

**A REVIEW ARTICLE ON STUDY OF MAJJA DHATU W.S.R. TO MAJJADHATU
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ABSTRACT

Ayurveda the holistic science suggest the unique principals of Tridosha, Dhatu and Mala for maintenance of the healthy body. Dhatu nourishes the body, supply nutrients to other vital tissues through Strotasa, supports the body and keeps the body healthy. During formation of Asthi Dhatu, Vata creates spaces in bones. These spaces are filled with nourishing tissues of Medas. This is known as Majja or Bone marrow. Majja Dhatu nourishes body, strengthens body, fills bones and nourishes or help in the production of Shukra Dhatu. Due to Pragyaparadha, Asatmyendriyarth Samyoga and Parinama, the equilibrium of Doshas, Dhatus and Malas is disturbed and homeostasis in the body is altered. Asthipuranam is done by Majja Dhatu. That's why Majja Kshaya takes place due to disturbed equilibrium of Tridosha then Asthi Dhatu is most affected. And Asthi Saushirya, Asthi Daurbalya, Asthi Laghuta, Asthi Nistoda, Pratatm Vata Roga, Alapshukrata, Bhrama, Timir Darshnam etc. are developed. The symptoms of Majja Kshaya can be correlated in Modern Science with osteoporosis, vertigo, hollowness in bones and oligospermia etc. The management of Asthi-Majja related diseases is irreplaceable because of the Ashrayaashrayi relationship of Vata Dosh and Asthi Dhatu which is fundamental base to understand any pathological condition related to Majja Dhatu. Thus this review study gives broad glimpse of knowledge about every aspect of Majja Dhatu and its vitiation effects described in Classical texts.

KEYWORDS: Majja Dhatu, Majja Kshaya, Majjavaha Srotas, Majja Utpatti, Osteoporosis.**INTRODUCTION**

Ayurveda the holistic science suggest the unique principals of Tridosha, Dhatu and Mala for maintenance of the healthy body. In Samyavastha the Tridosha regulate all physiological functions of the body. Only Vata is capable of movement and its force keeps the other two Dosh, Dhatu and Mala in motion. Dhatu nourishes the body, supply nutrients to other vital tissue through strotasaa, supports the body and keeps the body healthy. According to Acharya Susruta & Vagbhatta there are seven Dhatu's in body- Rasa (lymph), Rakta (blood), Maamsa (muscles), Medas (fat or adipose tissues), Asthi (bone), Majja (bone marrow), Sukra (semen, sex hormone). Majja Dhatu is the second last Dhatu formed as – unstable (poshaka) Asthi Dhatu movements through the MajjaVaha Srotas into the Majjas Dhara Kala and is digested by the Majjagni. During formation of Asthi Dhatu or Bone, Vata creates spaces in bones. These spaces are filled with nourishing tissues of Medas or fat which is known as Majja or Bone

marrow as stated by Acharya Charaka. The final essence of the Asthi Dhatu which is a semisolid substance becomes Majja in the process of metabolism. Majja Dhatu nourishes body, strengthens body, fills bones and nourishes Shukra Dhatu as described below by Acharya Sushruta. For a healthy body it is important that these Dosh, Dhatu and Mala should remain in Samyavastha. Due to Pragyaparadha, Asatmyendriyarth Samyoga and Parinama, the equilibrium of Doshas, Dhatus and Malas is disturbed and homeostasis in the body is altered. When Majja Kshaya takes place due to disturbed equilibrium of Tridosha then Asthi Dhatu is most affected, because Asthipuranam is done by Majja Dhatu, as described by Acharya Charaka. Majja Dhatu nourishes Shukra Dhatu, so when Majja Kshaya occurs, it causes Alpa Shukrata, as described by Acharya Sushruta. Also, as per Astanga Hridya due to Majja Kshaya, Timira Darshanam which can be due to hypoxia.

Function of Majja Dhatu

1. Snehanam Karma

Majja Dhatu is known as best for Snehan (oleation). So,

2. Balakrita

It is the main source of strength in body, especially for bones. Bones contain small pores due to the activity of Akasha and Vayu Mahabhuta and Majja fills the porous gap with fatty tissues and provides strength to the bones of the body and thus strengthen the whole body. In the absence of Majja, Asthi Daurbalya, Shunayta, Laghuta etc arises in the bones.

3. Shukra-Poshana

Nourishment of Shukra Dhatu is the function of Majja Dhatu. Poshaka Shukra Dhatu is formed during the metabolism of Majja Dhatu.

