ASTHI VIKARAS AND ASTHI SHARIRA: A REVIEW BASED ON AYURVEDA LITERATURE

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INTRODUCTION

Ayurveda is one of the oldest systems of medical science belongs from India provides different therapies and treatment modalities for the management of various disease. Ayurveda encompasses principles of philosophy, medicine, surgery and diseases. The different tissue participated towards the composition of body and Asthi (bones) tissue is one of them. Asthi along with Snayu & Mansa help to make connective & movable body framework. The Asthi Sharira acts as frame work of body and mainly associated with Snayu, Mansa, Dhanni and Sira. This article deals with various ayurveda consideration of Asthi Sharira & disease associated with this system.[1-3]

Ayurveda mentioned different types of Asthi depending upon shape & sizes such as: Kapalasthi which is flat in nature, it covers and protects the brain. Valayasthi which is round & hemi circle in shape. Tarunasthi which is soft in nature like bones of child. Nalikasthi is long tubes like & reed shaped. Ruchakasthi involve taste sensation & utilized to chew food.[4,5]

Anatomical positioning of some Asthi

- **Kapalasthi:** Asthi located in Nitamba, Ganda, Tala, Shankha, Vankshana and Amsa.
- **Valayasthi:** Asthi located in Pada, Uru, Parshva Pada, Hasta, Griva and Pani.
- **Tarunasthi:** Asthi located in Karn, Greeva, Bhoja and Ghrana.

- **Nalikasthi:** Asthi located in Pada Anguli, Pada Tala, Kurcha, Hasta Anguli & Jungha Asthi.
- **Ruchakasthi:** Danta Asthi & Asthi of other stiff parts.

Number of Major Bone in Body

The number of bone in limb region is that 03 bones in each finger, 10 in planter region, 01 in the heel, 02 in calf, 01 in knee and 01 in the thigh total 30 bones found in lower extremity. 05 bones present in the pelvic region, 36 bones in each side of the thorax and 30 bones in the back. Chest comprises by 8 bones, there are 12 ribs in each side, 09 bones in the neck and 04 in the trachea. There are 02 bones in the lower jaw, 32 in teeth, 03 bones in the nose, 01 in the palate, 02 in cheek, 02 in ears, 02 in temporal region and 06 in the cranium.

Major Groups of bones

- 03 groups of bone in each ankle knee and hip.
- 01 group in pelvis and in the skull.
- 03 groups in superior extremity in the wrist, 01 in the elbow and 01 in the shoulder.

KEYWORDS: Ayurveda, Asthi, Sharira, Anatomy, Samhita, Disease.
Figure 1: Types of Joints.

Table 1: Major bone of human skeleton as per modern science.

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Types of Bone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skull bone</td>
<td>Cranium, Mandible and Maxilla</td>
</tr>
<tr>
<td>Shoulder girdle bone</td>
<td>Clavicle and scapula</td>
</tr>
<tr>
<td>Arm bone</td>
<td>Humerus, radius and ulna</td>
</tr>
<tr>
<td>Hand bone</td>
<td>Carpals, Metacarpals and Phalanges</td>
</tr>
<tr>
<td>Chest bone</td>
<td>Sternum and Ribs</td>
</tr>
<tr>
<td>Spine bone</td>
<td>Cervical area, Thoracic, Lumbar</td>
</tr>
<tr>
<td>Pelvic bone</td>
<td>Ilium, Pubis and Ischium</td>
</tr>
<tr>
<td>Leg bone</td>
<td>Femur, Tibia and Fibula</td>
</tr>
<tr>
<td>Ankle bone</td>
<td>Talus and calcaneus</td>
</tr>
<tr>
<td>Foot bone</td>
<td>Tarsals, Metatarsals and Phalanges</td>
</tr>
</tbody>
</table>

Kandabhagna

The Bhagna means break in motion; fracture or trauma, this involve bending, fragmentation and cracking of different types of bone due to the injury. Tarunasthi, Nalkasthi, Kapalasthi, Ruchkasthi & Valayasthi may sometimes get injured and break which leads discontinuation of motion in particular body area. Kandabhagna associated with conditions such as; Shvyathubahulyam (swelling), Sparshasahismutvam (tenderness), Avapidyamane shabda, Vividhavedanapradarubhavah (pain) & Sarvasu Avasthasu Na Sharmalabha. The modern science also describe various types of fractures (Bhagna) such as; phalanx fracture or dislocation, foot bone fracture, fracture of Tibia – Fibula or Femur, fractured arm, hip joint dislocation, cracked or bruised femur fracture & iliac fracture.[6,7]

Types of Kandabhagna depending upon injury in Asthi

- **Karkataka**: The fracture which involves shape similar to crab is called karkataka.
- **Ashwakarana**: Asthi projects like the ear of horse.
- **Churnitam**: Asthi fractured into fragments or in powder form.
- **Pichhitam**: Asthi is compressed as sandwiched between two opposite forces.
- **Astichallita**: Fracture fragment slightly elevates into one side.

