INTRODUCTION

The term osteoporosis coined by Pommer in 1885 literally means porous bone and is defined as a skeletal disorder characterized by compromised bone strength predisposing to an increased risk of fractures. Osteoporosis has been operationally defined on the basis of bone mineral density (BMD) assessment. According to the WHO criteria, osteoporosis is defined as a BMD that lies -2.5 standard deviation or more below the average value for young healthy women (T score of <-2.5 SD).<sup>1</sup>

The early features of osteoporosis are bone pain, muscular weakness and wasting of muscles, general weakness, irritability, fatigue, fractures etc. It is often called the silent disease because the loss of bone occurs silently & progressively and often there are no symptoms until the first fracture occurs. There are three types of osteoporosis, idiopathic osteoporosis with reasons unknown, Type 1 is caused by a lack of estrogen results in loss of the inner layer of bone called the trabecular bone. Type 2 is caused mainly by a lack of calcium and/or vitamin D in the diet; this causes loss of the outer layer of the bone called the cortical bone. From the above it is obvious then that a woman who goes through hysterectomy will be more at risk of Type 1 osteoporosis.

AIMS AND OBJECTIVE

1. To review and analyze available literature of Asthimajja-gata vata and Asthimajja -kshaya described in Ayurveda and osteoporosis in contemporary science.
2. To study the occurrence of osteoporosis in post-surgical (B/L oophorectomy) cases.
3. To review the prospective of Ayurveda in the management of osteoporosis secondary to oophorectomy.

REVIEW

As per the description available with references texts Vata plays a major role in the manifestation of the disease independently and along with kapha<sup>2</sup> it causes srotorodh and improper formation of Asthi as Asthi dhatu prakriyakshaya does reaches to asthihava srotas. Asthivaha and majjaha srotas play key role in the proper functioning of bones and joints. There is an ashrayashrayi bhava in between asthi dhatu and vata<sup>3</sup>, while majja dhatu which is present inside the asthi provides nutrition to the asthi. Equilibrium of asthi, majja and vata is the essential state for the normalcy of bone and joint. The etiological factors like abhighata (surgical trauma / effect of oophorectomy) vata provoking ahara-vihara, virudha ahara-vihara etc aggravate the body dosha<sup>4</sup> especially vata dosha and shlesha kapha. Such provoked dosha especially vata impair the respective agni of asthivaha and majjaha srotas thereby formation of unmetabolised substance ama. This ama generates srotosanga type of srotodushiti of asthivaha and majjaha srotas. Consequently, there is an interruption in the process of formation and supply of the nutrients to bones and joints. Therefore, bones and joints are unable to execute their functions. Such etiopathogenesis reflects clinical features of asthimajjagata vata like asthi-sandhi shoola, stabdha, asthi sushirata etc<sup>5</sup>. At later stage if patient remains untreated lead to the development of severe features like intense and long lasting pain, mamsa-bala kshaya, asvapna etc.<sup>6</sup>

On the basis of the above mentioned symptoms, Asthimajja-gata vata and Asthimajja -kshaya may closely be correlated to osteoporosis. Similar references are also mentioned in Ashthanga hridaya, Chakardatta and Yogatanakar.

Keywords: Oophorectomy, Estrogen, Type 1 osteoporosis, Asthi /Majja-gata vata, Asthi / Majja –kshaya.
TYPES OF OSTEOPOROSIS

1. Idiopathic osteoporosis.
2. Type 1 occurs due to decreased estrogen level. Estrogen inhibits osteoclastic activity so women during climacteric changes, post-menopausal phase and post-surgery (Bilateral oophorectomy) that lack estrogen are particularly susceptible to this type of osteoporosis.
3. Type 2 or involutional osteoporosis due to drop in Vitamin D synthesis seen in people over 70.

Type 1 osteoporosis is commonly encountered in Post hysterectomy cases in which ovaries could not be preserved. Osteoporosis as Post-operative complication is noticed in-

1. Hysterectomy along with oophorectomy
2. Prophylactic oophorectomy

If the ovaries are required to be removed before the menopause during the surgery, this will result in immediate surgical menopause.

