Pathophysiological understanding of Asthivaha Srotas Dushti WSR to the osteoarthritis and osteoporosis

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Abstract

The World Health Organization defines osteoporosis as "a progressive systemic skeletal disease characterized by low bone mass and microarchitectural damage of bone tissue, with consequent increase in bone fragility and susceptibility to fracture." Osteoporosis is considered a serious public health problem. According to the 2001 census, there are approximately 163 million Indians above the age of 50. This number is expected to increase to 230 million by 2015. Even conservative estimates suggest that 20% of women and about 10-15% of men should be osteoporotic. So the total affected population would be around 25 million, this number may increase up to 50 million. According to the classics, Asthi Kshaya has Lakshanas like Asthi Shoolam, Kesha, Loma, Nakha, Dwija Prapatanam, Sandhi Shaithilya. As some of the Lakshanas of Asthi Kshaya resemble the signs and symptoms of osteoporosis, it can be compared to osteoporosis to some extent.

Keywords: Asthikshaya, vata dosha, postmenopausal osteoporosis

Introduction

Ayurveda is an ancient science of life that deals with both preventive and curative aspects. He explains the human body as a "pleasant homeostasis" of Doṣha, Dhatu and Mala. The function of Dhatu is Dharana Sharira [1].

Osteoporosis is one of the main symptoms, which is increasingly perceived as a serious disabling disease in women over 40 who reach Rajonivrti. It is not mentioned as a disease in the classical texts of Ayurveda. Still, according to Acharya Sushruta it can be considered Swabhavabala Pravritta Vyadhi [2]. Rajonivriti occurs in Sandhikala Praudhawastha and Jarawastha where Vata begins to overpower Pitta Dosha and leads to Kshaya of all Dhatus [3]. According to the principles of Ashrayaashrayi Bhava by Acharya Vagbhata [4] Asthi Dhatu is the seat of Vata Dosha [5] and is indirectly related to each other i.e. if there is Vata Vruddhi there is Asthikshaya.

Asthikshaya arises due to two main mechanisms, the first is lack of nutrients suitable for bone nutrition due to malnutrition or catabolic activity of Vata Dosha and the second is Srotoavarodha which prevents the supply of nutrition to the Asthivahasrotas due to imbalanced Agni i.e. with Jatharagnimandhaya and Dhatwagnimandhaya resulting in creation of Ama. It can also occur as a result of a combination of both.

The World Health Organization defines osteoporosis as "a progressive systemic skeletal disease characterized by low bone mass and microarchitectural damage bone tissue with a subsequent increase in bone fragility and susceptibility to fracture." Low estrogen levels cause an imbalance in bone reabsorption and remodeling, leading to accelerated bone loss [7]. Although most of the Samhita explained the Asthi Dhatu, its structure, function and various diseases, a detailed description about the Nidana Panchakas of the Asthikshaya is not available in our classics.

Considering the above factors in this study, an effort is made to understand the Nidana Panchak of Asthikshaya with special reference to postmenopausal osteoporosis.

Nidana

Samanya Dhatukshaya Nidana [8]

- Ativyayama (excessive exercise)
- Anashana (fasting)
- Ati Chinta (worry)
- Rukshashana (intake of dry food)
Acharayas mentioned Ashrayaasrayi Bhava which beautifully explains the relationship of different Doshas with Dhatus. According to this theory, Vata Ashrayi is Asthi Dhatu beautifully explains the relationship of different Doshas with

A functional distortion in any of these Agnis, especially Dhatwagni, leads to Vikruti in the transformation of Posaka Dhatu (Dhatu-specific nutrients) into Posya or Sthayi Dhatu, leading to Dhatuvikruti. So adaptation of Dhatu Posana and Kapha Kshaya show symptoms like Shoola, Rukshata, Ruja, Shrama etc.

Dushya: Asthi is the main Dushya in this disease with its Mala, Nakha and Kasha. But Kasha of all Dhatus also occurs in later stage i.e. all Dhatus including theirs Upadhatus can be considered as Dusyas.

