A CLINICAL STUDY ON THE EFFECT OF KAPARDAKA BHASMA W.S.R TO ASTHIVAH SROTA

Ajoy Bhakat¹, Apala Sengupta², Sumana Saha³

¹MD (Roga Nidan & Vikriti Vigyan) I.P.G.A.E&R at S.V.S.P, 294/3/1 A.P.C Road, Kolkata 9
²MD, PhD, Reader & H.O.D Dept. Roga Nidan & Vikriti Vigyan, I.P.G.A.E&R at S.V.S.P
³MD (kaya chikitsa) Senior Research Fellow, National research institute of Ayurvedic Drug Development, 4CN Block Sector V, Bidhannagar, Kolkata 700091, West Bengal.

Email: ayurveda.ab@gmail.com

ABSTRACT
Out of seven dhatus in body, asthi is important as it holds the body in specific. In the present era, the prevalence of the diseases related to asthi, sandhi is very common, resulting in the crippling state of the patients. The disease related to bone and joints are concomitant in nature. The pain and immobility is the intense characteristic of the bone related diseases. Asthikhsaya, asthyavrita vata, asthigata-vata, sandhivata are the specific diseases of asthivaha srotodusti and very much classified in bone disease. To combat the feature of asthivaha srotodusti kapardaka bhasma is therapeutically evaluated. All the results were analyzed statistically before and after treatment.

Keywords: Asthivaha srota, kapardaka bhasma

INTRODUCTION
Dosa, dhatu and mala are the main factors for the formation and regulation of the body¹. Dosa plays an important role to affect the dhatu resulting in several diseases in accordance with the affliction of respective dhatu². Out of seven dhatus, asthi is important as it holds the body in specific³. The mula of asthivaha srota is meda and jaghan & asthi is formed by the absolute function of asthyagni⁴. Altered function of asthi is caused due to the alteration of host (ashti dhatu) and guest (marut and vyom) relationship. Marut and vyom are the ashrayi of asthi. The intrinsic causative factor for the production of any disease is either dhatu kshaya or avarana⁵. In the present era, the prevalence of the diseases related to asthi and sandhi is very common resulting in the crippling state of the patients⁶. Aggravation of ruksha guna of vayu causes degeneration in asthivaha srota.
and asthi in specific. The pain is intense characteristic of the bone related diseases and subsequently there will be the immobility. The diseases related to bones and joints are concomitant in nature. Asthikhsaya, asthyavrita vata, asthigata vata, sandhi vata are the specific diseases of asthivaha srotadusti(7) and very much classified in disease state. The characteristics of asthivaha srotadusti are reflected in relation to the characteristics of those diseases. Asthivaha srota get vitiated due to intake of vataja ahar vihar, uppeshan, abhishyandi bhojan, abhighata and prapidan(8). The dhatu kshaya in respect to asthikhsaya is manifested by kesha loma nakha smasru prapatan and sandhi shaithilya(9) and subsequently produced the disease like adhyasthi, adhidanta, danta bheda, asthi shula, vivarnata(10) etc. Asthivaha srotadusti is caused due to either avaran or dhatukhsaya. Asthigata vata is manifested by asthi parva bheda, sandhi shula, mansa bala khsaya, aswapna, satata ruka etc. and likewise asthyavrita vata is manifested by sparsham asthyanam avrite tu ushnam pidanam cha abhinandite sanbhajjate shidati suchi bhiriba tudyate(12). It is also profoundly noted that, asthi majjavrita vata and asthi majjagata vata are characterized by identical features. Therefore, in asthikhsaya, sandhi gets effected, characterized by sandhi shula which is also a supportive feature of sandhivata(13).

AIMS AND OBJECTIVES
1. To evaluate the concept of Asthi and Asthivaha srota.
2. To evaluate the role of Vayu in the pathogenesis of Asthivaha srota dusti.
3. To evaluate the diagnostic measures in Asthivaha srota dusti.
4. To evaluate the efficacy of kapardaka bhasma clinically on Asthivaha srotadusti.

MATERIALS AND METHODS

SELECTION OF THE PATIENTS:
Fifty patients having the asthivaha srotadusti lakshan, at the age group of 16 - 70 years were selected from OPD and IPD of IPGAE&R at SVSP hospital irrespective of their sex, occupation and religion, following the exclusion and inclusion criteria.

