



Research Article

CLINICAL EVALUATION OF *GUGGULU TIKTAKA GRITHA MATRAVASTI* AND *PRAVALAPISTI* IN THE
MANAGEMENT OF *ASTHI KSHAYA* W.S.R TO OSTEOPOROSIS

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ABSTRACT

Ayurveda explains health as an equilibrium of the *Dhatu* "Dhatu Samyamarogata". Among the *Dhatu*, *Asthi* is blessed with the function of *Shareera Dharana*. Any derangement in *Asthi* results in disease. Being the principle seat of *Vata dosha*, *Asthi* related *Rogas* generally show a *Vata* dominance in pathology. In *Ayurveda* both *Vridhi* and *kshaya* are mentioned as the pathological states of *Dhatu*. Osteoporosis can be placed under the spectrum of *Asthi kshaya*. Classics mention the use of *Vasti* prepared with *Tikta Dravya*, *Ksheera* and *Ghritha* for the treatment of *Asthi Kshaya*. The present study was undertaken to assess the efficacy of *Guggulu Tiktakagritha matravasti* and *Pravalapisti* in the management of Osteoporosis. A total number of 10 patients were selected and treated with *Matra vasti* for a period of 11days along with *Pravalapisti* 250mg (oral) B.D. The combined therapy of *Vasti* and *Pravalapisti* showed encouraging results in the subjective and objective parameters of Osteoporosis.

KEYWORDS: *Asthi Kshaya*, Osteoporosis, *Matravasti*, *Pravalapisti*.

INTRODUCTION

Ayurveda explains Human body as a congenial homeostasis of *Dosha*, *Dhatu* and *Mala*.^[1] It highlights the importance of *Dhatu* and their related *Srotases* in the maintenance of positive health. *Asthi dhatu* which has the function of *Dharana*^[2] carrying the weight of the body is directly related with the principal *Dosha Vata*. Being the principal seat of *Vata* dominance in pathology any derangement in *Asthidhatu* leads to different kinds of diseases.

In *Ayurveda* both *Vridhi* and *Kshaya* are mentioned as the pathological states of *Dhatu*.^[3] Osteoporosis can be placed under the spectrum of *Asthi kshaya*. *Asthi Kshaya* is a condition in which there will be *Kshaya* (diminution) of *Asthi Dhatu* (bone tissue). *Asthi Kshaya* may be compared to Osteoporosis, in which there is a decrease in bone mass leading to increased bone fragility and susceptibility to fractures. Osteoporosis is commonest condition affecting the older population. According to the principle of *Ashraya Ashrayee Bhava*^[4] when *Vata* increases *Asthi* decreases because, *Vata* and *Asthi* are inversely proportional to each other. Hence the etiological factors of *Vata Vridhi* are the etiological factors for *Asthi Kshaya*. In osteoporosis, the primary stage in the *Samprathi* is *Vatakopa nidanas* of the individual. While analysing the cause of vitiation of *Asthi vaha srotas* and *Majja vaha srotas*, it can be seen that *Vatala aharas* and *Viruddha ahara* play pivotal role in *Asthi dhatu* related diseases. Here the *Vatala aharas* represented the low nutrient diet which aggravated the bone reabsorption rate. The *Viruddha aharas* impair metabolic processes, hampering the *Dhatwagnis*. By the result of above mentioned pathogenetic factors the provoked *Vata* either by *Dhatukshaya* or by *Margavarana* enters the *Rikta Asthi vaha Srotas* and leads to *Asthi Kshaya*. The clinical features of *Asthi Kshaya* are *Asthi shula*, *Toda*, and *Sandhi*

Shaithilya, *Kesha*, *Loma*, *Nakha*, *Danta Vikara* and *Paata*, *Dourbalya*, *Rukshata* etc. ^[5]