- **Kanda bhagna**: Shaft of the bone is fractured associated with abnormal movement.
- **Majjanugatam**: Fracture associated with displacement of bone marrow.
- **Atipatitam**: Fracture throughout the plane of the bone.
- **Vakra**: Asthi become bent without breaking especially in children.
- **Chinnam**: Fracture in which continuity of the bone infringe only at one side.
- **Patitam**: Bone fractured partially and multiple cracks along with pain.
- **Sputita**: Fracture with pricking pain associated with hair line crack.

MAJJADHATU KSHAYA

The formation of Asthi Dhata involves creation of spaces in bones through the Vata. These spaces further filled with fat known as Majja (Bone marrow). Majja Dhata is Asthi Dhata flows through the Srotas known as Majja Vaha Srotas into the Majja Dhara Kalu and utilized by Majjagni. Majja Dhata help to nourishes body; provide strength and boost Shukra Dhata. Sometimes the equilibrium of Doshas, Dhatus and Malas is disturbed due to the Pragyaparadha, Asatmyendriyarth Samyoga and Parinama which further leads Majja Kshaya. Asthiuparanam is maintained by Majja Dhata therefore Majja Kshaya involves disturbed equilibrium of Tridosha & Asthi Dhata. The clinical features of Majja Kshaya are Asthi Daurbalaya, Asthi Laghuta, Asthi Saushiryta, Asthi Nistoda, Alapshukrata, Timir Darshnam & Bhrama etc.

The aggravation of Vata Dosha associated with Aharaja, Vihara and Manasa Nidanas are responsible for Majja Kshaya. Vata Prakopa due to the Dhata Kshaya in Vridhavastha also described as Kalaja Nidana of disease, Vata Vardhaka Nidana and Kalaja Nidana leads Vata Prakopa which further causes Asthi-Majja Vaha Srotodushhi; these all together resulted Atipravarti, Sthanasamshraya of Dosha in the Asthi-Majja where Kha-Vaigunya present and Dosha Dushya Sammurchhana occurs in Asthi-Majja and Majja Kshaya take places. The management of disease involves pacifying vata dosha & good conduction of life style.[8-10]

Osteomalacia

Osteomalacia is the pathological condition which involve softening of bones due to the impaired bone metabolism & deficiency of phosphate, calcium and vitamin D. The inadequate bone mineralization takes places due to the impairment of bone metabolism. The signs and symptoms of disease are pain, weakness & fragility of the bones. The deficiency of vitamin D due to the inadequate exposure to sunlight and diet supply mainly considered as etiological factor. The primarily treatment approach involve supply of Vitamin D and calcium supplements through nutritional diet.
Osteomalacia persist condition of pains in the lumbar and thighs region. The pain is symmetrical, non-radiating and associated with sensitivity of bones. Bones become less rigid & deformed. The other causative factors of disease are renal tubular acidosis, malnutrition during pregnancy, malabsorption syndrome, hypophosphatemia, celiac disease & cadmium poisoning.

Rickets
Rickets is similar to osteomalacia but instead of adult occurs in children. It involves defective mineralization or calcification of bones due to deficiency or impaired metabolism of vitamin D & phosphorus in children. It is also associated with bone deformity. Rickets mainly affect children in developing countries due to lack of calcium in diet associated with severe diarrhea and vomiting. Malnutrition due to the starvation in childhood & insufficient absorption of minerals are major causative factors. The major signs and symptoms of rickets are tenderness in bone, susceptibility to fractures, skeletal deformities, thinned skull bones and joint bending.

Anatomically children may possess following conditions
Bowed legs, thickened ankles and wrists, knock knees, spinal curvatures of lumbar lordosis, deformity in pelvic bones. Thickening & nodules in the costochondral joints, deformity of a chest & formation of groove, square head, curvatures of the long bone and curved back.

The primarily treatment approach involve use of vitamin D, nutritional supply & surgery for bone abnormalities. Proper supply of dietary calcium, phosphates and vitamin D along with exposure to sunlight offer beneficial effects. Use of cod liver oil, halibut-liver oil and viosterol also improve clinical symptoms. [6-12]

CONCLUSION
Ayurveda believe that the understanding of anatomical & physiological functioning of human body is very essential to cure diseases conditions and keep healthy physical & maintain status. This article described some diseases related to Asthi (bone tissue) along with structural concept of Ashthi Sharira. The knowledge of Ashthi Sharira provides vital information related to the causes and treatment of diseases which are mainly associated with bone & skeleton system. The skeleton system is basic supportive framework of human body. There are various disorders which come under the heading of Asthi Vikaras, this article concluded that the physiological & anatomical knowledge of Asthi Sharira help greatly in the management of Asthi Vikaras.

REFERENCES