EXCLUSION CRITERIA:
1. Patients below the age of 16years and above 70 years of age.
2. Patients suffering from any other systemic diseases like hepatic failure, renal failure, cardiac disorder, diabetes mellitus and malignancy and thyroid disease.
3. Patients with certain symptoms not satisfying the subjective criteria of asthivaha srota.
4. Patients presenting the asadhya lakshna.
5. Patients receiving any other supplementary therapy.
6. Patient of majjaksaya, mamsa medogata-vata, mamsavrita vata, carcinometosis and fracture.

INCLUSION CRITERIA:
1. Patient above 16 years of age and below 70years of age.
2. Patients willing to include themselves in the study.
3. Patients having the signs and symptom of asthivaha srotodusti.
4. Primarily detected asthivaha srotodusti not taking any medicines,
5. Patients satisfying the maximum subjective criteria for asthikshaya.

SUBJECTIVE PARAMETERS FOR ASTHIVASA SROTO:
Kesha, loma, nakha, samshru prapatan, srama, sandhi shaithlya, rukshata, parusya asthi toda, samsparsham ushnam peedunam cha ubhinandati, sanbhajyateseedati suchithiriva tudyate, asthibheda, parvabhed, sandhishula, mansa bala khsaya, aswapna, satata ruka, vatapurna driti sparsha, sandhi sotha, prasaran kunchanaya pravritti save-
dana

OBJECTIVE PARAMETERS FOR ASTHIVAHA SROTO:
1. X-Ray of specific Bones and Joints
2. B.M.D (Bone Mineral Density)

3. Blood for TLC, DLC, ESR, Hb%, Blood Sugar (F&PP)
4. T3, T4, TSH
5. Serum Calcium, Serum Phosphate, Serum Alkaline Phosphates
6. Serum oestrogen, progesterone.

TRIAL DRUG:
Kapardaka bhasma was administered in the dose of 500 mg twice daily with honey after principle meal for the period of 3 months.

TRIAL PERIOD: Three month for each patient.

FOLLOW UP: All the patients were reviewed after fifteen days for a period of 90 days.

STUDY SAMPLE: Fifty patients of asthivaha srotodusti have been included in the study.

DROPPED OUT: Among fifty patients, ten patients were dropped during study course, hence complete clinical survey of forty patients was carried out.

STATISTICAL ANALYSIS OF DIFFERENT OBJECTIVE PARAMETER:

Table 1: Haematological Tests

<table>
<thead>
<tr>
<th>Name of the tests</th>
<th>No. of the patients</th>
<th>Mean score</th>
<th>% of relief</th>
<th>S.D.</th>
<th>S.E.M.</th>
<th>‘t’</th>
<th>‘P’</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Hb%</td>
<td>30</td>
<td>11.65</td>
<td>12.08</td>
<td>3.71%</td>
<td>0.507</td>
<td>0.092</td>
<td>5.03</td>
</tr>
<tr>
<td>2. ESR</td>
<td>30</td>
<td>63.43</td>
<td>63.83</td>
<td>0.63%</td>
<td>3.804</td>
<td>0.694</td>
<td>4.22</td>
</tr>
<tr>
<td>3. TLC</td>
<td>30</td>
<td>6051.66</td>
<td>6055.5</td>
<td>0.06%</td>
<td>5.276</td>
<td>0.963</td>
<td>3.63</td>
</tr>
<tr>
<td>4. Neutrophils</td>
<td>30</td>
<td>3571.82</td>
<td>3591.63</td>
<td>0.55%</td>
<td>5.296</td>
<td>0.966</td>
<td>3.24</td>
</tr>
<tr>
<td>5. Lymphocytes</td>
<td>30</td>
<td>2600.66</td>
<td>2604.66</td>
<td>0.15%</td>
<td>6.073</td>
<td>1.108</td>
<td>3.60</td>
</tr>
<tr>
<td>6. Monocytes</td>
<td>30</td>
<td>255.13</td>
<td>255.66</td>
<td>0.21%</td>
<td>0.819</td>
<td>0.149</td>
<td>3.56</td>
</tr>
<tr>
<td>7. Eosinophils</td>
<td>30</td>
<td>59.56</td>
<td>60.26</td>
<td>1.18%</td>
<td>1.149</td>
<td>0.209</td>
<td>3.33</td>
</tr>
<tr>
<td>8. Basophils</td>
<td>30</td>
<td>49.13</td>
<td>50.13</td>
<td>2.04%</td>
<td>2.482</td>
<td>0.452</td>
<td>2.20</td>
</tr>
</tbody>
</table>
**Table 2: Biochemical Tests**

