

Ayurvedic management of *Asthimajja gata vatarakta* (Avascular necrosis of head of the femur) – A case report

Case Report

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Abstract

Avascular necrosis is a condition where the bone tissue starts degenerating due to interrupted blood supply to the bone tissue. It is also known as ischemic bone necrosis, aseptic necrosis or osteonecrosis. From the contemporary medicine the management of AVN goes by pain management and joint replacement surgery. There is no direct correlation for AVN in Ayurveda. But concepts like *Asthi kshaya*, *Asthi majja gata vata*, *Asthi majja gata Vatarakta* symptoms stands very close to this disease condition. A female patient of age 42 came to the OPD complaining of pain in the bilateral hip joints with difficulty in walking since 6 months. MRI of the hip revealed grade 2 AVN of bilateral femur head. Patient was diagnosed as a case of *Asthi majja gata Vatarakta* with physical examinations. *Pancha tikta ksheera kashaya*, *Lakshaguggulu*, was given. *Sandhaneeya mahakashaya gana Ksheera basti* (enema with medicines processed in milk) was given to the patient for 14 days after *sthanika snehana ans swedan*. *Pancha tikta ksheera kashaya* has *tikta* and *kashaya rasa*. *Tikta rasa* has *ashraya asharee bhava* with *asthi dhatu*. Hence it improves the quality of *asthi dhatu*. *Laksha guggulu* helps in reducing the pain and improving the quality of *rakta* (rakta). Medicines included in *Sandhaneeya mahakashaya gana* are either *Tikta*, *Kashya*, *Madhura*. These *rasa* helps in reducing the *rakta dushti* (impaired circulation) and improves microcirculation. *Ksheera basti* helps in improving the quality of *Asthi* and *majja dhatu*. It also helps in reducing the pain in the affected region.

Key Words: AVN of head of the femur, *Asthimajja gata vatarakta*, *Panchatikta ksheerapaka*, *Sandhaneeya mahakashaya ksheera basti*, *Lakshadi guggulu*, *Rakta dhatu*.

Introduction

Avascular necrosis is a bone condition which is degenerative in nature, occurs due to subchondral blood supply interruption. Death of the cellular components happens due to hypoxia and ischemia. Aseptic necrosis, ischemic bone necrosis, osteonecrosis are the other names of the same disease condition. The typical site of manifestation of AVN is epiphysis of long bones majorly of weight bearing joints. This condition needs potential medical attention to prevent collapse of the joint or subchondral bone destruction which can lead to morbidity. (1) Prevalence rate of this condition is 0.135 per 1000 population and most of them falls under 50 years of age. (2) Avascular necrosis of head of the femur is mainly classified in to two. Post traumatic and idiopathic. As the arteries supplying blood to the head of femur are tiny they are susceptible for injury (3). Hence hip joint is most commonly involved but any

bone can develop AVN. Etiological factors for avascular necrosis of bones are trauma, glucocorticoids, alcoholism and diseases like sickle cell anemia, radiation, Caisson disease, Gaucher's disease. (4) Early stages of AVN are mostly asymptomatic. Groin pain and hip joint pain are common presenting complaint which indicates the progression of the disease condition. Pain at rest is seen in majority of patients associated with change in the gait. (1) Restricted range of motion like adduction, abduction, flexion extension, internal and external rotations are seen. (5) As there is no single test which make the diagnosis of AVN, communication and discussion with other health care workers are vital. Medical and surgical management available always can't guarantee a complete recovery in contemporary medicine (6).

In Ayurveda this condition can be managed better if identified in the early stages. In *Charaka samhita*, *chikitsa sthana*, *Vatashonita chikitsita adhyaya* it is clearly given that *Abhigata* is one among the *nidana* (cause) for manifestation of *Vata rakta*. (7) While explaining *gambhira vatarakta* Charaka mentions the symptoms like *ruk* (pain), *sphurna akunchane*, *sphurana*. When the *prakupita vata* causes pain moves with high speed through the *sandhi*, *Asthi* and *majja*. This can cause the breaking of the bone and can cause