Ati Ashana (excessive eating) leads to poor Dhatu formation, by affecting Dhatvagni and Bhutagni.

Agni: In old age, Jatharagni Vaishamya leads to poor Dhatu formation, by affecting Dhatvagni and Bhutagni.

Ama: Jatharagnijanya Ama and Dhatvagnijanya Ama

Srotas: Medavaha, Asthivaha, Majjavaha, Purishavaha Srotas.

Sroto Dushti Laksana: Sanga.

Udbhava Sthana: Ama Pakwashaya.

Sanchara Sthana: Rasayani.

Vyakta Sthana: Asthi Dhatu, its Upadhatu Danta and Mala Kasha, Nakha, Roma and Sandhi.

Adhisthana: Asthi and Sandhi.

Roga Marga: Madhyama Roga Marga.

Roga Prakriti: Chirakari.

When we go through the classics we cannot find Poorvarama of Asthikshaya. Vataavardhaka Nidana along with other Nidana itself forms Nidana for Asthikshaya due to Ashraya Bhava of Vata and Asthi. So Vridhdhavata causes Asthi Kshaya disease. As we all know Poorvarama in Vataavadyadi is Vyakta. Chakrapani clarified in his commentary that Vyakta can be taken as Alpavyakta or as Asamopornalakshana or as mild Lakshana. So Lakshana in their mild form can be considered as Poorvarama of Asthikshaya in the initial stage of the disease. Manda Vedana

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Alpaashana (intake of less food)
Vataataapa Sevana (exposure to dust and sunlight)

Blaya, Shoka (excess of worry, grief, fear.)

Rukshapana (intake of dry liquid like Ruksha Madya)

Prajaragya (waking at nights)

Ativartana (Ayadhiha Pravrutti) of Kapha, Rakta, Shukra, Mala,

Kala (time factor (Adana Kala and Vridhavasta)

Bhutopaghata (invasion of Bhuta, Preta etc.)
(dull aching type of pain) in Asthi, Sandhi and Mildness of other Lakshana like Kesha, Roma, Nakha, Danta Vikara (Shadana and Bhanga) can be considered as Purvarupa of Asthikshaya disease.

Rupa

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Lakshanas</th>
<th>Ch</th>
<th>Su</th>
<th>A.S</th>
<th>A.H</th>
<th>H.S</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Asthibhedha</td>
<td>+</td>
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<tr>
<td>2.</td>
<td>Asthitoda</td>
<td>-</td>
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<td>3.</td>
<td>Raja</td>
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<td>4.</td>
<td>Asthi Shula</td>
<td>+</td>
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<tr>
<td>5.</td>
<td>Kesha Vikara and Patina</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
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<tr>
<td>6.</td>
<td>Loma/Roma Vikara and Patina</td>
<td>+</td>
<td>-</td>
<td>+</td>
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<tr>
<td>7.</td>
<td>Nakha Vikara and Patina</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>8.</td>
<td>Smashru Vikara and Patina</td>
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<td>-</td>
<td>+</td>
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<tr>
<td>9.</td>
<td>Danta Vikara and Patana</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>10.</td>
<td>Sirama</td>
<td>+</td>
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<td>11.</td>
<td>Sandhi Shaiithiya</td>
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<td>Asthibadda</td>
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<td>15.</td>
<td>Mamsabhilasha</td>
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<td>16.</td>
<td>Anga Bhanga</td>
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<td>17.</td>
<td>Ati Manda Chesta</td>
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<td>-</td>
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<td>18.</td>
<td>Bala Kshaya</td>
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<td>+</td>
<td>+</td>
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<tr>
<td>19.</td>
<td>Medo Kshaya</td>
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<td>20.</td>
<td>Vryasya Mandya (Usaha Hani)</td>
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<td>-</td>
<td>-</td>
<td>+</td>
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<td>21.</td>
<td>Vikampama</td>
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<td>-</td>
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<td>22.</td>
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<td>23.</td>
<td>Visangnata</td>
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<td>+</td>
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<td>24.</td>
<td>Shasha</td>
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<td>-</td>
<td>+</td>
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<td>25.</td>
<td>Kathorata</td>
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<td>-</td>
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<tr>
<td>26.</td>
<td>Shophita</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