Ayurvedic treatments for osteoporosis mainly aim the improvement of *Asthisara* and *Vatasamana*. *Vatasamana* can be brought about by the proper administration of *Snehana* and *Swedana* followed by the mild *Shodana*. *Acharya Charaka* suggests very special treatment for *Asthi kshaya*.^[6] According to this, the medicated *Ksheera* or *Ghritha* preferably by *Tikta rasa* dominant drugs are the first choice. The *Vasti chikitsa* by the above *Ksheera-ghritha* has unique role here. *Tiktarasas* when combined with *Ksheera* or *Ghritha* will improve the *Dritatha* of *Asthidhatu*.^[7] For *Asthi vardana*, there should be the combination of *Snigdhattha*, *Shosana* and *Kharathwa* as explained by *Arunadatta* in *Astangahridaya*.^[8] Since there exists no drugs with all these properties, *Acharya* selected this combination of *Ksheera* or *Ghritha* with *Tiktarasas* drugs. *Vasti kalpana* is the best treatment for the vitiated *Vata dosha*.^[9] When *Vata* gets vitiated in its own related *Dushya-Asthi* the strength of the *Samprathi* will be more severe. Hence medicated *Vastikalpanas* play a key role in the *Samprathi vighatana* of osteoporosis.

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"^[10]

Epidemiology

Osteoporosis is a global dilemma that is expected to increase in significance with the growing elderly population. It affects both sexes and all races albeit to different degrees. Women are at high risk compare to men and the risk even increases at menopause, which is physiological transition period of hormonal imbalance.

The life time risk of osteoporotic fracture is 30- 40% in women and 13 -15% in men.^[11]

The etiological factors of Osteoporosis are increasing age, sex hormone deficiency, Caucasian race, low body mass index (BMI), malnutrition (low Calcium diet), smoking, alcohol, prolonged corticosteroid therapy etc.^[12] The treatment is mainly aimed at preventing further.

Bone loss, maintaining the bone mass, prevention of fractures, calcium and vitamin-D supplementation, hormone replacement therapy (HRT), and the use of certain drugs like Bisphosphonates, Selective Oestrogen Receptor Modulators (SERMs) and anabolic steroids etc. Use of HRT, Bisphosphonates, SERMs and anabolic steroids are not devoid of adverse effects.^[13] Hence, it is need of the hour to carry researches for finding efficient, economic, natural and safer formulations to manage Osteoporosis. *Ayurveda* has got many time tested formulations for this condition.

Present formulation of *Guggulu tiktaka gritha*^[14] has the ingredients of *Tikta rasa pradhana dravyas* which when made *Samskara* with *Gritha* helps in nourishing the *Asthi dhatu* and thereby gives strength to *Asthi*.

Pravala pisti^[15] is the *Samana dravya* of *Asthi dhatu*. The chemical composition of *Pravala pisti* has rich source of Calcium, Phosphorous, Iron, Silicon, Magnesium, Sodium and potassium which gives strength and stability to the bones. Calcium and Phosphate may combine to form Calcium phosphate which is the major component of Bone mineral complex called as Hydroxyapatite.^[16]

Aims & Objectives

1. To study *Asthi kshaya* w.s.r to Osteoporosis in the light of *Ayurveda* and Modern sciences.
2. To study the efficacy of *Guggulu tiktaka gritha matra vasti* and *Pravala pisti* in *Asthi kshaya*.
3. To find out natural, safest and cost effective treatment measurement in the Osteoporosis.

Materials & Methods

Source of data: Patients attending the OPD and IPD of Kayachikitsa Department of Dr.BRKR Govt Ayurvedic Hospital, Hyderabad were selected for study.

