present as a result of previous anterior compression fractures.
- Involvement of lumbar spine is noted by progressive loss in lumbar lordosis.
- Axial height may be decreased.
- Spine and paravertebral muscles are tender on palpation and percussion over the level of fracture.
- Most patients are totally pain free during the intervals between compression fractures, whereas some may complain of chronic, dull, aching postural pain in mild thoracic and upper lumbar region.
- Loss of height may be upto 2 to 4 cm with each episode of segmental vertebral collapse and progressive kyphosis.
- There is no significant loss of height when the lower ribs come to rest on iliac crest due to collapsed spine. Yet loss of bone mass continues.
- This results in decrease in size of thoracic and abdominal cavities, which are
- responsible for clinically disturbing side effects – exercise tolerance is reduced.
- Abdominal distention, protrusion is a common manifestation secondary to severe lumbar vertebral collapse.

Radiographic findings:

Axial sites have a greater proportion of trabecular to cortical bone than appendicular sites. Therefore vertebral deformities may be the first evidence of osteoporosis.

Thoracolumbar spine x rays may reveal important and relatively early evidences of osteoporosis.

At an early stage, spinal radiographs show loss of transverse trabeculae, with prominence of the vertical weight bearing trabeculae. Later as trabecular architecture is lost, principal x-ray appearances include wedge, crush and biconcave deformities.

The most frequently fractured vertebrae are those subject to the greatest mechanical stresses, namely T8, T12 and L1.

Bone densitometry:

The following methods are widely available for Bone Mineral assessment.

1. SPA – single photon absorptiometry.
2. DPA – Dual photon absorptiometry
3. DXA – Dual x-ray absorptiometry
4. QCT – Quantitative computerized tomography
5. QUS – Quantitative ultrasound

Amongst the above Dual energy X- ray absorptiometry represents the best available measure of bone density and is the most reliable predictor of fracture risk. BMD values are expressed as absolute values in g / cm² (i.e. as an areal density corrected for height or width of bone but not depth) or as SDs related to the young adult (T scores) or age matched (Z scores) reference range.

- T scores between -1 and -2.5 represents osteopenia, clinical significance of which is not completely understood.
- T score below -2.5 represents osteoporosis and a high risk of fracture.
- T score below -2.5 plus one or more fragility fractures is indicative of established osteoporosis.

Bone densitometry measures bone density, not bone turnover or bone stability.

Bone Mineral Density (T-Score): WHO Criteria for assessing osteoporosis

(T-Score)	Condition
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greater than -1	Normal
between -1 to -2.5	Osteopenia
less than or equal to -2.5	Osteoporosis

Complications of Osteoporosis:

Osteoporosis increase the risk of many physical, mental and social conditions. Fracture is main risk factor of osteoporosis .Osteoporosis complications include both morbidity and mortality. Bone fractures, particularly in the spine or hip, are the most serious complication of osteoporosis. Kyphosis is a serious Complication.

significant amount of pain

decrease in quality of life

Complications of fractures.⁹

Vertebral- Back pain, Height loss, Kyphosis (commonly known as ‘Dowager’s hump’

Multiple thoracic- Restrictive lung disease

Lumbar fractures- Constipation, Abdominal pain, Distention. Reduced appetite, Premature satiety.

Management of osteoporosis: -

Dietary/lifestyle modification,

Generally used Biophosphonates,

Oral drugs like Calcium and Vitamin D supplements. The drugs improve Bone density and redusing bone turn over.

Drawbacks of modern therapy for osteoporosis:-

As with any therapy, the benefits of efforts directed towards Bone density control must be weighed against the risk of treatment, side effects of intensive treatment(calcium gluconate) include- an allergic reaction while taking calcium gluconate: hives; difficulty breathing; swelling of your face, lips, tongue, or throat. Less serious side effects of calcium gluconate may include: nausea or vomiting;decreased appetite,upset stomach,constipation;dry mouth or increased thirst; or increased urination.rapid intravenous injections of Calcium gluconate may cause hypercalcaemia,which can result in vasodilation,cardiac arrhythmias,decreased blood pressure and brady cardia,Extra rasation of calciu gluconate can lead to cellulitis. Side effects of Vitamin D is weakness,fatigue,sleepiness,headache,loss

of appetite,dry mouth,metallic taste,nausea and vomiting.

Osteoporosis in Ayurveda:-

Osteoporosis is taken in relation to Asthi-kshaya.In our classical text book there is the disease Asthi-kshaya is not find as a seprate disease.In our classical text books described asthi-kshaya mentioned under Dhatu kshaya .Acharya Charak described eighteen types of kshaya in adhyaya no. seventeen kiyanta shirashiya –sutrasthana.So,we can take as an independant disease.The sign and symptoms of this disease are described all the texts of ayurveda and we can find its specific etiology also.