Upashaya

1. Shali, Rakta Shali, Masha, and another Madhura Rasa Pradhana Dravyas.
2. Lavana Rasa Pradhana Dravya with Amla.
3. Ghrta, Takra, Dadhi, and Dudha.
4. Four. Mamsa, Mamsa Rasa, etc.
7. Vedana Shamaka Oushadhi and Vata Nashaka.

Anupashaya

1. Adhaki, Kalaya, Mudga, Masura, Shushka Shaka, etc.
2. Madhya.
3. Sahasa, Ati Vyayama, etc.

Sadhyasadyata

Asth is at a deep location, or Gambhira Dhatu. Yapya or Kashtha Sadhya is supposed to be the sickness of Gambhira Dhatu [17]. Because it occurs in Jarawastha, the illness Asthikshaya is also known as Asadhyatha. Additionally, when the ailment Asthikshaya manifests in bhedawastha, or the last stage of Kriya Kala. Whereas if the illness is cured, it remains Yapya; nevertheless, if it is not, it transforms into Asadhyatha [18].

Upadrava

If the condition is not effectively managed, it may result in further Dhatu Kshaya, such as Majja Kshaya, Shukra Kshaya, and other Dhatu Kshaya leading to Bala and Oja Kshaya. The most frequent Upadrava of Asthi Kshaya is Asthi Bhagna (fractures), which are caused by Asthi Dhatu's loss of normal texture, strength, and density. The fractures are the primary risk factors for osteoporosis, according to contemporary science.

Pathya-Apathya

<table>
<thead>
<tr>
<th>S. N.</th>
<th>Varga</th>
<th>Pathya</th>
<th>Apathya</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rasa</td>
<td>Madhura-Amla-Lavana</td>
<td>Katu-Tikta-Kashaya</td>
</tr>
<tr>
<td>2.</td>
<td>Shukadhanya</td>
<td>Nava Godhuma, Nava Shali, Rakta Shali, Shashikha Shali</td>
<td>Rajamasha, Nishpava, Mudga, Kalaya</td>
</tr>
<tr>
<td>3.</td>
<td>Shimbhi Varga</td>
<td>Nava tila, Masha, Kulattha</td>
<td>Truna, Koradusha</td>
</tr>
<tr>
<td>4.</td>
<td>Shaka Varga</td>
<td>Putola, Shigru, Fartaka, Lashuna</td>
<td>Jambu, Udambura, Kramuka, Tinduka</td>
</tr>
<tr>
<td>5.</td>
<td>Mamsa Varga</td>
<td>Ushtra, Go, Varaha, Mahisha, Masura, Bheka, Nakula</td>
<td>Shushka Mamsa, Kapota, Paravata</td>
</tr>
<tr>
<td>6.</td>
<td>Jala Varga</td>
<td>Ushnajala, Shratishevtajala</td>
<td>Sheetajala</td>
</tr>
<tr>
<td>7.</td>
<td>Dugdha Varga</td>
<td>Go, Aja, Dadhi (Svadu Dadhi and Amla Dadhi, curd prepared from buffalo milk), Ghrita, Kilata</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Mutra Varga</td>
<td>Gomutra</td>
<td>-</td>
</tr>
<tr>
<td>9.</td>
<td>Madhya Varga</td>
<td>Dhanyamla, Sura</td>
<td>-</td>
</tr>
<tr>
<td>10.</td>
<td>Sneha Varga</td>
<td>Tilaja, Ghrita, Vasa, Majja</td>
<td>-</td>
</tr>
<tr>
<td>11.</td>
<td>Vihara</td>
<td>Veshana, Trasana, Mardana, Sana</td>
<td>Ratri Jagarana, Ativyayama, Adhika Shrama,Aticryavaya, Atri Chankramana, Vegadharama</td>
</tr>
<tr>
<td>12.</td>
<td>Manasika</td>
<td>Sukha</td>
<td>Atichinta, Atibhaya, Atishoka</td>
</tr>
</tbody>
</table>
Osteoporosis

Etymology
Osteoporosis is derived from Latin. Osteon - bone; Porosis – porous Hence it means porous bones.

