



E ISSN 2350-0204

IJAPC

VOLUME 11 ISSUE 3 2019

www.ijapc.com

Greentree Group Publishers (GGP))



Asthishrunkhala Ghrit Guggulu: Hope for Osteoporosis

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ABSTRACT

Osteoporosis is a disease of bone in which absolute bone mass is less than normal. The risk of fracture is increased in this disease. In most western countries the risk of the condition is about twice as high in women, with approximately 40% of women over 60 years of age being osteoporotic. It is classified as primary osteoporosis and secondary osteoporosis. In Ayurveda it can be correlated with *Asthi Majja Kshaya*. *Asthi* is a site of *vata* and this disorder is also more prevalent in old age which is *vata* predominant age. So it can be considered as a *Vata* predominant *Vyadhi*. In modern medicine it is treated with bisphosphonates, raloxifene, and teriparatide, and denosumab, hormone therapy, combination therapy. *Ayurvedic* management includes *Nidana Parivarjana*, *Samshodhana Chikitsa* and *Samshamana Chikitsa*. *Ayurvedic* medicine *Asthishrunkhala Ghrit Guggulu* can be an alternative for modern medicines. *Asthishrunkhala* along with *Ghrit* and *Guggulu* breaks the pathogenesis and provide relief to patient.

KEYWORDS

Asthi, *Asthishrunkhala Ghrit Guggulu*, Osteoporosis, *Asthi Majja Kshaya*



Greentree Group Publishers

Received 14/08/19 Accepted 05/11/19 Published 10/11/19



INTRODUCTION

Osteoporosis term describes a group of bone disorders or osteoporotic syndrome in which the absolute bone mass is less than normal. There is increased risk of fracture in this disease. The most common sites are the spine, hip and wrist. Results of these fractures include disability and even death. The factors that may increase the rate of bone loss include a low calcium diet, a sedentary life style, cigarette smoking, low body weight, early menopause, use of medicine (for example- cortisone-like drugs) etc. It is silent condition as there are no symptoms of low bone density. It is diagnosed with certain techniques, among them, DEXA is widely accepted. Ayurveda has proved to be effective in these type of disorders. *Asthi majja kshaya* is majorly explained in most of the *ayurvedic granthas* as one of the 18 *kshayas*.

In most western countries the risk of the condition is about twice as high in women, with approximately 40% of women over 60 years of age being affected. The higher incidence of osteoporosis in women may reflect their tendency to live longer than men as well as the occurrence of a period of increased rate of bone loss around the time of, and for some years following, the menopause. Indeed, because women are at higher risk and have longer lifespan, the

cases of hip fracture in women are 3-4 times more than in men¹.

This said, osteoporosis is seen to particularly affect white-skinned people from North America, Northern Europe and elsewhere. The risks for osteoporotic fractures are substantially lower in many parts of Asia, Africa and South America. Some sorts of changes like the estimated size of the population aged over 50 years will increase 130-150% in Europe and about 200% or more in all other regions, with the most marked increase in Asia between 1990 and 2025, suggest that the number of hip fractures annually will rise from around 1.5 million worldwide in 1990 to between 4 and 6 million in the year 2025².

DISEASE REVIEW (MODERN)

The term osteoporosis consist of two words: *osteo* and *porosis*. In Greek *osteo* means bone tissues, and *porosis* is derived from a Latin word *porosus* which means full of pores³. World health organisation defines osteoporosis 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”⁴. Some other definition is based on bone mineral density (BMD) measurements of the hips and spine.



WHO criteria for diagnosis of osteoporosis⁵:

Diagnosis of osteoporosis is based on a standardized score, known as T score, comparing BMD to average values for young.

Level	Definitions
Normal	T score -1.0 and above
Low bone mass(osteopenia)	T score between -1.0 and -2.5
Osteoporosis	T score -2.5 and below
Severe and established osteoporosis	T score -2.5 and below with history of fracture

Classification of Osteoporosis

Osteoporosis is classified as primary osteoporosis and secondary osteoporosis. Primary osteoporosis has been further divided into type 1 and type 2 osteoporosis⁶.

