STUDY OF ASTHI DUSHTI LAKSHANAS IN RELATION WITH BONE MINERAL DENSITY

Umesh W. Yelne *
Assistant Professor, Mahatma Gandhi Ayurved College Hospital & Research Centre Salod (H), Wardha, Maharashtra, India

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*Corresponding author
E-mail: drumeshyelne@gmail.com

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ABSTRACT

Ayurveda provides healthy and disease free life. Asthithidatu (Bone) is responsible for appropriate posture of the body. During the age of 20 to 30 body build more bone than lose. It reaches to peak density between 25 and 30. There after bone mass begins declining at the age of 30, it is essential to build bone strength as much as possible at this age. Now a days, this declination gets accelerated due to changing food habits, eating disorders, unhealthy diet, increasing stress factors, excessive smoking & alcohol & lack of exercises. In practice, no one is going to investigate for bone mineral density so this is helpful to estimate BMD score clinically. This may be useful for Ayurvedic Physician as a diagnostic tool in future. In statistical analysis Correlation coefficient (r) = -0.7898, considered as moderately Negative. This study correlate the Asthivaha Strotodushti lakshana i.e. Asthipradoshaja vicar, Asthi kshaya lakshana and Asthi vriddhi lakshana with the bone density value.

Keywords: Asthipradoshaja vicar, Asthi kshaya lakshana, Asthi vriddhi lakshana & BMD.

INTRODUCTION

Ayurveda is one of the ancient and most reliable systems of medicine in the world; its antiquity goes back to the ancient Vedas. Concept of Sharira (Anatomy) is distinctive and has been described with its applied aspects. Description of Strotas (channel) has been dealt in depth in Shareera Sthana of Sushruta, which is difficult to understand. Strotas (channel) is the structures originates from vacant spaces, spread throughout the body and purvey materials and apart from the Sira (vein) & Dhamani (artery). With the study of single Shastras, a physician can never catch the true import, therefore a one should study as many allied branches as possible. This study concentrated to understand Strotas (channel) in detail regarding Asthivaha strotas with special reference to Asthivaha strotodushti lakshanam with its applied aspect. Further these applied aspects correlate the symptoms clinically with the objective finding of bone density score. Topic was decided to correlate the Asthivaha strotodushti lakshanam (asthi pradosha vicar, asthikshaya lakshana and asthi vriddhi lakshana) with bone mineral density score.

Aim and objective

To establish a relationship between Asthi dushti lakshana and bone mineral density
1) To assess the symptoms of Asthi pradosha vicar
2) To assess the symptoms of Asthikshaya
3) To assess the symptoms of Asthi vriddhi

MATERIAL AND METHOD

Study design- Observational study
Research protocol approved by IEC- Ref. CARC/IEC 10/22/2010-11
Sample technique- convenient sampling

No. of patients 100
All patients with classical signs of Asthivirdhidi, Asthikshaya & Asthipradoshaja vyadhi as described in the text were selected for the study.
The patients of Dantavivar, Keshavivar and Nakhvikrut were included as Dant are said to be the upadhatus whereas Kesha and Naka are the Mala of Asthithidatu.

Inclusion Criteria (Table 1)
1. Age between 30 to 50 years
2. Either Sex irrespective of socioeconomically status
3. Classical signs of Asthi Dhatu Dushhti

Patients presenting with at least two symptoms from any one of the group were included in the study.
Informed consent was taken from all the participants of the study.
CRF was filled after obtaining the information from the participants.
Bone mass density of all these participants was performed.

Exclusion Criteria
1. Congenital anomalies
2. Any major illness
3. Ages below 30 and above 50 yrs
4. Crushed vertebral bone
density.
5. Fatty patients

The subject undergoing this study was informed about the nature of study and written consent from each subject was taken.
Method used for this project is mostly based on the Trividha Pariksha- Darshan (Inspection), Sparshan (Palpation) and Prashna (Interrogation). Past history of any pre-existing diseases were noted. Then BMD had done with the help of CM-200 Ultrasound Bone Densitometer.
Table 1: Symptoms of Asthi dusthti lakshanas classified in three groups

<table>
<thead>
<tr>
<th>Dhatu</th>
<th>Asthi Updhatu</th>
<th>Mala</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthi</td>
<td>Danta</td>
<td>Kesha</td>
</tr>
<tr>
<td>Adhyashti</td>
<td>Adhidasant</td>
<td>Kesha vicar</td>
</tr>
<tr>
<td>(Extra growth of bone, bone growing over another)</td>
<td>Extra teeth (redundant teeth)</td>
<td>(Disease of hairs)</td>
</tr>
<tr>
<td>Astishul</td>
<td>Dantshul</td>
<td>Lom vicar</td>
</tr>
<tr>
<td>(Being pierced with a Shakhu (spear) in the inside of body)</td>
<td>(Being pierced with a Shakhu (spear) in the inside of tooth)</td>
<td>(Disease of hairs on body)</td>
</tr>
<tr>
<td>Astitod</td>
<td>Dantabhangva</td>
<td>Smashru vicar</td>
</tr>
<tr>
<td>(Pain like Pricking with needle in bone)</td>
<td>(Brittleness of teeth)</td>
<td>(Disease of Mustache hair)</td>
</tr>
<tr>
<td>Astibheda</td>
<td>Dantbheda</td>
<td>Nakha bhanga</td>
</tr>
<tr>
<td>(Fracturing or wounding a bone)</td>
<td>(wounding a teeth)</td>
<td>(Brittleness of nails)</td>
</tr>
<tr>
<td>Sandhishlahitya</td>
<td>Dantvivarnata</td>
<td>Nakha Rakshata</td>
</tr>
<tr>
<td>(Looseness in joint)</td>
<td>(Discoloration of teeth)</td>
<td>(Dryness of nails)</td>
</tr>
<tr>
<td>Dantarukshata</td>
<td>Dantarukshata</td>
<td></td>
</tr>
<tr>
<td>(Dryness of nails)</td>
<td>(Dryness of nails)</td>
<td></td>
</tr>
</tbody>
</table>

Procedure of measuring BMD
During measurement apply the gel to heel and give the position to foot, align cylinder then press start key. Within 10 seconds, result was on the screen & BMD score was noted on the CRF prepared for this study.
The World Health Organization has established the following diagnostic guidelines:
T-score -1.0 or greater is "normal"
T-score between -1.0 and -2.5 is "low bone mass" (or "Osteopenia")
T-score -2.5 or below is “osteoporosis”.

