To Evaluate The Effect Of Matra Basti And Tikta Ksheera Basti On Asthikshaya W.S.R. To Osteoporosis

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ABSTRACT

Asthikshaya i.e. Osteoporosis is a condition in which there will be kshaya (diminution) of Asthidhatu (bone tissue). Asthikshaya may be compared to Osteoporosis, in which there is a decrease in bone mass leading to increased in bone fragility and susceptibility to fractures. Osteoporosis is a commonest condition affecting the older population. According to the principle of Ashraya Ashrayee Bhava, when Vata increases Asthi decreases because, Vata and Asthi are inversely proportional to each other. Hence the etiological factors of Vata Vriddhi are the causative factors for Asthikshaya. Apart from this, the causative factors for Asthikshaya can also be taken as the factors for the vitiation of Medavaha, Asthivaha, Majjavaha and Purishavaha Srotas as well. Thus very complex mechanism involves in the Samprapti of Asthikshaya. By the above mentioned results, the pathogenetic factors of the provoked Vata, either by Dhatukshaya or by Margavarana, enters the Rikta Asthivaha Srotas or leads to Asthikshaya. The clinical features of Asthikshaya are Asthishoola, Toda, Sandhi Shaithilya, Kesha, Loma, Nakha, Danta Paata, Dourbalya, Rukshata etc. As per Acharya Charak & Vagbhata, the remedial measures in the disorder of Asthi consist of the Panchkarma therapy Basti prepared with the Tiktaadravya, Ksheera and Ghrita along with the use of Swayoni dravyas. The present clinical study was
undertaken to evaluate the efficacy of Matra Basti and Tikta Ksheera in the management of Asthikshaya w.s.r. to Osteoporosis

Aims & Objectives: To evaluate the effect of Matra Basti and Tikta Ksheera Basti on Asthikshaya w.s.r. to Osteoporosis.

Methodology: In Group-A 15 patients were given Matra basti & In Group-B 15 patients were given Tikta ksheera basti

Result: Among 15 patients in group A, marked improvement was found in 3 patients, and 12 patients were moderately improved in lakshana of Asthikshaya. Among 15 patients in group B, marked improvement was found in 5 patients and 10 patients were moderately improved.

In this study the Group- B (Tikta ksheera basti) shows slightly good results than Group-A (Matra basti) in all the symptoms in combating the disease Asthikshaya.

Key Words: Asthikshaya, Osteoporosis, Tikta ksheera basti, Matra basti

INTRODUCTION

Osteoporosis is a metabolic bone disease characterised by diffused skeletal lesions in which normally mineralized bone is decreased in the mass to the point that is no longer provides adequate mechanical support.\(^1\) Worldwide, it is estimated that 1 in 3 women above the age of 50 will experience osteoporotic fractures, as well as 1 in 5 men. India with a population of 1.2 billion people is the second most populated country in the world with approximately 10% of population (more than 100 million) over 50 years of age.\(^2\)

Osteoporosis can be correlated with Ashtikshaya in Ayurveda. It is a condition in which diminution of Asthidhatu will occur. According to Ashrayaashrayee bhava, Vata and Asthi, both are inversely proportion to each other means when Vata increase Asthi decrease.\(^3\) So, etiological factors which are responsible for Vata increase can cause Asthikshaya. The clinical features of AsthiKshaya mentioned by Acharyas are Asthishula, Toda, Sandhi Shaithilya, Kesha, Loma, Nakha, Danta Vikara, Daurbalya, Rukshata Sparhashyatava etc. which are closely resembles with the symptoms of Osteoporosis like bone pain, tenderness and weakness etc.\(^4,5\)

As per Acharya Charak & Vagbhata, the remedial measures in the disorder of Asthi consist of the Panchkarma therapy, Basti prepared with the Tiktadravya, Ksheera and Ghrita along with the use of Swayoni dravyas.\(^6\) Hence the present study was undertaken to understand and study the efficacy of Matra basti & tikta ksheera basti in the management of Asthikshaya w.s.r.to Osteoporosis.

OBJECTIVES
1. To evaluate the efficacy of *Matrabasti* in the management of *Asthikshaya*

2. To evaluate the efficacy of *tikta ksheera basti* in the management of *Asthikshaya*.

3. To evaluate and comparative effect of *Matrabasti* and *tikta ksheera basti* in the management of *Asthikshaya*

**MATERIALS AND METHODS**

**Source of Data**

Minimum 30 patients of *Asthikshaya* were selected randomly from the OPD, IPD and by conducting the special camps in Department of Post Graduate Studies in Panchakarma, Bhagawan Mahaveer Jain Ayurvedic Medical College, Hospital & PG Centre Gajendragad.