A) Primary osteoporosis

a) Post-menopausal osteoporosis (type1) - this is most common form of osteoporosis occurring in women between 51 and 75 years of age as a result of cessation of ovarian function. This cessation activates osteoclasts. Also, bone becomes more sensitive to the reabsorption stimulating action of parathyroid hormones. As a result of this, there is increased resorption of cancellous bone with a corresponding increase in fracture risk⁷.

b) Age related osteoporosis (type2) - It occurs in patients over the age of 70 years, hence called senile osteoporosis. History of chronic calcium deficiency is mainly

responsible for this condition. It is related to decrease osteoblastic bone formation. It affects all skeletal sites with both cortical and cancellous bone⁸.

B) Secondary osteoporosis:

It occurs due to endocrine defects, malignancy, osteomalacia, long term use of corticosteroids and heparin etc.

- Endocrine causes- Cushing's syndrome, thyrotoxicosis, hypogonadism, pituitary insufficiency, athletic amenorrhea
- Drugs- corticosteroids. Heparin, anticonvulsants
- Inherited- osteogenesis imperfect, homocystinuria, anorexia nervosa, alcoholism, malabsorption syndrome
- others-chronic hepatic disease, juvenile pregnancy

Symptoms

1. Increasing stooping- incremental loss in height and mild kyphosis
2. Episode of joint or muscle aches
3. Difficulty getting up from a chair without using arms to push
4. Acute pain in middle to low thoracic or high lumber region
5. Acute onset of back pain followed by a vertebral compression fracture is common symptom indicating a new fracture
6. Fracture of femur after little or no trauma, fracture of distal radius during a



fall, intracapsular and intra trochanteric fractures of femur, hip fractures and wrist

AYURVEDIC REVIEW

In Ayurveda, osteoporosis is likely to be *asthi majja kshaya* or *asthi saushirya* which means *saushirya* of *sthayi asthi dhatu* in which the *asthi* become porous.

Vayu and *asthi* have *ashraya ashrayi bhav*⁹ so the factors which provoke *vata* are supposed to provoke *asthi majja kshaya*. According to different Ayurveda *granthas*, the symptoms of *asthi kshaya* are as follows:

1. Hair, nails, beard fall- these are the *malas* of *asthi dhatu*. Due to improper nutrition of *asthi dhatu*, the *mala* of *asthi dhatu* also don't get nutrition leading to hair fall and brittleness of nails.

2. Pain – the variety of pains are mentioned in *samhita* due to *asthi kshaya*. As *vata* is predominant in *asthi kshaya* and pain is the cardinal symptom of *vata*, it is obvious to have varieties of pain mentioned below:

- *Asthitoda*- intermittent pricking type of pain¹⁰
- *Asthiruja*- uninterrupted constant type of pain¹¹
- *Asthibheda*- severe pain which feels like breaking of bone¹²
- *Asthishoola*- continuous pricking type of pain

3. Teeth problems- teeth fall in the category of *ruchak asthi*, with *kshaya* in *asthi*, teeth will also be affected.

4. Tiredness and weakness- the resistance of the body against workload produces this symptom. There is *bala kshaya* in *asthi kshaya* due to *vata prakopa* and *dhatu kshaya*, which ultimately leads to tiredness and weakness.

5. Brittleness and fracture- due to the loss of bone tissue, bones become more and more brittle making them more susceptible to the fractures.

6. Tremors- It is found in later stages of disease when there is excessive deterioration of the condition and excess vitiation of *vata*

