Published online in http://ijam. co. in;
ISSN: 0976-5921
International Journal of Ayurvedic Medicine, 2015, 6(1) Supplement, 169-174

Supplemental Issue of
National Seminar on Empowering and Empanelling Ayurveda System of Medicine
Organized by SC Mutha Aryangla Vaidyak Mahavidyalaya, Satara on 26-27 March 2015

Avascular necrosis of Femoral head post corticosteroid therapy: A Case Study

Case Study

Rupesh V. Patil[1*], Manojkumar A K[2], Prakash Mangalasseri[3]

1. Final Year PG Scholar, 2. Guide and HOD, 3. Co-Guide and Associate Professor, Department of Panchakarma, VPSV Ayurveda College, Kottakkal, Kerala.

* Corresponding Author: **Rupesh V Patil,** PG Scholar, Department of Panchakarma, VPSV Ayurveda College, Kottakkal, Kerala.
E-mail: drrupeshvpatil87@gmail.com

Abstract

Avascular necrosis (Osteonecrosis) is known to be caused by a variety of etiological factors like high dose corticosteroids, alcoholism, and rarely by infections including tuberculosis. A review of literature yielded a few cases of avascular necrosis of femoral head in patients on corticosteroid therapy for skin diseases. Gradual onset of pain in motion, relieved by rest in the affected joint alongwith radiation down the affected limb with a slight limp is the clinical presentation. Avascular necrosis (AVN) is a progressive disorder with surgical intervention as the prime choice. From the *Ayurvedic* perspective, the disease may fall under *Asthi majjagata vata*, which may be effectively managed if the intervention is started early. *Snehapaana* with *Guggulutiktaka ghrita*, *Virechana* with *Avipatthy choornam*, *Vasti* with *Panchatikthaka Ksheera yoga* combined with *Njavara Kizhi* is found effective for alleviating the symptoms. A patient presented with grade 3 presentation of AVN on radiological screening, post corticosteroid therapy for contact dermatitis and was advised for hip surgery. This case was well managed and relieved significantly by *Ayurvedic* approach which is non-invasive.

Keywords: Avascular necrosis, *Asthi majjagata vata, Snehapaana, Virechana, Vasti*

Introduction

In most regions of the body, rich anastomoses of blood vessels provide a wide margin of safety in the event of vascular interruptions, mild or extensive. However there are certain regions with a less liberal blood supply and a narrow margin of safety. The head of femur is one such region and is in fact the most common site affected by vascular disturbance (1). AVN of femoral head is often referred to as “Coronary disease of the hip”(2) as it simulates the ischemic condition of heart.

Avascular necrosis (AVN) of femoral head is a pathologic process resulting from interruption of blood supply due to traumatic or non traumatic factors ultimately compromising the already precarious circulation of femoral head. Femoral head ischemia results in bone marrow and osteocyte death which ultimately results in the collapse of necrotic segment. . AVN of femoral head

is a debilitating disease which usually leads to osteoarthritis of hip in relatively young adults. Higher incidence is found in 4th to 5th decade of life with male:female ratio being 8:1(3). The etiology of AVN is multifactorial ranging from traumatic namely traumatic fracture of femur neck, dislocation of hip. It has also been reported secondary to addictions like alcoholism and smoking, autoimmune diseases like Rheumatoid arthritis, SLE, infections like HIV, meningococcemia, radiation and an idiopathic cause has also been attributed(4).

Corticosteroid therapy, irrespective of the mode of administration, either oral, parenteral, or topical has its own risk of developing corticosteroid induced side effects. AVN of femoral head has been reported secondary to systemic as well as topical therapy with corticosteroids in patients with dermatological diseases like psoriasis, eczema, contact dermatitis and SLE(5).

AVN is clinically characterized by gradual onset of pain and limitation of motion. Pain may be localized to groin area but may radiate down the affected limb or ipsilateral buttock, knee or greater trochanteric region. Pain is exacerbated with motion or weight bearing and relieved by rest. Passive range of motion of hip is painful, especially forced internal rotation. A distinct abductor lurch and rotation, with limitation of abduction and adduction is seen. Atrophy of the proximal muscles may be associated (6). Limping, which may be unilateral or bilateral is also seen.