4. Asthi poorana

Bones contain small pores due to the activity of Akasa and Vayu Mahabhuta and Majja fills the porous gap with fatty tissue and provides strength to the bones of the body otherwise due to Ruksha Guna in bones, Vata Dosha increases and Asthi Bhangurta will occur.

Factors Affecting Asthimajja Dhatu

(1) Prakriti

Prakriti plays a major role in determining the quality of Dhatu which is indicated by description of specific characteristics of persons possessing Vata, Pitta and Kapha dominant Prakriti. This indicates that persons with Kapha dominant Prakriti possess better quality of Asthi Dhatu. Vata Prakriti persons are Alpa Sarira, possess AnavAsthita, Asthi Sandhi (Movable), Alpa and Parusha Keshha, Roma, Nakha, Dashana. This represents inferior quality of Asthi Dhatu. So, Majja Pusti is also of inferior quality. Persons of short stature and less body weight have low bone mass. Vata Prakriti persons are lean and thin- Alpa Sarira.

(1) Nutrients

Asthi-Majja is formed from Ahara Rasa in the process of formation of Dhatu. Hence quality and quantity of Ahara Rasa can interfere with quality and quantity of Asthi-Majja Dhatu. According to Ashraya Ashrayi Sambandha of Asthi and Vayu, Vata Prakopaka Ahara will cause Kshaya of Asthi Dhatu. Asthi-Majja Dhatu Posaka Amsa Alpata in Ahara also leads to poor formation of Asthi and Majja Dhatu. Calcium and vit-D (Asthi Dhatu Posaka Amsa) plays an important role in bone formation. Decreased lifetime calcium intake is a factor causing risk for developing osteoporosis.

(2) Physical Activities

Exercises etc. illuminate Dhatavagni. Bone responds to mechanical stimuli. When placed under mechanical stress, bone tissue increases deposition of mineral salts.

(3) Bala

Overall body weight affect Dhatu metabolism. In strong persons rate of bone formation is more. Compared to

the special indications are given for Majjapan. It oleates and nourishes body organs.

men and women, men possess better strength, bone mass is more in men whereas bone loss is more in women. The living body can function normally only when its Dosha, Dhatu and Mala are in a state of equilibrium. These Dosha, Dhatu and Mala constitute the basis of the physiological and pathological doctrines of Ayurveda. Dosha, Dhatu and Mala are equally important for health. Ayurveda has proved to be effective in managing and preventing chronic ailments till date. Concepts of Ayurveda have been helpful in treating new diseases arising due to changing lifestyles and environment. This study was an attempt to understand the Disease in Ayurvedic concept and find an effective therapy in preventing the disease.

(4) Age

Because of diminishing Agni in older age, all the Dhatu decrease in quantity and quality. Bone favours synthesis in youth and in old age favours resorption. Also, peak bone mass is achieved at the age of 20 years and then bone loss begins which is accelerated in old age

Characteristics of Majja Sara Purusha

Individuals having the excellence of Majja or marrow are characterised by softness of organs, strength, unctuous complexion and voice and robust long and rounded joints. Such individuals are endowed with longevity, strength, learning, wealth, knowledge, progeny and honour. A man with a thin and sinewy body and who exhibits traits of excessive strength and possesses a deep resonant voice and who is successful in every walk of life, should be looked upon as one in whom the principle of marrow preponderates. According to Sushruta, big eyes (MahaNetra) are a differentiating symptom of Majja Sarata.

Causes for Vitiatio of Majjavaha Srotas

1. Abhigata (injury)
2. Utpesa (crushing) of bone
3. Prapidanat (internal injury)
4. Ahar (food) Viruddha and Abhisayandi (foods which are unhealthy, contraindicated and which cause moisture inside the body).

Cause of Majjakshaya

Aharaja, Viharaja and Manasaja Nidanans which cause aggravation of Vata Dosha are said to be responsible for MajjaKshaya. On the other hand, Vata Prakopa also takes place due to the DhatuKshaya in the Parihani Kala that is the Vriddhavastha can be described as Kalaja Nidana of the disease. Vata Doshas plays main role in the disease. Due to Nidana Sevana (Vata Vardhaka Nidana and Kalaja Nidana both), there is occurrence of Vata Prakopa leads to Asthi-Majja Vaha Srotodushti.

Due to this Asthi-Majja vaha Srotodushti which is due to Atipravarti, Sthanasamshraya of Dosha occurs in the

Asthi-Majja where Kha-Vaigunya, is already present and Dosha Dushya Sammurchhana takes place in the AsthiMajja, gives rise to a Sthanika KaphaKshaya and Vata Vriddhi. Vatavriddhi leads to MajjaKshaya.