Definition
World Health Organisation defines osteoporosis 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”. Pregnancy

Secondary Osteoporosis

Endocrine
Cushing’s syndrome
- Thyrotoxicosis
- Hypogonadism
- Pituitary insufficiency
- Athletic amenorrhoea

Drugs
- Corticosteroids
- Long term heparin use
- Anticonvulsant drugs
- Cytotoxic drugs

Inherited
- Turner’s syndrome
- Osteogenesis imperfecta
- Homocystinuria

Nutritional
- Anorexia nervosa
- Alcoholism
- Malabsorption syndrome

Immobility
- General (lack of weight bearing exercises)
- Local (e.g. rheumatoid arthritis,hemiplegia, fracture)

Other (rare)
- Chronic hepatic disease
- Juvenile bone tissue, with a consequent increase in bone fragility and susceptibility to fracture”. Pregnancy
- Masto cytosis

Postmenopausal Osteoporosis

Mechanism of Estrogen Effects on Bone
A number of data in the reproductive stage showed that estrogens may have an impact on bone mass prior to the menopause. In certain research, premenopausal women's bone mass and parity were found to be positively correlated \[19\]. Additionally, albeit not consistently across studies, the use of oral contraceptives has been linked to greater bone density in certain women. In premenopausal women, a number of hypo-estrogenic conditions are linked to decreased bone mass. Amenorrhea is linked to decreased bone density and an increased risk of fractures in female dancers and sports. There is yet little understanding of how estrogen affects bone turnover. However, other theories have been put forth. Both genomic and non-genomic activities may be used by estrogen to affect the skeleton.

Calcitonin theory
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Estrogen receptors theory
The estrogen receptor (ER) has two primary subtypes, ER and Er. In human bone, both receptor subtypes have been found. According to recent research, ER predominates in cortical bone while ER predominates in cancellous bone. Osteoclasts, osteoblasts, and osteocytes—the three primary kinds of bone cells—have all been identified as having estrogen receptors. Several cytokines and growth factors that are involved in the control of bone remodeling are produced as a result of estrogen's actions. Estrogen has a bone-preserving impact that is mostly mediated by how it affects osteoclast activity and number. Lack of estrogen in postmenopausal women is linked to higher levels of interleukin 1 (IL-1), IL-1 and TNF also promote osteoclastic activity, as do tumour necrosis factor (TNF) and granulocyte macrophage colony stimulating factor (GMCSF), cytokines that accelerate osteoclast formation. Interleukin-6 (IL-6) synthesis is also inhibited by estrogen, and more recently, it has been demonstrated that osteoprotegerin production in osteoblastic cells is stimulated by estrogen. For the cytokine RANKL (receptor activator of NF-B ligand), which is crucial for osteoclast formation, osteoprotegerin serves as a soluble decoy receptor. Estrogen effects on osteoclast activity are also mediated through apoptosis activation. Osteoclast apoptosis has been demonstrated to be inhibited by IL-1, IL-6, and M-CSF, whereas transforming growth factor (TGF), whose synthesis is reduced in estrogen-deficient situations, increases apoptosis. Thus, the loss of estrogen at the menopause results in accelerated bone loss and is a major pathogenic factor in postmenopausal osteoporosis.

Signs and Symptoms
Osteoporosis is a silent disease, until a fracture is sustained.