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khanja and *pangu*.(8) These disease description has proximity to AVN symptoms. In AVN there is impaired blood circulation. It can be *rakta* involvement and leading to impaired nourishment (*Dhatu aparinama*).The condition of AVN has been widely correlated with *Asthi majjagata*(9). Some Ayurvedic physicians consider this as *Asthi kshaya*. In this case report we consider the condition of AVN as *Asthi majja gata Vatarakta* because of its more proximity to AVN signs and symptoms. This Ayurvedic diagnosis is rare but effective in the management of AVN due to the involvement of *Rakta* (Blood circulation) in its pathology. Hence there is high need of reporting this case management to provide the information and interpretation we got from this case for better understanding and treatment of AVN through holistic approach of Ayurveda. Corticosteroid intake and hip replacement surgery being the treatment provided from modern science there is a high need for encouraging the classical Ayurvedic methods for the management of AVN. This work aims to report the successful management of AVN through Ayurveda by considering it as *Asthi majja gata Vatarakta*. This study intends to explain the case history, diagnosis, treatment given and its probable mode of action in AVN.

Case report

A female patient of age 42 who is a home maker came to the OPD complaining of pain in the hip since 6 months. Patient is unable to climb the stairs and walk fast due to the pain in the hip joints. Right hip joint is relatively more painful than the left.

Medical history

Patient was apparently normal 6 months before. She fell down at bathroom by hitting her hip on the floor 8 months ago. She was immediately taken to nearby hospital. X ray done at that time excluded the fracture of the bone. She got discharged after pain management. After two months she started observing pain in the right hip joint. It started getting increase day by day. After 2 weeks the pain started in the left hip also. She consulted nearby hospital and MRI was advised. MRI revealed grade 1 avascular necrosis of head of the femur. She underwent various treatments but didn't get many benefits out of them. She came to our hospital for the management of the same. Patient has no history of diabetes mellitus, Hypertension. There is no significant family history contributing to this condition.

Personal history

- Ahara (Diet) : Vegetarian food habit
- Nidra (Sleep) : Disturbed due to pain
- Vyasana (Habits) : Nil

Examination of the patient

General examination

- Blood pressure – 126/84 mmHg (at the time of admission)
- Respiratory rate – 12 breaths /min

- Body temperature – 98 F

Systemic examination (Loco motor system examination)

- Inspection – Mild redness over the right hip region.
- Palpation – Tenderness present in left and right hip region, Raise in temperature over bilateral hip joint

Samprapti Ghataka

- Dosha – Vata Pradhana Tridosha
- Dushya – Asthi, Majja, Rakta , Rasa
- Srotas – Asthi, Majja, Rakta , Rasa
- Srotodushti – Sanga
- Udbhavastana – Kati
- Agni – Manda (Jadaragni, Rasadhatuagni, Asthi majja dhatuagni)
- Ama – Jadaragnimandhyajanya, Asthi, Majja, Rasa, Rakta dhatuagni mandhyaganya
- Vyaktastana – Kati
- Rogamaarga – Marmasthisandhi
- Rogaprakriti – Asukari
- Sahyasadhyaata – Kruchra sadhya - Yapya

Investigations

- Hematological investigations.
- MRI – Grade 2 AVN of B/L femurs.

Table 1: Dashavidha pariksha (Examination of the strength of the patient)

SI No	Examination	Observation
1	Prakriti (body constitution)	Pitta vata
2	Vikriti (pathology)	
3	Sara (quality of tissue)	Rakta sara, Asthi sara
4	Satmya (adaptability)	Madhyama (average)
5	Samhanan	Madhyama (average)
6	Praman (Anthropometric measurement)	Height – 178 Weight – 56 kg BMI – 17.7 kg/m ²
7	Satva (strength of mind)	Madhyama (average)
8	Aharshakti (digestive)	Madhyama (average)
9	Vyayamshakti (Exercise)	Avara (poor)
10	Vaya (Stage of age)	Yuva (Young stage)

Table 2: Ashtavidha pariksha (Eight fold examination)

SI No	Examination	Observation
1	Nadi (pulse)	Vata pitta nadi 76 b/min
2	Mala(stool)	Unsatisfactory, Hard stools
3	Mutra(urine)	3-4 times/day
4	Jihwa(tounge)	Prakruta (normal)
5	Shabdha (sound)	Prakruta (normal)
6	Sparsha (touch)	Anushna sheeta (Afebrile)
7	Druk(vision)	Spashta (clear)
8	Akruti (body built)	Madhyama