<table>
<thead>
<tr>
<th>Name of the tests</th>
<th>No. of the patients</th>
<th>Mean score BT</th>
<th>Mean score AT</th>
<th>% of relief</th>
<th>S.D.</th>
<th>S.E.M.</th>
<th>‘t’</th>
<th>‘P’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Sugar (Fasting)</td>
<td>30</td>
<td>102.83</td>
<td>99.3</td>
<td>3.43%</td>
<td>3.753</td>
<td>0.685</td>
<td>4.67</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Blood Sugar (PP)</td>
<td>30</td>
<td>138.26</td>
<td>136.0</td>
<td>1.61%</td>
<td>2.344</td>
<td>0.427</td>
<td>5.22</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Serum Calcium</td>
<td>30</td>
<td>3.98</td>
<td>4.06</td>
<td>2.16%</td>
<td>0.104</td>
<td>0.019</td>
<td>2.62</td>
<td>&lt;0.02</td>
</tr>
<tr>
<td>Serum Alkaline Phosphates</td>
<td>30</td>
<td>72.55</td>
<td>74.93</td>
<td>3.12%</td>
<td>4.370</td>
<td>0.797</td>
<td>2.83</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Serum Progesterone</td>
<td>30</td>
<td>7.01</td>
<td>7.19</td>
<td>2.57%</td>
<td>0.355</td>
<td>0.064</td>
<td>2.98</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Serum Estrogen</td>
<td>30</td>
<td>156.9</td>
<td>157.6</td>
<td>0.47%</td>
<td>1.111</td>
<td>0.202</td>
<td>3.61</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Serum T3</td>
<td>30</td>
<td>86.06</td>
<td>86.76</td>
<td>0.81%</td>
<td>1.055</td>
<td>0.192</td>
<td>3.63</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Serum T4</td>
<td>30</td>
<td>6.29</td>
<td>6.44</td>
<td>2.38%</td>
<td>0.303</td>
<td>0.055</td>
<td>2.82</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Serum TSH</td>
<td>30</td>
<td>1.86</td>
<td>1.91</td>
<td>2.70%</td>
<td>0.077</td>
<td>0.014</td>
<td>3.54</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

‘P’ value = level of significance, SE = standard Error, SD = standard deviation, BT = before treatment, AT= after treatment. ‘t’ value = paired ‘t’ test,

**IMAGING TEST**

Selected patients were advised for x-ray of the affected joints before and after administration of kapardaka bhasma. It was observed from the x–ray plate that maximum patients had osteoporotic change and minimum number of patients had normal study. After therapy there was no significant changes found in x-ray.

**INSTRUMENTAL TEST**

Bone mineral density (B.M.D) has been observed in 30 patients. Result of data before and after treatment given bellow.

<table>
<thead>
<tr>
<th>Name of the Test</th>
<th>No. of patients</th>
<th>Mean B.T</th>
<th>Mean AT</th>
<th>% of relief</th>
<th>S.D.</th>
<th>S.E.M.</th>
<th>‘t’</th>
<th>‘P’</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.M.D</td>
<td>30</td>
<td>-2.07</td>
<td>-2.09</td>
<td>0.96%</td>
<td>0.025</td>
<td>0.004</td>
<td>1.45</td>
<td>&gt;0.10</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Samprapti plays a major role in understanding the complete pathogenesis of a disease and is an indispensible factor from the chikitsa point of view. The series of changes taking place within the body right from the nidana sevana until the complete manifestation of disease is entailed by Samprapti. Ayurvedic classics has not mentioned about the samprapti of asthivaha sroto, but, Acharayas have mentioned about the Ashrayaashrayi Bhava which beautifully explains the relationship of various doshas with the dhatu. In order to have a proper interpretation of the samprapti of asthivaha srotodusti, apart from the normal vata prakopa nidana, the main factors for the materialization of the disease, srotopradusaka nidanas of asthivaha, majjavaha and purisavaha srotas should not be neglected, as they also play a definite role, either directly or indirectly in the pathogenesis of asthivaha srotodusti. The proper functioning of Jatharagni, Bhutagni, Dhatwagni is essential for the disease.

"Samyak dhatu posana prakriya" in order to maintain the qualitative and quantitative normalcy of the dhatus while explaining concept of dhatu utpatti. Functional deformity in any...
of these agnis especially the dhatwagnis leads to the vikrti in the transformation of poshaka dhatu (dhatu specific nutrients) into poshya or sthayi dhatu, resulting in dhatu vikrti. Hence, adaptation of the principles of dhatu poshana krama is also carried out in this regard to explain the samprapti of asthivaha srotodusti. Manasika factors also play a vital role in the pathogenesis of asthivaha srotodusti. Thus these factors are also considered to frame up and explain the samprapti of asthivaha srotodusti effectively. Considering the above said factors it is learnt that the Pathogenic mechanism of asthivaha srotodusti is not single mechanism whereas it is a complex mechanism. These mechanisms may be classified as samanya and vishesha samprapti.