Clinical Findings
- In early stages, following acute thoracic compression fracture, patients exhibit marked discomfort on sitting and standing.
- Gait is normal but slow. Spinal movements considerably reduced, with more restriction in flexion than in extension.
- Dowager’s hump (thoracic kyphosis) may be present as a result of previous anterior compression fractures.
- Involvement of lumber spine is noted by progressive loss in lumber lordosis.
- Axial height may be decreased.
- Paravertebral muscle spasms are palpable and often visible. Spine and paravertebral muscles are tender on palpation and percussion over the level of fracture.
Bony point tenderness is usually absent as the fracture is in the anterior vertebral body of spine which are not palpable.

Most patients are totally pain free during the intervals between compression fractures; whereas some may complain of chronic, dull, aching postural pain in mild thoracic and upper lumbar region. This responds symptomatically to frequent, intermittent horizontal rest.

Loss of height may be up to 2 to 4 cm with each episode of segmental vertebral collapse and progressive kyphosis.

There is no significant loss of height when the lower ribs come to rest on iliac crest due to collapsed spine., yet loss of bone mass continues.

This result in decrease in size of thoracic and abdominal cavities, which are responsible for clinically disturbing side effects – exercise tolerance is reduced.

Abdominal distention, protrusion is a common manifestation secondary to severe lumbar vertebral collapse.

Circumferential pachydermal skin folds develop at the rib and pelvic margins as the disease progresses.

Measurement of Bone Mass or Bone Mineral Density (BMD)
One of the advancements in osteoporosis that has led to greater patient awareness of this condition is the clinical application of bone densitometry. A physician can use bone densitometry to diagnose osteoporosis before the first fracture occurs, as well as to forecast fracture risk in postmenopausal women, males, and patients taking glucocorticoids. Three reasons clinicians do bone mineral density measurements are
1. Diagnosis using the WHO criteria for Osteoporosis.
2. Fracture risk prediction, and
3. Monitoring the natural progression of diseases that affect BMD or monitoring the therapeutic response to Osteoporosis specific treatments.

T scores between -1 and -2.5 represents osteopenia, clinical significance of which is not completely understood.

T score below -2.5 represents osteoporosis and a high risk of fracture.

T score below -2.5 plus one or more fragility fractures is indicative of established osteoporosis.

Bone densitometry measures bone density, not bone turnover or bone stability.

Treatment of Osteoporosis
Modern research accepts "Prevention Is Better than Cure" as the key management strategy for osteoporosis. Medical intervention is only required when the disease manifests and begins to raise the risk of consequences, posing a threat to the patient's life.

Prevention
R Handa claims in his orthopaedics textbook The best ways to prevent osteoporosis include engaging in regular physical activity, eating a diet rich in dietary calcium, magnesium, phosphorus, and other minerals, getting enough vitamin D from the sun, abstaining from tobacco and alcohol use, and avoiding prolonged use of certain medications like corticosteroids, anticonvulsants, heparin, and other similar ones.

Discussion

Nidana
The Asthikshaya Nidana or the causes of AsthiKshaya are not specifically mentioned in the classics. However, the Ashrayashrayi Bhava, which is described in our classics, provides a magnificent explanation of the link between Asthi Dhatu and Vatadosh. This theory holds that Asthikshaya happens when Vata grows and vice versa.

With this idea in mind, we may argue that the Nidana that causes the Vata Dosa to rise also causes the Asthi Kshaya. Rajonivrittiyana Avastha also frequently exhibits a number of Jarawastha symptoms. Rajonivritti might therefore be defined as a component of the aging process that is unique to women. Akalaja Jara (Rajonivritti), Ruksha Ahara Sevana for lifetime, sedentary life style, and low intake of Asthi Posaka Amsa in diet serves as Nidana of Asthi Kshaya.

Asthivaha, Majja Vaha, and Purisha Vaha Srotas as well as factors affecting Jatharagni, Bhutagnis, particularly Parthivagni, Vayuvagni, and Tejasagni, as well as both Upachayakaraka and Apachayakaraka Asthi Dhatwagnis, are other causes of Asthi Kshaya.