Diagnosis

Asthi majjagata vatarakta (Avascular necrosis of head of the femur)

Table 3: Treatment given

SL.No	Medicine	Dose and time of administration	Anupana (Adjuvant)	Duration
1	<i>Pancha tikta kashaya</i> (<i>Ksheerapaka</i> of <i>guduchi, vasa, nimba, patola, kantakari</i>)	30 ml twice daily	-	21 days
2	<i>Lakshadi guggulu</i>	1-0-1 (After food)	-	21 days
3	<i>Ashwgandha bala lakshadi taila – Sthanika snehana</i>	Before basti administration	-	14 days
4	<i>Sthanika Nadi sweda</i>	Before basti administration	-	14 days
5	<i>Sukumara lehya</i>	10 gm at night	<i>Ushna jala</i> (hot water)	7 days
6	<i>Ksheera basti - Sandhaneeya mahakashaya gana</i> <i>Madhu – 80 ml</i> <i>Saindhava – 10 gm</i> <i>Goghrita –80 ml</i> <i>Shatapushpa kalka – 10 gm</i> <i>Ksheerapaka of Sandhaneeya mahakashaya gana – 200 ml</i> <i>Anuvasana Basti – Panch tiktaka ghruta</i>	-	-	14 days

Method of preparation of medicines

Sandhaneeya mahakashaya gana ksheerapaka (For basti)

Yashti madhu (Glycyrrhiza glabra), Guduchi (Tinospora cordifolia), Prishniparni (Uraria picta), Patha (Cissampelos pareria), Samaga (Rubia cordifolia), Mocharasa (Bombax ceiba), Dhataki (Wodfordia fruticosa), Lodhra (Symplocos racemosa), Priyangu (Callicapra macrophylla) powder was taken 2 gm. This powder is added to 200 ml of cow milk and 640 ml of water (1:8:32). This mixture is boiled and reduced to 200 ml. This *ksheera kashaya* is used to prepare the *basti dravya*.

Follow-up and observations

Table 4: Range of movement

SI No			Before treatment	After treatment
1	Abduction	Right leg Left leg	10 ⁰ 20 ⁰	20 ⁰ 30 ⁰
2	Adduction	Right leg Left leg	15 ⁰ 20 ⁰	25 ⁰ 30 ⁰
3	Flexion	Right leg Left leg	105 ⁰ 110 ⁰	110 ⁰ 120 ⁰
4	Extension	Right leg Left leg	10 ⁰ 10 ⁰	15 ⁰ 15 ⁰
5	Internal rotation	Right leg Left leg	15 ⁰ 20 ⁰	25 ⁰ 30 ⁰
6	External rotation	Right leg Left leg	10 ⁰ 20 ⁰	25 ⁰ 30 ⁰

Table 5: Harris hip score

SI No	Criteria	Assessment	Right leg		Left leg	
			Before treatment	After treatment	Before treatment	After treatment
1	Pain	<ul style="list-style-type: none"> • None or ignores it (44) • Slight , occasional, no activity compromise (40) • Mild pain, no effect on average activities, moderate pain rarely with unusual activity, may take aspirin (30) • Moderate pain, tolerable, some limitations of ordinary activity or work May require occasionally medications stronger than aspirin (20) • Marked pain, serious limitation of activities (10) • Total disability, pain in bed, crippled, bedridden(0) 	20	30	30	40
2	Limp	<ul style="list-style-type: none"> • None (11) • Slight (8) • Moderate (5) • Severe (0) 	5	8	8	11
3	Support	<ul style="list-style-type: none"> • None (11) • Cane for long walks (7) • Cane most of time (5) • One crutch (3) • Two canes (2) • Two crutches or not able to walk (0) 	5	11	7	11