SAMPRAPTI

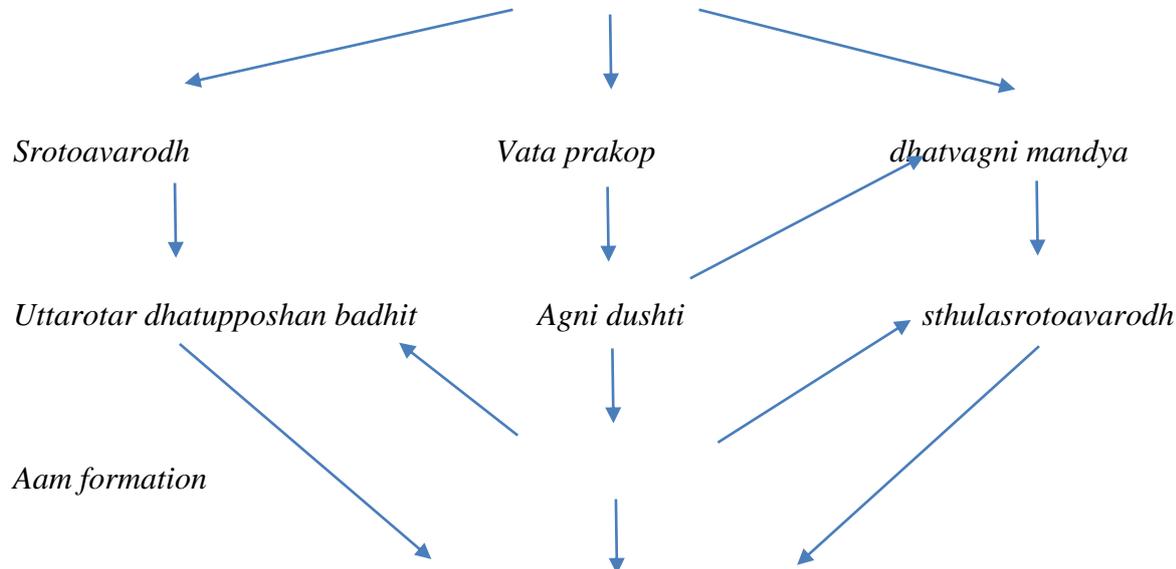
When it comes to *samprapti* of *asthi majja kshaya*, ayurvedic classics have not mentioned about it. But *Acharya* have mentioned about the *ashraya-ashrayi bhava*. *Vata* is resident of *asthi* and they share a reciprocally proportional relationship¹³. So all the *vata* aggravating factors cause *asthi kshaya*. The proper functioning of *jatharagni*, *bhutagni*, and *dhatwagni* is essential for “*samyak dhatu poshan prakriya*”¹⁴ in order to maintain the qualitative and quantitative normalcy of the *dhatu*s. Functional deformity in any of these *agnis* leads to the abnormality in the transformation of *poshaka dhatu* into



poshya or *sthayi dhatu*, resulting in *dhatu vikriti*.

dhatu vikriti.

Nidan sevan



Asthi majja dhatu kshaya

MODERN MANAGEMENT

Management consist of non-pharmacological and pharmacological treatments

a) Non Pharmacological Measures

It includes strategies like – prevention from falling, exercise and physical therapy, quitting addiction and taking proper diet. Consuming more than 2.5 units of caffeine daily (1 unit = one cup of coffee or two cups of tea) may increase fracture risk¹⁵.

b) Pharmacological Measures

It includes bisphosphonates, raloxifene, teriparatide, and denosumab, hormone therapy, combination therapy.

AYURVEDIC MANAGEMENT

Ayurvedic management includes:

1) ***Nidan Parivarjana*** – avoiding disease causing factors

2) ***Samshodhana chikitsa***

a) ***Basti Chikitsa***-*Basti* acts on *Asthivaha* and *Majjavaha srotas* and plays an important role in strengthening bones. Acharya Charaka described in *Sidhhisthana* that *Matra basti* plays an important role in *Vataja Vikara* and *Bhagna Vikara*.

b) Other ***Upakrama***- In acute pain due to *Asthivikara*, *parisheka* (*Taila dhara*), *Bandhana*, *Vedhana*, *Raktamokshana* plays important role in reducing the pain. *Sechana* or *parisheka* is done by *vataghna*



dravya siddha oil, *Nyagrodhadi kashaya*.
Laksha sidhha milk is taken internally for strengthening of the bones.

3) *Samshamana Chikitsa*

The following herbs are useful in strengthening the bones and also useful in fractures.

a) *Asthishrikhanla (Cissusquadrangularis)*-

b) *Ashwagandha- (Withania somnifera)*

c) *Arjuna (Terminalia Arjuna)*

d) *Gandha Tailam*

In this article, the role of *Asthishrunkhala ghrita guggulu* in Osteoporosis is being described.