The disease and its pathology understood by ashraya-ashrayi bhava-A very important and impressive theory given by Astang hridaya. The theory is that there is vata dosha’s specific sthan is Asthi dhatu. And Vata is increase Asthi dhatu is decrease and this is vice-versa. The relationship between Asthi and Vayu is called “Asrayasrayi Sambandha”.This relationship helps in knowing hetu and chikitsa of a vyadhi as nourishment of Asraya and Asrayi is similar. The ahara, vihara or aushadha that increase or decrease the dosha will increase or decrease the corresponding asraya (dhatu and mala). The above mentioned rule is not applicable to asthi dhatu and vata dosha.¹⁰

Brimhana chikitsa; use of Snigdha, madhura etc. dravyas is indicated for increasing asthi dhatu (asthi vridhhi). This decreases vata dosha. In the same way to increase vata dosha, ruksha, katu etc. dravyas are indicated which causes kshaya of asthi. Hence the rule of asrayasrayi is opposite for asthi and vata.Hence for treatment of diseases related to asthi dhatu, this unique relationship should be taken into consideration. Drugs acting both on Asthi dhatu and vata dosha provide better treatment of diseases related to asthi dhatu.¹¹

Nidana (Causative factors)of Osteoporosis:-

All the causative factors described in Ayurvedic classics can be classified in to four groups:-

1. Ahartmaka Nidana(Dietary)
2. Viharatmaka Nidana(Regimens)
3. Manas Nidana(Psychological)
4. Anya Nidana(Others)

Ahartmaka Nidana(Dietary):- Aptarpana(lack of nourishing),Alpashana(Lack of eating),excessive consumption of laghu,Katu(spicy food),Sheeta(cold diet),Ruksha(food without oil/ghee), Ahartmaka nidana Laghvanna(To eat light foods.langhana(starvation).

Viharatmaka Nidana:- Ativyayama (excessive exercise), ativyavaya(excessive intercourse), Atiprajagrana(Asomnia), Vishamadupchara(faulty treatment), Dosha Ashruka Stravanadi(excessive bleeding), Plavana (sweeming), Ati Adhva gamana(Excessive walking), Divasvapana(Day sleep),Vega Vidharana (control natural urges).

Manshika Nidana:- Chinta(tension), Shoka(Sadness), Krodha(anger), Bhaya(fear),

Others: Chirkalaj roga (long time unhealthy),Aghata(trauma).¹²

Samprapti:- Consumption of nidana sevana are reason for vata prakopa and as per ashraya ashrayi bhava vata dosha increase asthi dhatu decrease .So, resulting in Asthi-khaya.

Impact of Asthi-kshaya:- Disproportionately increased vat dosha and decrease asthi dhatu are accountable for several serious consequences reported in *Charaka* ,*Sushruta* and *vagbhata* like- *Asthi toda*, *Asthi bheda*, *Anga bhanga*, *Danta bhanga* ,*Srama*, *Kesha patina*, *Vinamana*, *Bala kshaya*, *Asthi saushirya*, *Sandhishoola* *SandhiSaithilya*.¹³

Ayurveda management of osteoporosis:

In Ayurveda,management of any disorders is divided into three parts;-

1. *Nidana parivarjana*
2. *Shodhana*

3. *Shamana*

Nidana parivarjana:- It is the first line of treatment of any disease and it is most important line of treatment for Asthi kshaya also.It says that the root of Samprapti process,Nidana must be avoided for best management of the disease.In osteoporosis the factors i.e.Ahartmaka,Viharatmaka,manas and others which are responsible for the causation of the diseases should be avoided.¹⁴

Sodhana therapy:- Meaning of Sodhana is Apakarshana of dosha.therapies in which the aggravated doshas or the excretionary product of digestion are eliminated after mobilizing them from their respective sites,by urdhva or adhva marga from the body is known as sodhana therapy.It is also termed as Apakarshana.Panchkarma is including in Sodhana therapy.Tikta basti is indicated in Osteoporosis.¹⁵

Shamanotherapy:-Among said upkrama (six types of therapies-snehana, swedana, rukshana, langhana, stambhana,brihana.)Snehana and swedana can be administered for shaman purpose in asthi-khaya.charaka samhita –best grantha for treatment .has given treatment in following words. Administration of guru,Brinhan,Snehana,swedana articles which posses additional vata nasaka properties is considered as an ideal for shaman therapy.¹⁶

Different medicaments for Asthi-khaya:

Single drugs like Asthi shrinkhala ghrita,Satavari,Ashwagandha churna, guggulu, Mukta pisti,Praval pisti,pravalpisti,Sankhabhama.

Compound drugs: *Yograj guggulu*,*Rasayana churna*,*Triphala guggulu*,*aaabha guggulu*, *laxadi guggulu*

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