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4	Distance walked	<ul style="list-style-type: none"> • Unlimited (11) • Six blocks (8) • Two or three blocks (5) • Indoors only (2) • Bed and chair only (0) 	5	11	8	11
5	Sitting	<ul style="list-style-type: none"> • Comfortably in ordinary chair for one hour (5) • On a high chair for 30 minutes (3) • Unable to sit comfortably in any chair (0) 	0	5	3	5
6	Enter public transportation	<ul style="list-style-type: none"> • Yes (1) • No (0) 	0	1	0	1
7	Stairs	<ul style="list-style-type: none"> • Normally without using a railing (4) • Normally using a railing (2) • In any manner (1) • Unable to do stairs (0) 	2	4	2	4
8	Put on shoes and socks	<ul style="list-style-type: none"> • With ease (4) • With difficulty (2) • Unable (0) 	2	4	2	4
9	Absence of deformity	<ul style="list-style-type: none"> • Less than 30 fixed flexion contracture <ul style="list-style-type: none"> • Yes or No • Less than 10 fixed abduction <ul style="list-style-type: none"> • Yes or No • Less than 10 fixed in extension <ul style="list-style-type: none"> • Yes or No • Limb length discrepancy less than 3.2 cm <ul style="list-style-type: none"> • Yes or No 	0	0	0	0
10	Range of motion	<ul style="list-style-type: none"> • Flexion (140) • Abduction (40) • Adduction (40) • External rotation (40) • Internal rotation (40) 	3 0 0 0 0	3 0 0 0 0	3 0 0 0 0	3 0 0 0 0
11	Range of motion scale	<ul style="list-style-type: none"> • 211 – 300 (5) • 161 – 210 (4) • 101 – 1160 (3) • 61- 100 (2) • 31 – 60 (1) • 0 – 30 (0) 				
	Total	100	42 (Poor)	77 (Fair)	63 (Fair)	90 (Good)

Result

Range of movement of right and left hip increased significantly.

Discussion

Avascular necrosis is a condition where the bone tissue starts degenerating due to interrupted blood supply to the bone tissue. It is also known as ischemic bone necrosis, aseptic necrosis or osteonecrosis. From the contemporary medicine the management of AVN goes by pain management and joint replacement surgery. There is no direct correlation for AVN in Ayurveda. But concepts like *Asthi kshaya*, *Asthi majja gata vata*, *Asthi majja gata Vatarakta* symptoms stands very close to this disease condition. As there is involvement of interrupted blood supply involvement of *rakta* has to be considered. The treatment has improved the clinical condition of the patient. Abduction, adduction, flexion, extension, internal rotation, external rotation are improved after the treatment. Harris hip score for the right leg improved from 42 (poor) to 77 (fair) and for the right leg it is improved from 63 (fair) to 90(good). With ayurvedic treatments we could manage the condition without getting any morbidity.

Pancha tiktaka kheera kashaya

Pancha tikta Ksheera kashaya which is made by *Ksheerapaka vidhi* (Method for making milk decoction) of *guduchi* (*Tinospora cordifolia*), *vasa* (*Adathoda vasica*), *nimba* (*Azadirachta indica*), *patola* (*Trichosanthes Dioica*), *kantakari* (*Solanum xanthocarpum*). This was given to the patient orally 30 ml twice daily for 21 days. All the ingredients in this are *tikta rasa pradhana* and have *Katu* and *kashaya anurasa*. *Guduchi* (*Tinospora cordifolia*) acts as *agnidipana*, *Rasaana*, *Vayasthapana*, and *balya*. *Vasa* (*Adathoda vasica*) is *kapha pitta hara*, *soshahara*. *Nimba* (*Azadirachta indica*) is *dipana* in nature. *Kantakari* (*Solanum xanthocarpum*) is *angamarda prashaman* (reduces the body pain), *dipana pachana*, While *Patola* (*Trichosanthes Dioica*) is *ruchikara*.

Other than *guduchi* having *madhura vipaka* all other has *katu vipaka*(10). *Tikta rasa* has known effect since long period over the *Asthi dhatu* when it given with milk. *Ashtanga Hridaya* commentator *Arunadatta* says *dravya* which can produce roughness (*khara guna*) with its unctuousness (*snigdha guna*) and dryness (*soshana guna*) can increase *asthi dhatu* because it has the same *guna*. There is no substance which has both *snigdha* and

shoshana properties(11). Combination of *ksheera* and *tikta rasa dravya* can produce *snigdha* and *soshana* property at the same time. All this contributes to the *samprapti vighatana* of this condition.