Dhatu kshaya and margavarana are the causative factors for Vata prakopa. Owing to the asrayasrayi bhava between asthi and vata dosha the prakopa of the vata dosha is said to be the causative factor for the asthivaha srotodusti. Over indulging nidana lead to the rikta of the srotas due to dhatu kshaya. This leads to vata prakopa and prakupita vata fills in the rikta dhatuvaha srotas and vitiate them further leading to the stronger provocation of its own. This means that the empty srotas which are devoid of snehadi gunas gets filled by the prakupita vata and produces either sarvanga or ekanga rogas. As a result of this, the ahara rasa containing the poshak rasa to the dhatu will not be able to reach and nourish the sthayi dhatu i.e. specific arrangement and permeation of the poshak rasa inside the sthayi dhatu will not be possible and the functions of the dhatwagnis are also affected. As a combined effect of these factors dhatu kshaya occurs. When this altered process occurs in asthi and majja vaha srota that leads to asthivaha srotodusti. The altered function of medagni, asthagni and majjagni diminished the process of formation of poshya and poshak rasa of asthi and majja dhatu.

"Parasparopa samsthabdha dhatu sneha parampara". Asthi and majja dhatu also perform this function of paraspara poshana. The srotapradushaka nidanas of asthivaha and majjavaha srotas are also responsible for asthi kshaya. The aharaaja nidanas such as abhi-syandi and viruddha ahara of majjavaha srotodusti causes margavarananjanya vata prakopa and the vatala ahara vihara sevana explained under asthivaha srotodusti hetu directly leads to vata prakopa, resulting in asthi kshaya. The other nidanas explained under the dusti of both the srotas are specific to abhighata causing vata prakopa and leading to asthimajja kshaya. Purisadhara kala and asthidhara kala are one and the same. Hence, involvement of the purisavaha srotodusti hetus in the pathogenesis of asthimajja kshaya should not be neglected. Purisavega sandhara leads to udavarta, further leading to vata prakopa. Krisa sarira is the main lakshana of vata prakrti person. Hence the prakupita vata causes asthivaha srotodusti. According to the modern science also, lean built and low body mass index (BMI) are the risk factors of osteoporosis. The role of jatharagni is explained as follows-the vitiation of jatharagni leads to the improper digestion of the ahara resulting in the production of ama rasa which contains very less poshakamsas or may totally be devoid of poshakamsas leading to improper
nourishment of the asthi dhatu resulting in asthivaha srotodusti vikrti.
The result of B.M.D is osteopenia due to dhatu kshaya, which ultimately aggravates vayu, and vice versa. After administration of kapardaka Bhasma the haemoglobin percentage increase 3.71%, ESR changes 0.63% which was significant (p< 0.001). In TLC, DLC there is mild variation occur which also significant (p<0.01).

After the therapy blood glucose fasting and postprandial changes found which is significant at p<0.001. Serum calcium is significant (p< 0.02). Serum phosphorus, serum alkaline phosphatase, blood progesterone, blood oestrogen, serum T3, T4, TSH all of them are significant (p<0.01). In imaging test there is no significance changes found after administration of kapardaka bhasma. In this study, it is shows that the bone mineral density was no significant even after therapy. The pharmacological properties of kapardaka as- Rasa – Katu, Guna – Ruksha, Tiksna Vipaka- Katu, Virya – Ushna, Dosha Prabhava- Kaphavataghna.

**CONCLUSION**

Out of seven dhatus, asthi is important as it holds the body in specific. Dhatyagni plays important role to produce asthivaha srotodusti. Owing to the asrayasrayi bhava between asthi and vata dosha the prakopa of the vata dosha is said to be the causative factor for the asthivaha srotodusti. Kapardaka has ushna guna and katu rasa and vata kapha nashak property and therefore it acts on asthivaha srotodusti based on samanya siddhanta. The obtained result highlight the dictum of treatise of ayurveda that kapardaka bhasma is selective medicine for asthivaha srotodusti and also a good remedy for the same though in B.M.D study and X-ray finding are not showing any changes yet clinically kapardaka bhasma giving relief to the patients on clinical perspectives.

**REFERENCES**


& Vimansthan, Chapter 5, Sloka 8, page 250.


Source of Support: Nil
Conflict Of Interest: None Declared