Criteria for Selection of Patients

Inclusion criteria

- Patients presenting with the classical features of *Asthi Kshaya* vis-à-vis Osteoporosis
- Post-Menopausal women and Osteoporotic men were taken for the study
- Patients were selected between the age group of 40-60 years
- Patients of Osteoporosis diagnosed by B.M.D test (t-score < -2.5)

Exclusion criteria

- Patients below the age of 40 years and above the age of 60 years
- Patients suffering from pathological Osteoporosis and neoplasm of the bone
- Patients suffering from Diabetes Mellitus, Hyperparathyroidism, Paget's disease, Thyrotoxicosis,

Cushing's syndrome, Endocrinal disorders and other serious systemic diseases were excluded

Plan of study

10 patients were selected for the study after properly diagnosed as Osteoporosis. Each patient was given (60-75 ml) of *Guggulu tikatha gritam matra vasti* for 11 days continuously along with *Pravalapisti* 250mg (oral) twice in a day with *Godhugdha* as *Anupana*. The course of the study continued for 3 consecutive months. Results were assessed based on subjective and objective parameters before and after the treatment i.e. 90days.

Investigations

- Regular haematological tests like Hb%, TC, DC, E.S.R, RBS were performed to rule out systemic disorders.
- Serum phosphorus and serum calcium.
- **BMD:** to measure bone mineral density before and after the treatment, standard ultrasound bone densitometer was used.

Follow up

Patients were followed up for 3 months after the completion of treatment.

Parameters of the study

Subjective parameters

Shula (Pain)

- Grade 0 - No pain
- Grade 1 - Mild pain
- Grade 2 - Discomforting pain
- Grade 3 - Distressing pain
- Grade 4 - Horrible

Sandhishathilyam

- Grade 0 - No pain on walking
- Grade 1 - Mild pain but no difficulty in walking
- Grade 2 - Walking with moderate pain and difficulty
- Grade 3 - Walking with severe pain and difficulty
- Grade 4 - Unable to walk.

Sparshasahyata (Tenderness)

- Grade 0 - No Tenderness
- Grade 1 - Mild tenderness without any sudden response on pressure
- Grade 2 - Wincing of face on pressure
- Grade 3 - Wincing of face and withdrawal of the affected part on pressure
- Grade 4 - Resist touch due to tenderness

Effect on Regular Activities

- Grade 0 - No difference/ Able to perform normal duties
- Grade 1 - Strain on performing normal activities
- Grade 2 - Not able to perform normal activities
- Grade 3 - Cannot perform even moderate activities
- Grade 4 - Unable to do mild activities

Objective parameters

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

Normal -'t' score greater than -1; Osteopenia -'t' score between -1 to -2.5; Osteoporosis - 't' score less than or

equal to -2.5 and severe osteoporosis - 't' score less than -2.5 with fracture.

Overall effect of therapy

Marked improvement :->75% to 100% improvement
 Good improvement: >50%to <75% improvement
 Moderate improvement : >25% to <50% improvement
 Poor improvement: <25% improvement

Observations

The following are the observations of the study.
 Since it is a pilot study, a total number of 10 patients were selected. Out of 10 patients.
 7 patients were in the age group of 50 to 60 years - 70%.
 6 patients were female and all had attained menopause - 60%.

5 patients were house wife 83.3 %.
 8 patients (both men & women) have the chronicity of 2-4 yrs - 80%.

After *Guggulu tiktaka gritha* in the form of *Matra vasti* there is relief of symptoms like *Asti Sula*, *Sparshasahayata*, *Dourbalya*, *Sandhisaisithilyam*.

The effect of therapy on subjective and objective parameters is statistically highly significant and there was 63% gain in bone density.

Results

The results were calculated on the basis of scoring pattern given for subjective and objective parameters before and after the treatment.