Conditions Requiring Hysterectomy Along With Oophorectomy

1. Uterine Carcinoma
2. Carcinoma Cervix
3. Krukenberg tumor
4. Dysfunctional uterine bleeding
5. Ill-defined growths concerning ovaries
6. Uterine fibroids

Prophylactic Oophorectomy: Approximately 78% of women between the ages of 45-64 years underwent prophylactic oophorectomy when hysterectomy is performed for benign disease. This is in practice owing to following reasons:-

1. Reduction in risk of developing ovarian cancer
2. Reduction in risk of developing breast cancer

Most of the patients when taken for the follow-up in post-surgery period for above said conditions whether done in NIA Jaipur elsewhere reports the incidence of this variety of osteoporosis

Available Diagnostic Tools Are

2. Dual-energy X-ray absorptiometry (DEXA) is considered the gold standard for the diagnosis of osteoporosis.
3. Quantitative ultrasound preferably of calcaneal region.
4. Quantitative computed tomography.
5. Chemical biomarkers could be a useful tool in detecting bone degradation.

The WHO has defined a number of threshold values for osteoporosis. The reference measurement is derived from BMD measurement in a population of healthy young adults.

Table 1: Reference values of T-Score in concern to BMD

<table>
<thead>
<tr>
<th>Status</th>
<th>Hip BMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>T-score &gt;-1</td>
</tr>
<tr>
<td>Osteopenia</td>
<td>T-Score -1 to -2.5</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>T-Score &lt;-2.5</td>
</tr>
<tr>
<td>Severe osteoporosis</td>
<td>T-Score &lt;-2.5 &amp; presence of at least one fragility fracture</td>
</tr>
</tbody>
</table>

Present scenario of osteoporosis management includes

1. HRT (Hormonal replacement therapy particularly with estrogens)
2. Calcium & Vitamin D (1000-1500mg of calcium along with 400-800 IU/day of vitamin D)
3. Biphosphonates (Alendronate Sodium)
4. SERM’s (Therapy with selective estrogen receptors modulators)
5. Teriparatide

Associated Complications with Available Therapy

1. HRT with long term estrogen replacement therapy results in bone mass gain of approximately 3-5% over a period of 12 months with the potential complications like uterine & breast cancers, heart disease, pulmonary embolism etc.
2. Calcium and Vitamin D: Prolonged usage lead to GIT disturbances like nausea, vomiting, poor appetite & flatulence, etc.
3. Biphosphonates: Causes GIT related side effects like cramps, dyspepsia, diarrhoea/constipation renal failure etc.
4. SERM’s lead to aggravation of the symptoms of menopausal syndrome & swelling in legs apart from increasing clotting tendency of blood.
5. Teriparatide leads to aggravation the symptoms of leg cramps, dizziness and transient episodes of orthostatic hypotension.

DISCUSSION

Prospects of Ayurveda in the management of Osteoporosis secondary to oophorectomy

There is a systemic pathway of the pathogenesis of asthimajjagata vata and certain factors are involved in the pathogenesis of Asthimajjagata vata. These are as follows-

- Dosh- predominant vata with shleshaka kapha.
- Dushya- Asthi and majja
- Srotas- Asthivaha and Majjavaha
- Srotodushhi- Srotosang and vimargagamana

The line of treatment is designed on the basis of above pathological factors. In asthimajjagata vata, use of sneha both externally and internally is the prime line of treatment followed by Panchakarma (Karmabasti), Balya treatment could be the main stay. Counseling in concern to the life style (Do’s and Don’ts) after the oophorectomy in females could be the most effective measure. Controlled exposure to sun is advisable in the management of this condition. Various Yoga exercises including setubandha sarvangasana, parivratta trikonasan, utthita parsvakonasana, salabhasana, tadasana, arda chandrasana, extended triangle pose in particular could be a very effective physical exercises. *Asparagus racemosus* (Satavari) *Glycine max* (Soya) are the potential sources of estrogen particularly for the females in their climacteric phase and post-menopausal phase. *Saraca indica*, *Centella asiatica*, *Terminalia chebula*, *Glycyrrhiza glabra* could be very effective in this condition. Various calcium supplement (Sudhavargiya) preparation like Godanti, Mukta, Pravaal, Kukkutandatvak Bhasma and Zaharmohara Bhasma are very good calcium supplements. Various herbomineral preparations like Tryodshang Guggulu, Laksha Guggulu could also be a very effective supplement in concern to osteoporosis.

CONCLUSION

The life style moderation, Yoga, Panckarma, various herbal and herbo-mineral preparations possess potential management options for osteoporosis encountered in post-surgery phase in patients that had undergone B/L oophorectomy.
REFERENCES


Cite this article as:


Source of support: Nil; Conflict of interest: None Declared

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