**Study Design:**

A comparative clinical study with pre-test and post-test design.

All the formulations were prepared in the pharmacy attached to the college.

**Methods of Collection of Data**

Patients of either sex were selected randomly based on the symptoms of *Asthikshaya*, the screened patients were randomly divided into two groups group A and group B with 15 patients in each group.

**Inclusion Criteria**

1. Patients were selected between the age group of 40-70 years.

2. Patient representing with classical features of asthikshaya.

3. Patient of both sex are taken.

4. Patient of osteoporosis diagnosed by BMD test.

**Exclusion Criteria**

1. Patient below the age of 40 and above 70 years.

2. Patient suffering from any systemic disorder like DM, HTN, Endocrinal disorders, Paget’s disease, Cushing syndrome etc.

3. Patient suffering from pathological osteoporosis or any neoplasm or osteoporosis related to systemic disorders.
4. Osteoporosis associated with fracture

Diagnostic Criteria

- Parameter for diagnostic purpose depends on classical signs & symptoms.
- Bone mineral density.

Grouping

<table>
<thead>
<tr>
<th>Groups</th>
<th>No of Patients</th>
<th>Trail Drugs</th>
<th>Duration of the Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>15</td>
<td>Matrabasti</td>
<td>8 days</td>
</tr>
<tr>
<td>Group B</td>
<td>15</td>
<td>Tikta Ksheera Basti</td>
<td>8 days</td>
</tr>
</tbody>
</table>

Intervention: Conducted on patient diagnosed as asthikshaya.

Randomly selected patients were assigned in two groups. Group A and Group B having 15 patients in each group.

Group A:

Sample size: 15 patients

Method: Matra basti

Duration: 25 days

Purva karma: Preparation of basti yoga

- Saindhava lavana heated red hot and dipped in ghruta till whole saindhava dissolves.
- Matra of panchatiktaka guggulu ghruta = 1 ½ pala = 72 ml
- Matra of saindhava lavana = 1 karsha = 10 gm
Preparation of patient:

   Sthanika abhyanga.

   Sthanika sweda.

   Intake of laghu bhojana.

Pradhana karma :  Matra basti administered Paschat karma :

   ▪ Hitting over buttocks

   ▪ Gently massaging over abdomen

   ▪ Raising both leg slightly above and patting over feet.

   ▪ Giving gentle massage over body so that patient feels sleepy.

   ▪ Basti pratyagamana should be observed

   ▪ Nireekshana of samyaka anuvasana and sneha jeerna lakshana

Treatment duration : 8 days

   ▪ Post treatment : On 25th day follow up

**Group B:**

Sample size : 15 patients

Method : Tikta ksheera basti

Duration : 25 days

Purva karma : Preparation of basti yoga

   • Madhu =1 prasruta
   • Saindhava = 1 aksha
   • Ghruta = Goghruta 2 prasruta
   • Kalka =Rasana kalka 20 gms
   • Kasaya =Pancha tikta + ksheera = 3 prasruta
   • Total quantity = 6 prasruta

Preparation of patient: Sthanika abhyanga and Sthanika sweda.

Pradhana karma : Tikta ksheera basti administration.

Paschat karma : Patient should rest for a while till basti pratyagamana kala and nireekshana followed with pathya bhojana.
Treatment duration : 8 days
Post treatment : On 25th day follow up

Assessment Criteria

Assessment of the condition was done based on the detailed proforma adopting standard methods of scoring for subjective parameter and objective parameters.

- Pre test assessment- Before the commencement of treatment (0 day).
- Post test assessment- After the completion of treatment (25th day).

PARAMETERS OF THE STUDY:

Subjective Parameters:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Shoola (Asthi Pradesha)</th>
<th>Sparsha Asahyata</th>
<th>Daurbalya/ Shrama</th>
<th>Sandhi Saithilyata</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Pain</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Mild</td>
<td>No strenuous activity</td>
<td>Pain and swelling</td>
</tr>
<tr>
<td>2</td>
<td>Discomfort</td>
<td>Wincing of face on pressure</td>
<td>Moderate activity</td>
<td>Pain ++ Swelling ++</td>
</tr>
<tr>
<td>3</td>
<td>Distress</td>
<td>Wincing of face and drawing affected part back</td>
<td>Only mild activity</td>
<td>Pain +++ Swelling +++ Crepitus +</td>
</tr>
<tr>
<td>4</td>
<td>Horrible</td>
<td>Resist touch</td>
<td>Even mild activity can be performed</td>
<td>Pain ++++ Swelling +++ Crepitus ++ Tenderness +</td>
</tr>
</tbody>
</table>
Objective Parameters:

- Bone Mineral Density (W.H.O. criteria for osteoporosis)

  T-score
  Normal = -1
  Osteopenia = -1 to -2.5
  Osteoporosis = less than or equal to -2.5
  Severe osteoporosis = less than -2.5 with fracture

RESULTS

Table No. 1: Effect of therapy on Shoola

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Group</th>
<th>Mean</th>
<th>Diff.</th>
<th>%</th>
<th>SD</th>
<th>SE</th>
<th>‘t’</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B.T.</td>
<td>A.T.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoola</td>
<td>A</td>
<td>2.80</td>
<td>0.93</td>
<td>1.86</td>
<td>67</td>
<td>0.74</td>
<td>9.72</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>2.86</td>
<td>0.86</td>
<td>2.00</td>
<td>70</td>
<td>0.65</td>
<td>11.83</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Table No. 2: Showing effect of therapy on Sparsha Asahyata

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Group</th>
<th>Mean</th>
<th>Diff.</th>
<th>%</th>
<th>SD</th>
<th>SE</th>
<th>‘t’</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sparsha Asahyata</td>
<td>A</td>
<td>2.66</td>
<td>1.00</td>
<td>1.66</td>
<td>62</td>
<td>0.48</td>
<td>13.2</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>3.00</td>
<td>0.80</td>
<td>2.20</td>
<td>73</td>
<td>0.67</td>
<td>12.60</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Table No. 3: Showing effect of therapy on Shrama

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Group</th>
<th>Mean</th>
<th>Diff.</th>
<th>%</th>
<th>SD</th>
<th>SE</th>
<th>‘t’</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrama</td>
<td>A</td>
<td>2.66</td>
<td>1.00</td>
<td>1.66</td>
<td>63</td>
<td>0.48</td>
<td>13.2</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>3.26</td>
<td>0.86</td>
<td>2.40</td>
<td>73</td>
<td>0.50</td>
<td>18.3</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>
### Table No. 4: Showing effect of therapy on Sandhi Saithilyata

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Group</th>
<th>Mean</th>
<th>Diff.</th>
<th>%</th>
<th>SD</th>
<th>SE</th>
<th>‘t’</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandhi Saithilyata A</td>
<td>B.T.</td>
<td>3.00</td>
<td>1.06</td>
<td>1.93</td>
<td>64</td>
<td>0.25</td>
<td>29.00</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>A.T.</td>
<td>2.86</td>
<td>0.80</td>
<td>2.06</td>
<td>72</td>
<td>0.59</td>
<td>13.48</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

### Table No. 5: Showing effect of therapy on Singh index

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Group</th>
<th>Mean</th>
<th>Diff.</th>
<th>%</th>
<th>SD</th>
<th>SE</th>
<th>‘t’</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singh index</td>
<td>A</td>
<td>4.40</td>
<td>2.00</td>
<td>2.40</td>
<td>54</td>
<td>0.63</td>
<td>14.69</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>4.06</td>
<td>1.93</td>
<td>2.13</td>
<td>52</td>
<td>0.51</td>
<td>16.0</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

### Table No. 6: Showing the Overall effect of the treatment

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marked Improvement</td>
<td>3</td>
<td>20</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>(75-100% relief)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Improvement</td>
<td>12</td>
<td>80</td>
<td>10</td>
<td>67</td>
</tr>
<tr>
<td>(50-75% relief)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild Improvement</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(25-50% relief)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Improvement</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(&lt; 25% relief)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

Effect of Therapy on Asthi Kshaya Lakshana Effect of medicines on Shoola:

Group A and group B showed 67% and 70% decrease in Shoola respectively. Reduction in Shoola in both groups was statistically significant at p<0.05.

Effect of medicines on Sparsha Asahyata:

Group A and group B showed 62% and 73% decrease in Sparsha Asahyata respectively. Reduction in Sparsha Asahyata in group A and group B was statistically significant at p<0.05.

Effect of medicines on Shrama:

Group A and Group B provided 63% and 73% decrease in Shrama respectively. Reduction in Shrama in group A and group B was statistically significant at p<0.05.