Chief Symptoms

Asthi Saushirya, Asthi Daurbalya, Asthi Laghuta, Asthi Nistoda, Pratatm Vata Roga, AlapShukrata, Bhrama, Timir Darshnam etc. occur in MajjaKshaya. The symptoms of Majja Kshaya can be correlated in Modern Science with pain in joints, seeing dark in day light, extra hard root like formation in joints, vertigo, hollowness and lightness in bones and oligospermia etc. There is no exact clinical entity mentioned in classics for the above symptoms. Asthi Saushirya, Asthi Daurbalani, Asthi Laghuni, Asthi Shirnta, all these symptoms shows resemblance with osteoporosis. Asthi Kshaya is decrease in the bone tissue and Asthi Saushirya means „porous bones“. Hemadri as commented on the word „Saushirya“ as “Sarandhratvam” which means „with pores“. These symptoms are explained in the context of Majja Kshaya. Osteoporosis means the decrease in the bone tissue. Osteoporosis is defined as a „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. Primary, i.e., involuntal, osteoporosis is clearly the most frequent and also, clinically, the most important bone disease. Osteoporosis must therefore be viewed as the consequence of a specific imbalance of bone remodelling, which leads to net bone loss because formation of new bone by osteoblasts for several reasons does not match the extent of bone resorbed by osteoclast activity.

DISCUSSION

Dhatu Nirmana is a continuous process going on in body. The nourishment to all Dhatus is supplied through Ahara Rasa and preceeding Dhatu of that particular Dhatu. For proper nourishment of Majja Dhatu, Majja Poshaka Amsa in Ahara Rasa is necessary. Other way of its nourishment is from Asthi Dhatu (preceeding Dhatu). This signifies the importance of Asthi Dhatvagni. Imbalance in Asthi Dhatvagni leads to improper formation of Sthayi Asthi Dhatu from Poshaka Asthi Dhatu, and improper Majja formation. Meda Dhatu which resides between bones in the formation of Asthi Dhatu is known as Majja Dhatu. So, Meda Dhatu also plays an important role in nourishment of Majja Dhatu. Majja Dhatu resides in the Asthi Dhatu. The Ashrayaashrayi relationship of Vata Dosha and Asthi Dhatu forms a fundamental base to understand any pathological condition related to Majja Dhatu. Also the management of AsthiMajja related diseases is unique because of this relationship. Majja is Apya Pradhan Dhatu. Vitiated Vata decreases Majja, means Kshaya of Majja Dhatu. Vata Prakopa and Kshaya of all Dhatu are a natural phenomenon occurring during Jarawastha in men and women and also Vata Prakopa occurs by two processes either Santarpan Janya or Aptarpan Janya.

Aptarpan Janya Vata Prakopa is due to taking Ahara and Vihara which vitiates Vata or due to Jara Janya and Santarpan Janya is due to creating Margavrodha causing vitiation of Vata. Vata Dosha is very much potent for the occurrence of Asthi-Majja related diseases because of unique relationship of Vata and Asthi. Gambhira Dhatu, Svabhavabalapravritta Vyadhi and Bhedawastha make Majjakshaya Asadhya. This disease can become Yasya by intervention at proper level, followed with Pathyapathaya. For minimizing Majja Kshaya and preventing, ideal period of intervention can be the beginning of age of Hani (approx. 40 years) i.e. last phase of Madhyamawastha when Kshaya of all Dhatu begins. As the Nourishment to all Dhatus through Ahara Rasa is minimal in old age and it just supports life. In this stage Pitta Dosha is still dominant and Vata is yet to increase its activity and to overpower Pitta and Kapha.

CONCLUSION

Very little matter is available in our classics regarding Majja Dhatu. The nourishment to all Dhatus is supplied through Ahara Rasa. Imbalance in Asthi Dhatvagni leads to improper formation of Sthayi Asthi Dhatu from Poshaka Asthi Dhatu, and improper Majja formation. The management of AsthiMajja related diseases is unique because of the Ashrayaashrayi relationship of Vata Dosha and Asthi Dhatu which is fundamental base to understand any pathological condition related to Majja Dhatu. Vata Prakopa and Kshaya of all Dhatu are a natural phenomenon occurring during Jarawastha. For minimizing Majja Kshaya and preventing, ideal period of intervention can be the beginning of age of Hani (40 years) i.e. last phase of Madhyamawastha when Kshaya of all Dhatu begins. As the Nourishment to all Dhatus through Ahara Rasa is minimal in old age and it just supports life.

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