RESULTS
Enrolled patients were assessed with the help of assessment criteria and recorded in the CRF. Observations recorded were analyzed for correlation of Asthi dhatu lakshanas and BMD by calculating correlation coefficient. The observations are as follows.

1. B.M.D. score according to symptoms

Asthipradoshaja Vyadhi

![Figure 1: BMD score according to symptoms of Asthipradoshaja Vyadhi](image)
Asthikshyaja Lakshana

Figure 2: BMD score according to symptoms of Asthikshyaja Lakshana (X-axis represents symptoms and Y-axis represents number of patients)

Asthivriddhi Lakshana

Figure 3: BMD score according to symptoms of Asthivriddhi Lakshana (X-axis represents symptoms and Y-axis represents number of patients)

Statistical Analysis

Statistical analysis shows Negative Correlation between Asthivahastrutodushti lakshanani and Bone mineral Density Score. Correlation coefficient (r) = -0.7898, considered as moderately Negative.15

Figure 4: Negative correlation (X-axis represents number of patients and Y-axis represents Bone mineral density score)
The above correlation shows that, as the symptoms increased the BMD score gets decreased. It means there is negative correlation between them. But this negative correlation is seen only in Asthipradoshaja Vyadhi and Asthikshayaja Lakshana not in Asthivrididdhi lakshana.

DISCUSSION

Acharya Sushrut quoted that, Dhatu is that entity which acts as a stabilizing pillar of the body. Asthi (Bone) gives support to the body and maintain upright position of the body. The study was carried out to establish relationship between Asthidushti lakshana and bone mineral density score. The motive behind this clinical observation is to establish a new diagnostic tool and estimate the bone density score with symptoms present of Asthidushi.

In today’s perspective bone related diseases are very common and seen in early ages, because of fast life style changes, lack of exercise, unhealthy diet, disordered eating & increase stress all these factors affect the micro architecture of bone slowly. For this study patient of Asthidushti lakshanas were selected. Most of the lakshanas observed in this study were related to Updhatu and Mala of Asthi Dhatu. 16

More Lakshanas of Asthipradoshaja vyadhi were observed in those with BMD score -2.5 or below i.e “osteoporosis as compared to the Normal and Osteopenic BMD score. In Normal score 2 to 3 symptoms were observed, in patients having Symptoms of Asthiriddhi were observed in Osteopenia 3 to 4 symptoms were observed whereas in Osteoporosis 6 to 7 symptoms were observed.

Symptoms of Asthikshayaja were observed more in Osteoporotic BMD score than that of Normal and Osteopenic BMD score. Observation also shows the increasing pattern of the symptoms in Asthikshayaja lakshana i.e. In Normal score of BMD 0 to 1 symptoms was observed, In Osteopenia score of BMD 4 to 5 symptoms were observed and In Osteoporosis 6 to 7 symptoms were observed. As the lakshanas were increased the BMD score decreased.

Asthipradoshaja Vicar and Akshayaja lakshana can be estimated with the help of Bone Density Score. But in case of Asthi vrididdhi lakshana this can’t calculate with BMD Score. Symptoms of the Asthiriddhi were observed more in Normal BMD score than that of the Osteopenic and Osteoporotic BMD score. Observation didn’t show any correlation in symptoms. In Normal 1 to 2 symptoms was seen, In Osteopenia 0 to 1 symptom In Osteoporosis 0 to 1 symptom was found.

CONCLUSION

Asthivaha Srotodushi Lakshana can be correlated with Bone Mineral Density Score. BMD score can be estimated with the help of assessment of Asthipradoshaja vyadhi and Asthikshayaja Lakshana. But Asthivridddhi lakshana can’t assess with the Bone Mineral Density Score. Occurrence of the Asthipradoshaja lakshana and Asthikshayaja lakshana according to BMD are as follows;

<table>
<thead>
<tr>
<th>BMD score</th>
<th>Asthipradoshaja vyadhi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (-0.1 to 0)</td>
<td>Asthishula, Adhyasthi, Asthodita</td>
</tr>
<tr>
<td>Osteopenia (-1.1 to -2.5)</td>
<td>Asthishula, Keshavica, Asthitoda, Aistbhabda</td>
</tr>
<tr>
<td>Osteoporosis (-2.5)</td>
<td>Asthishula, Keshavica, Nakhabhada, Kshitodi, Aistbhabda, Dantavarnata, Adhidanta</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMD score</th>
<th>Asthikshayaja Lakshana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (-0.1 to 0)</td>
<td>Asthishula</td>
</tr>
<tr>
<td>Osteopenia (-1.1 to -2.5)</td>
<td>Asthishula, Keshapatan, Deharukshata, Dantavarnata, Nakharukshata</td>
</tr>
<tr>
<td>Osteoporosis (-2.5)</td>
<td>Asthishula, Keshapatan, Nakharukshata, Shrama, Dantavarnata, Deharukshata, Sandhishtalayi.</td>
</tr>
</tbody>
</table>

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