Effect of medicine on Sandhi Saithilyata:

Group A and Group B provided 64% and 72% decrease in Sandhi Saithilyata respectively. Reduction in Sandhi Saithilyata in group A and group B was statistically significant at p<0.05.
Effect of medicine on Singh’s index:

Group A and Group B provided 54% and 52% decrease in Singh index respectively. Reduction in Singh index in group A and group B was statistically significant at p<0.05.

Mode of Action of Matrabasti on Osteoporosis:

Arunadatta in his commentary Sarvangasundari, in case of Asthi Ksaya, Ksheeraghrita Tikta Samyukta Basti is advised. In Asthi Kshaya, there is no such drug which causes Asthi Vridhi. When Tikta dravya is used, it causes Vata Vruddi and it will lead to Asthi Kshaya. Since Asthi is Khara by its nature, in order to control Vata and to make Asthi Vruddi, Drug of choice should be drugs possessing Gunas like, Snigdha, Shoshana and Khara. For this type of combination of properties, Ksheera Ghrita Tik-tayukta Basti is advised. Panchatiktaka guggulu ghrita is the compound formulation having these Snigdha, Shoshana and Khara qualities. Snigdha Ghrita is obtained by Ghrita, Shoshana Ghrita is ob-tained by Tikta Rasa and Khara Ghrita is obtained by Guggulu. In the case of Asthi Kshaya, or in case of Sandhivata, Matrabasti with Panchatikta Guggulu Ghrita is advocated or panchatiktaka guggulu Ghrita can be used as Sneha Dravya in Ksheera basti. The ingredients of Panchatikta Guggulu have Tikta Rasa, Ushna Virya, and Madhura and Katu Vipaka. It may increase Dhatwagni and Poshana of all the Dhatus, especially Asthi and Majja Dhatu which controls Asthi and Majja Kshaya (the degeneration process). Tikta Rasa is predominant in Akasha and Vayu Mahabhuta which helps in preservation of normal health of Asthi Dhatu. Tikta Rasa has got Deepana and Pachana effect that might have helped to improve general health and thus strengthens the whole body. Purana Guggulu also acts as Rasayana which may help to prevent any degenerative changes in the body. Ghrita is having property such as Yogavahi which is helpful to increase bioavailability of other drugs without losing its own property. Ghrita is Vata- Pittashamaka, Balya, Agnivardhaka, Madhura, Saumya, Sheeta Virya, Shulahara, Jwarahara, Vrishya, and Vayasthapaka. Thus, it pacifies Vata, improves the general condition of the body, and acts as a rejuvenator of the body causing in the Samprapti Vighatana of the Asthikshaya.

Probable action of Tikta Ksheera Basti in osteoporosis

Ksheera Basti is such a vataghna yoga that induces bala, snehana and when used with tikta ksheera and gritha, it acts specifically on asthidhatu. According to Arundatta commentary – Any dravya having snigdha and shoshan property and the dravya which produces kharatva in body is beneficial for asthikshaya as the asthi dhatu has kha property. In the universe there is not a single drug having these combined property. Tikta is the rasa which produces kharatva because of most shoshana swabhava, and kharatva is pradhana guna of Asthidhatu. Tikta rasa when combined with ksheera or gritha will improve the dridatha of asthidhatu, resulting in asthiposhana and asthivardhana. Tikta rasa aggravates vata, but when it’s processed with ksheera, and grithas it promotes osteogenesis. Hence because of such combination this Basti though vatahara by nature, produces kharatva in the shareera, but does not cause vataprapkopa because of snighatva of ksheera and gritha.
Ksheera and gritha are very useful and effective dravyas in degenerative conditions. Sushruta says that Basti stays in pakwasaya, where pureesha dhara kala exists and does its action. Dalhana in his commentary mentions that pureeshadhara and Asthidhara kalas are one and the same, so when Basti is given, it acts on asthidhara kala. It means kharatva produced in pakwashaya by Tikta ksheera Basti helps in normal formation of asthidhatu in shareera, and hence improves the condition.

CONCLUSION

The following conclusions are drawn after logical interpretation of the results obtained in this clinical study, which are listed below:

- The paired ‘t’ test which was used to compare the effect of therapy before and after treatment in Group A and Group B, indicates that both group showed significant results but on the basis of percentage relief in the symptoms and t-score it can be said that the results in Group-B (Tikta ksheera basti) was better than Group-A (Matra basti) statistically.
- Among 15 patients in group A, marked improvement was found in 3 patients, and 12 patients were moderately improved in lakshana of Asthikshaya.
- Among 15 patients in group B, marked improvement was found in 5 patients and 10 patients were moderately improved.
- No patient remained unchanged result in both groups.

REFERENCES