DISCUSSION

ASTHISHRUNKHALA

- Latin name- *Cissus quadrangularis*
- Family- vitaceae
- Common name- veld grape
- Pharmacodynamics- *rasa- madhur kashaya; guna- guru, snigdha, tikshna; virya- ushna; vipak- katu; doshaghanata- vatasleshma; karma- vrishya, balaprada*
- Part used- stem
- Active ingredients¹⁶- contains high amount of Carotene A, anabolic steroidal substances and Calcium. The plant contains ascorbic acid, 479 mg and carotene, 267 mg per 100 g freshly prepared paste, in addition to calcium oxalate. The stem of the plant contains two asymmetric tetracyclic

triterpenoids, onocer- 7 ene 3 α , 21 β diol and onocer- 7 ene-3 β , 21 α diol, etc.

GUGGULU

- Latin name- *Commiphora mukul*
- Family- Burseraceae
- Other names- *guggulu, kaushik, pura, palankash, mahishaaksha, kalaniryasa, devadhoopa, jatayu*
- Pharmacological properties- *rasa- katu, tikta; guna- laghu, tikshna, vishada, sukshma, sara; virya- ushna; vipak- katu; doshaghanata- tridoshashamak*
- Part used- gum exudates
- Chemical composition¹⁷- steroidal constituents, which include, cholesterol, 4,17(20)-(trans)-pregnadiene-3,16-dione (I), 4,17(20)-(cis)-pregnadiene-3,16-dione (II) and three new sterols—guggulsterol-I, guggulsterol-II and guggulsterol-III¹

GO-GHRIT

- Latin name- *Butyrum depuratum*
- *Bhautik sangathan- prithvi and ambu*
- Chemical composition- saturated fatty acids, triglycerides, diglycerides, monoglycerides, phospholipids, contains beta carotene 600 IU and vitamin B, A, D and K2

Asthi majja kshaya is majorly explained in most of the *ayurvedic granths* as one of the 18 *kshayas*.

The *dushti* of jatharagni affects the digestion of food resulting in improper



nourishment of *asthi dhatu* resulting in *asthi kshaya*.

Also, *asthi* and *vata dosha* have *ashra ashrayi* relation, due to which when *vata* increases there is more *kshaya* of *asthi*. In Ayurveda, it is said that, *vata* is *Pradhan* in old age. This satisfies the fact that osteoporosis is common in old age.

There is no cure for osteoporosis, the only aim of treatment is to protect and strengthen the bones. Medical care includes administration of calcium, vitamin D and anti-osteoporotic medication and treatment of the secondary cause.

According to Ayurveda, the principle of treatment in this case includes pacification of *vata* and maintenance of *Agni*, and increase in *asthi dhatu*. *Asthishrunkhala ghrith guggulu* can be a better drug for the same as *asthishrunkhala* has the properties to pacify *vata* and it increases *asthi dhatu* and as it is prepared with *ghrit* and *guggulu*, its properties are enhanced by their *sanskaranuvartan* and *sukshma guna*.

The drug and its mode of action:

The main content of *asthishrunkhala ghrith guggulu* is *asthishrunkhala* and *guggulu*.

1. *Cissus quadrangularis* contains high amount of carotene A, anabolic steroidal substance and calcium. It also contains ascorbic acid and saponins that affect the permeability; of the small intestinal mucosal cells due to its strong surface

active properties and thus have an effect of active nutrient transport¹⁸. In many researches it is seen that it has ability to speed bone healing showing it act as a glucocorticoid antagonist. It also increase the bone tensile strength faster and is very helpful in degenerative conditions of bones. Hence it can be of great significance for osteoporosis.

2. *Guggulu* has anti-inflammatory and anti-arthritic properties. It is anti-aging in nature. It improves digestion and strength. Guggululsterone isolated form *commiphora mukul* has effect on osteoclast formation and hence prevent osteoporosis. The oleo- resin fraction has much anti-arthritic and anti-inflammatory activity. Other content of the drug is *Trikatu*. It has been proven that *Trikatu* especially alkaloid piperine to have a bio enhancing or potentiating effect when mixed with other drugs¹⁹. Studies show the piperine also have effect on both osteoblast and osteoclast²⁰. It increases the osteoblastic activity and decrease the osteoclastic activity.

CONCLUSION

From the above discussion it can be concluded that, *Asthishrunkhala Ghrith Guggulu* can be a boon for the osteoporotic patients with minimal or no side effects. *Asthishrunkhala Ghrith Guggulu* is a purely



herbal medicine and can be used as an alternative for modern medicines because of its minimal or no side effects.



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