Histologically the involved bone has three zones - necrotic, granulomatous and a variable zone. Radiologically the picture is variable depending on the stage of the disease but a wedge-shaped area of increased radio-opacity with the base adjacent to the articular cartilage and the apex pointing to head of the involved bone. Necrosis appears as a mottled area and the fibrous zone as a radiolucent band with demineralization of the uninvolved bone. Various mechanisms have been put forth in respect of the etiopathogenesis of this crippling side-effect, namely increase in the intra-osseous pressure resulting from lipocyte hypertrophy and derangements in fatty metabolism causing deposition of fat in the marrow spaces of the skeleton in patients who were treated with steroids,(7) particularly in individuals who underwent short-term treatment with high-dose steroids.

In *Ayurvedic* parlance, vitiated *vata dosha* in *asthi* (bones) and *majja* (marrow) leads to *asthi majjagata vata(8),* which presents clinically with features as *bhedo-asthiparvaṇam* (breaking type of pain in bones), *sandhishoola* (joint pain), *satata ruk* (continuous in nature), *mamsabalaksaya* (loss of strength and muscles weakness) and *asvapna* (disturbed sleep), which can be very well correlated with symptoms of AVN. External and internal administration of *snehana* (oleation) is the best treatment modality explained for this condition(9). External oleation is performed by *abhyaṅga* with medicated oils and internally it is administered in the form of *paana* (internal oleation through oral route) and *vasti* (oleation through rectal route). For nourishing *asthi dhatu*, *Panchatikthaka Ksheera vasti* is the best option. For treating *bala mamsa kshaya*, *Njavara kizhi*, which is considered to possess best *brimhana* action, is performed.

Case history

A 37 year-old male patient, non-diabetic and non-hypertensive, was a known case of contact dermatitis since past 3 years. He was under corticosteroid therapy for this. 7 months back, insidiously he developed pain in the left hip region radiating to left anterior thigh with limitation of hip movements. The nature of pain was continuous with

Published online in http://ijam. co. in;
ISSN: 0976-5921
International Journal of Ayurvedic Medicine, 2015, 6(1) Supplement, 169-174

walking or any activity as the aggravating factor and rest as relieving factor. The pain also showed diurnal variation with increased intensity during night hours. Allopathic conservative treatments gave only symptomatic relief with gradual weakness in affected limb and swelling in the feet after few days. Eventually his condition worsened and he was able to walk only with limping and only with support. He was advised to undergo surgery but he refused and opted *Ayurvedic* treatment.

Personal history revealed mixed diet with *no Samashana, adhyashana, viruddhashana,* reduced appetite, irregular and constipated bowel (1/2-3 days) and disturbed sleep (due to pain at night hours). He had no H/0 addictions, trauma.
Family history revealed no significance.
Drug history- Since last 3 years he had been prescribed the following medications Deltacortil- 10mg once daily, Clobetasol ointment for external use, Calcimax-1000mg once daily three days a week. Since last 7 months for 4 months, he also took Emanzen- D(SOS).

Examination

Vitals- Pulse- 84/min, regular, BP-130/80 mm of Hg (right arm sitting), Temperature- 99.40(armpit, 8 am) and respiratory rate-20/min.

Systemic examination

On Inspection, a non-pitting edema on left lower limb associated without any signs of inflammation (rubor and calor) was seen. On palpation, tenderness grade 2 was elicited. On assessing Range of movements of hip joint, there was partial arrest of all movements of left hip due to severe pain in the hip joint. Power in left lower limb was grades as 4+. Muscles in lower limb had normal bulk and tone.

Investigations

X- ray left hip (AP and Lateral) and MRI revealed - Grade 3 (Steinberg classification system) Avascular Necrosis of left hip joint.

The laboratory findings were Hb-12.6gm%, TC- 8100/ mm3, ESR-12mm/ hr, DC: N:47%, L:32%, E:3%, B:0%,FBS:105gm/dl, PPBS- 130 mg/dl. Urine examination was within normal limit.

Dasavidha pareeksha revealed

1.	*Dooshyam*	*Vata, Asthi , Majja*
2.	*Desam*	*Deha- Vaama paada Bhoomi- Jangala Sadharana*
3.	*Balam*	*Roga bala- Pravara Rogi bala- Madhyama*
4.	*Kalam*	*Kshanadi- Sharad Vyadhyavastha- Purana*
5.	*Analam*	*Manda*
6.	*Prakriti*	*Vata Pitta*
7.	*Vayah*	*Madhya*
8.	*Satwam*	*Madhyama*
9.	*Satmyam*	*Katu, Amla, Usna*
10.	*Aharam*	*Jarana sakthi- Avara Abhyavahara- Madhyama*

The patient was analyzed according as per *Ayurvedic* norms, based on which he was diagnosed as having *Asthimajjagata vata with features of aamavastha* and a treatment strategy was scheduled accordingly.