Functional malformation in any of these Agnis, particularly the Dhatwagni, causes Posaka Dhatu to change into Posaka or Shthayi Dhatu, which results in Dhatuvikriti. In order to explain the Samprapti of Asthikshaya, the Dhatu Posana Krama principles are thus also applied in this case.

Discussion on Samprapti
Samprapti of Asthikshaya is not a single pathogenic mechanism whereas it is a complex mechanism. Hence Samprapti Asthi Kshaya is explained under two different headings Samanya Samprapti and Vishesha Samprapti.

According to Acharya Charaka, Avruta Marga of Vata causes it to become Prakupita and causes Rasadhi Dhatu Shoshana. Obstruction of normal Gati Vata (Vyanata Vata) occurs due to Margavanara. This affects the functions of ahara rasa viksepa (rasa samvahana), dhatu vyuhana and agni samirana functions of vjana Vata. As a result Ahara Rasa containing posakamsas to Dhatu will not be able to reach and nourish Shthayi Dhatu, Dhatu Vyuhasana i.e. specific arrangement and permeability of posakamsas within Shthayi Dhatu will not be possible and functions of Dhatwagnis are also affected. This signifies the importance of Medodhatvagni. Vitamin D, which is obtained from sterols, is necessary for the absorption of calcium in the body. Therefore, Moola of Asthi Vaha Srotas is rightly considered as Honey. Imbalance in Asthi Dhatwagni leads to improper formation of Shthayi Asthi Dhatu from Poshak Asthi Dhatu. Parathyroid hormone, calcitonin, estrogen, etc. play a significant role in bone metabolism. All these can be classified under the types of Agni operating at different levels.

The relationship of Ashrayashraayi Vata Dosha and Asthi Dhatu is classified under the types of Agni operating at different levels. The Ashrayashrayi Vata Dosa and Asthi Dhatu forms the basic basis for understanding any pathological condition related to Asthi Dhatu.

As a combined effect of these factors, Dhatu Kshaya occurs. According to the principles of Ashrayashrayiibhava explained by Acharya Vagbhata, Asthi Dhatu is the most fictitious to influence among Saptha Dhatu because Vata and Asthi are inversely proportional. In short it can be said that Asthikshaya is caused by Dhatu Kshaya Karaka and Maragavarana Karaka, Nidana Sevana causes Prakupita Vata to fill Rikatata in Astivaha Srotases which are barren Snehadi Gunas and cause Asthikshaya.
Poorna Roopa

We are all aware that Ayvaka is the Poorna Roopa in Vata Vyadhi. Ayvaka can be consumed as Alpa Vyaktata, Asampoorna Lakshanas, or mild Lakshanas, according to Chakrapani's commentary. In a milder form than Asthishula, Toda, Bheda, Shrama, Sandishhaitilya, Danta Shadana, Nakha Shadana, and Danta and Nakha Bhanga emerged.

Rupa

Along with the Laknas of Asthadasa (18 sorts), it was referenced among Acharya Caraka. Along with the Laknas of Kshaya (Rajayakshma), the Laknas of Asthikshaya are detailed in the Harita Samhita. Due to the Asrayasrayi Bhava, Pravrudtha Vata Dosa is the primary cause of Asthi Kshaya. Therefore, the Vata Vruddhi is the cause of the Laknas, which is why different kinds of Vedanas may be seen in the Asthis and Sandhis. Due to the fact that the Dhatu metabolism involves two Pakas, Prasada Paka and Kitta Paka, when the Dhatus are harmed, the Upadhathu and Malas are typically also impacted concurrently. The Prasada Paka and the Kitta Paka are inevitably impacted by a malfunction in Dhatu metabolism due to an inadequate supply of nutrients, which results in the Vikaras of Dhatu.

Conclusion

Asthikshaya is a crippling disease that renders women bedridden for life. The prevalence of postmenopausal Asthi Kshaya is more in people above 40 years of age. Peak bone mass is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. Asthikshaya is one of the Kshayas more in people above 40 years of age. Peak bone density is reached at the age of 30. A

References