Lakshadi guggulu

This formulation contains *guggulu*, *laksha*, *ashwagandha*, *nagabala*, *arjuna* and *asthi sringala*. *Guggulu* is anti inflammatory (*shotha hara*) and *bhagna sandhanakara*(12,13). *Laksha* is bone healing, wound healing. There are proven experimental and histological study of bone healing effect of *Laksha*(14). This will help in localized anti-inflammatory action and promote the healing of the bone tissue.

Ashwagandha bala lakshadi taila

It is also called as *Bala Ashwagandhadi taila* and it is mentioned in *Bhaishajya ratnavali Vatavyadi Adhyaya* and *Sahasra yogam*. It contains various ingredients which will improve the strength of the body tissue and provide good blood circulation. By performing local massage with this oil one can achieve good body strength. The major ingredients are *Bala (Sida cordifolia)*, *Ashwagandha (Withania somnifera)*, *Laksha (Laccifer lacca)*. *Bala (Sida cordifolia)*, *Ashwagandha (Withania somnifera)* are *Madhura rasa* predominant and are *Vata shamaka* and *dhatu poshaka* (improves the tissue strength). *Tila taila* (Oil of *Sesamum indicum*) is the base oil used along with other medicines like *Rasna (Pluchea lanceolata)*, *Rakta Chandana (Pterocarpus santalinus)*, *Manjishta (Rubia cordifolia)*, *Durva (Cynodon dactylon)*, *Madhuka (Glycyrrhiza glabra)* etc.

Sukumara lehya

Sukumara lehya is used to induce purgation in the patient in order to remove the toxins from the body. The procedure is called *Virechana* and it is excellent in management of *Pitta*, *Rakta* and *Vata* conditions. This was administered for the patient for 7 days. This formulation is mentioned in *Ashtanga hridaya Chikitsa sthana*. Major constituents of *Sukumara lehya* are *Punarnava (Boerhaavia diffusa)*, *Dashamoola*, *Ashwagandha (Withania somnifera)*, *Eranda (Ricinus communis)*, *Shatavari (Asperagus racemosus)*, *Ghee* and *Eranda taila* (Caster oil).

Ksheera basti (Enema therapy)

Sandhaneeya mahakashaya gana ksheera basti was administered for 14 days with *ksheerapaka* (milk decoction) made out of *sandhaneeya mahakashaya gana*. It contains *Yashti madhu (Glycyrrhiza glabra)*, *Guduchi (Tinospora cordifolia)*, *Prishniparni (Uraria picta)*, *Patha (Cissampelos pareria)*, *Samaga (Rubia cordifolia)*, *Mocharasa (Bombax ceiba)*, *Dhataki (Wodfordia fruticosa)*, *Lodhra (Symplocos racemosa)*, *Priyangu (Callicapra macrophylla)*. All the ingredients are having *katu*, *tikta kashaya rasa* or *madhura rasa*. Such a combination of drug is having a re binding property. It helps in neo angiogenesis and improves the blood circulation. This leads to osteogenesis so that the necrotic area of the bone gets regenerated. (15) *Basti* helps in reducing the *Vata*. *Ashti dhatu* has predominance of *Vata dosha* hence the

treatment of *vata* will have an effect in *Asthi dhatu* also. As it is given through *Ksheera paka* the efficacy and availability of the drugs for the *Asthivaha srotas* (Bone tissue) will be high.

Conclusion

Treatment of Avascular necrosis of head of the femur is very challenging. Timely intervention will avoid the morbidity of the patient. In this case report a case of grade 2 AVN of bilateral femur which was effectively treated is explained in detail. As the obstruction of the blood circulation being the primary cause in AVN, in the treatment *Vata rakta* treatment principle adaptation will be effective. *Tikta rasa pradhana dravya* in *ksheera paka* form will help in improving the *Asthi dhatu*. *Virechana* followed by *Basti* helps in controlling the *pitta* and *vata*. *Sandhaneeya mahakashaya gana dravya* has to be explored more in the treatment of AVN as they have tremendous ability to bring the binding property as well as tissue regeneration. It is advisable to conduct such studies in large patient sample to draw a concrete conclusion.

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