Treatment Schedule

Aama symptoms such as *aruchi, gaurava, anilamudhata* and *malasanga* were observed in the patient. So *aamapacana* and *vatanulomana* was first targeted by adopting *Dipana* and *Paacana* by administration

of *Panchakola choornam* (one teaspoon twice a day before food) and *Gandharvahasthadi kashayam*(15ml with 45ml water twice a day at 6am,6pm). *Mrdu rookshana* with *Dhanyamladhaara* was done for 4 days till attainment of *samyak nirama lakshanas.*

For alleviating *pada sopha* (Pedal Oedema), *nitya koshtha shodhana* with *Gandharva eranda taila- 15 ml HS was given.*

Vatanulomana, agnidipti, deha laghava and relieved *padasopha* suggested *niraamavastha*.

After this, *Sodhananga Snehapaana* with *Guggulutikthaka ghrita* was done in *Aarohana krama* for 7 days with dose ranging from 25ml(1st day)-160ml(7ndday). Then *abhyanga* and with *Dhanwantharam Taila and Ooshma sweda* was done for 3 days.

Mrdu virechana with *Avipatthy choornam* – 20gm with *madhu* was given considering the *sameekshya bhavas*.

Patra potala sweda with *Dhanwantharam taila* was done for 7 days.

After this *Panchatikthaka Ksheera Vasti* was done for 4 days followed by *Njavara Kizhi* for 7 days.

After this treatment regimen, pain reduced and an improvement in the range of movements was observed.

Outcome and Follow up

Pain, pedal edema and range of movements were assessed. Pain was assessed by using visual analog scale (VAS), where "0" is no pain and "10" is severe pain. Circumference of the feet in centimeters was measured before and after the treatment to assess the swelling. Range of movements were also assessed.

Pain

On the day of admission, pain graded as "8" on VAS (Visual Analogue Scale). After administration of this treatment approach, pain relieved and was graded as "1" on VAS.

Swelling

On the 1st day, circumference feet, was around 28 cm and after *nitya koshthasodhana* swelling was reduced and circumference measured about 22.5 cm.

Range of movements

On admission, the patient presented with pain during all movements of hip with limited range of motion. He had a limping gait and could walk only with support. At the time of discharge, he started walking without limp and support.

Advice on discharge

1*) Guggulutikthakam kashayam*- 15ml + 45ml water at 6am, 6pm
2) Gandha Tailam- 10 drops with *Guggulutikthakam Kashayam*
3) Bonetone capsules- 1-0-1
4) Kashaya of Dhathri, Mustha, Amritha - 60 ml at 11 am

Follow up

After 21 days, the patient was reassessed and presented with a sustained improvement.

Discussion

Basic pathology of AVN involves the reduction in blood supply to the femoral head.

In this case, *Ayurvedic* pathogenesis can be formulated as follows: Administration of corticosteroids lead to *aama* formation and *srotorodha*. Consequently the *Rakta dhatu* (blood tissue) supply to the femoral head is decreased. This lead to decreased nutrition supply to that part and reduction in its density and leads to *asthidhatukshya*. As *majja* resides in *asthidhatu*, it may further result in *majjadhatukshaya*.

Panchakola choornam ***(10)*** and *Gandharvahasthadi kashayam* **(11)** were administered for *aamapachana* and

Published online in http://ijam. co. in;
ISSN: 0976-5921
International Journal of Ayurvedic Medicine, 2015, 6(1) Supplement, 169-174

vatanulomana as they contain ingredients which predominate in *katu rasa* and *ushṇa veerya*. These qualities increase *jatharagni* and help to achieve *vatanulomana*. *Kleda* which was evident by *padasopha* was relieved by *nitya kosthasodhana* w ith *Gandharva eranda taila*.

Following the principle, "*Brmhyamstu mrdu langhayeth"*, *langhana* in the form of *mrdu rookshana* was done with *Dhanyamladhaara*.