Table 1: Effect of treatment on subjective parameters

Symptoms	No. of patients	Mean		% of Relief	'p' Value
		BT	AT		
<i>Shula</i>	10	3.2	0.8	75.6	<0.001
<i>Sandhisaitilyam</i>	10	1.9	0.5	73.6	<0.001
<i>Sparhashayata</i>	10	2.1	0.5	76.1	<0.001
Effect on regular activities	10	2.2	0.5	77.2	<0.001

Table 2: Effect of treatment on BMD (t-score)

No. of Patients	Mean		% of Relief	'p' Value	t' Value
	BT	AT			
10	-2.04	-0.74	63.7	<0.001	6.06

Table 3: Total effect of treatment

Results	No. of Patients	Percentage
Marked Relief	7	70%
Moderate Relief	2	20%
Good Relief	1	10%
Poor Relief	0	-

DISCUSSIONS

- ✓ *Asthi Kshaya* is explained in almost all texts of *Ayurveda* along with 18 types of *Kshayas*.^[17]
- ✓ As explained in the *Nidana* aspect, both *Ayurveda* and Modern science consider old age as one of the causative factor of Osteoporosis. This age is said to be dominated by *Vata*, where *Dhatu*s becomes *Kshina* along with *Indriya*, *bala* and *Virya* etc.^[18]
- ✓ Higher incidence of Osteoporosis was noted in females, the reason being the total body bone mass in men is 2065gms which is greater than in women i.e., 2368gms and BMD is also 13 % higher in males compared to females.
- ✓ All the women in the study had attained menopause. Menopause is one of the risk factors of osteoporosis, because of sex hormone (estrogen) deficiency.
- ✓ Among *Panchakarma*, *Vasti* is the choice for *Vata* disorders. *Vasti* has direct effect on *Pakwashaya* (large intestine) and is also considered as *Purishadhara kala*. *Dalhana* opined that there is a definite relationship between *Purishadhara kala* and *Asthidhara kala*.^[19]

Hence *Vasti* will be definitely helpful in reducing the symptoms of osteoporosis.

- ✓ *Giggulu tiktaka ghritam* contains *Tikta rasa pradhana dravyas*. *Tikta rasa* is *Agnidipana* and it alleviates *Ama* (toxic substances) the increased digestive fire helps in maintaining the normal stage of *Dhatwagni*, so that the body tissues will be in equilibrium state. In this way *Tikta rasa* helps in formation of *Samyak Asthi dathu*. As *Tiktha rasa* is predominately contains *Akasa* and *Vayu mahabhuta* ^[20] It can reach the subtle parts of the body, especially those parts having the similar *Mahabhuta* dominances like *Asthi dhatu* and can act at the level of bony tissue.
- ✓ *Guggulu* is Anti-inflammatory and analgesic drug which relives pain and tenderness.^[21]
- ✓ *Pravala Pisti* is given as a *Shamana dravya* in different *Asthivikaras*. It is a red colour fossil having many pores with irregular shape.

Table 4: The chemical composition of Pravalapisti

Components	%
Ca	44.60%
Mg	3.39%
Fe	688.6mg/kg
P	174.3 mg/kg
Si	1584.8 mg/ kg
Na	3516.7
K	253.8
Mn	11.3

CONCLUSIONS

1. The common causative factors described for 18 types of *Kshayas* here been considered as the causative factors for *Asthikhsaya* also.
2. As we know *Asthi* and *Vata* both are having *Ashraya-ashrayee bhava* relationship and both are reciprocal to each other, therefore anything which causes *Vata* aggravation will bring degenerative changes in *Asthi*.
3. The *Chikitsa* should be planned to bring normalization of aggravated *Dosha*. To remove *Avarana* by *Srothoshodana* and to normalize as well as increase the *Poshan* of *Asthi dhatu*.
4. *Guggulu tiktaka gritha matra vasti* along with *Pravala pisti* was found to be effective in obtaining very good results on all the parameters.
5. No untoward incidence was reported during treatment course.
6. It can be safely concluded that *Matravasti* with *Guggulu tiktaka gritha* and *Pravala pisti* is a natural safe and cost effective therapeutic measure in Osteoporosis.
7. However, further evaluation is necessary by conducting clinical trials on a large sample to come to a final conclusion.

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