Guggulutikthakam ghrita ***(12)*** was selected for *Sodhananga Snehapaana* as it is mainly indicated in *asthi, sandhi, majjagata vatavikaras*. Most ingredients of *Guggulutiktaka ghṛta* have *tikta rasa, ushna veerya* and *madhura* and *katu vipaka* which favors normal functioning of *dhatwagni*, thereby facilitating increased nutrition of the *asthi dhatu*. *Ghrita* is *vata-pittasamaka, balya , agnivardhaka, madhu ra, sheeta veerya* and helps to improve the *dhatu upacaya*.

As the patient had *mrdu kostha*, *Avipatthy choornam* for *virechana* was selected.

Panchatikthaka ksheeravasti was planned as it is indicated as a treatment modality in *asthi pradoshaja vikaras****(13)***. *Tikta rasa* and *asthi* in the body has a predominance of *Vayu* and *Akasha Mahabhuta*. Owing to same *Mahabhuta* composition, *Tikta rasa vasti* has got a special affinity towards *asthi dhatu*. *Ksheera* has *madhura* and *snigdha guna* which helps in to control *vata dosha* by *bṛhmaṇa*. Hence, *ksheeravasti* is found to be efficacious in *asthikshaya*.

Lastly, *Njavara Kizhi* was done as it enhances *brmhana* effect on all body tissues including periarticular structures.

Conclusion

Extensive and irrational use of corticosteroids for treating several skin diseases is on the surge. AVN of femoral head, a crippling disorder, is one of the unnoticed side effects of corticosteroid administration with surgical intervention as the mainstay of treatment in modern medicine. But this case indicates that symptoms of AVN of femoral head can be relieved significantly by *ayurvedic* management even though the claim cannot be made that the patient is completely cured of the disease. Advanced investigations and further clinical studies should be conducted to validate the treatment principles applied for treating this case.

References:

1. Richard J. Patterson et al, Idiopathic Avascular Necrosis of the Head of femur- A study of fifty two cases. Journal of Bone Joint Surgery Am, 1964 Mar, 46(2):267-400.
2. Chandler FA. Coronary disease of the hip. J Int Coll Surg 1949;11 :34–36.
3. Mankin HJ (1992)- Non traumatic necrosis of bone (Osteonecrosis), New England Journal of medicine, 326: 1473-79.
4. Vibhu Mendiratta et al, Avascular Necrosis- A RARE COMPLICATION OF STEROID THERAPY FOR PEMPHIGUS. Indian J Dermatology.2008 Jan-Mar; 53(1): 28-30.
5. Epstien NN, Tuffanelli DL, Epstein JH. Avascular bone necrosis: A complication of long term corticosteroid therapy. Arch Dermatol. 1965;92:170–80. (PubMed)
6. Aiello MR. Avascular necrosis of the femoral head. Available from:http://www.emedicine.medscape.com/article/386808
7. Shim SS, Hawk HE, Yu WY. The relationship between blood flow and cavity pressure of bone. Surg

Gynaecol Obstet. 1972;135:353–60. (PubMed)
8. Yadavji Trikamji Acharya, editor. Caraka Samhita. Cikitsasthana. 28th Adhyaya. 33rd sloka; Varanasi: Choukhamba Orientalia. 2011. p. 617.
9. Yadavji Trikamji Acharya, editor. Caraka Samhita. Cikitsasthana. 28th Adhyaya. 93rd sloka; Varanasi: Choukhamba Orientalia. 2011. p. 621.
10. Dr. Brahmanand Tripathi, editor. Sarngadhara Samhita of Pandit Sarngadharacharya. Madhyama Khanda. 6th Adhyaya.13th- 14th sloka;Varanasi: Choukhamba Surbharati Prakashan. 2008. p. 174.
11. Dr. K Nishteswar & Dr. R Vaidyanath, editor. Sahasrayogam.Kashaya prakarana. 59. Vatahara Kashaya 4; Varanasi: Choukhamba Sanskrit Series.Edition Second, 2008. p. 46.
12. Pt. Hari Sadashiva Sastri Paradkara, editor. Ashtanga Hridayam.Cikitsasthana.21st Adhyaya.58-61 sloka; Varanasi: Chaukhamba Sanskrit Sansthan. 2011. p. 726.
13. Yadavji Trikamji Acharya, editor.Caraka Samhita. Sutrasthana. 28th Adhyaya. 27th sloka; Varanasi: Choukhamba Orientalia. 2011. p. 180.

*****