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### RESEARCH ARTICLE

#### MANAGEMENT OF AVASCULAR NECROSIS OF FEMORAL HEAD IN SICKLE CELL ANAEMIA BY MAJJA BASTI – A CASE STUDY.

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#### Abstract

Significance of Study: The application of majja basti for the management of AVN is of new of its kind in ayurveda which was not trialed before.

Case representation: A pre diagnosed case of 14 years old male patient suffering from homozygous Sickle cell disease since last 5 years. Blood hematological test CBC, shows low Hemoglobin count and elevated total leucocytes, Plain radiographs of the Right Femoral head showed hypoplasia, sclerosis, articular marginal irregularity and subarticular cystic changes. This grave disease which is discussed above remains unexposed because of many unturned pages of molecular genetics which had aroused severe morbidity and mortality in the patients which needed a full evidence based established management for its alleviation and cure. Consequently the patient developed Avascular Necrosis (AVN) which is death of the bone tissue seen as a result of late complications of SCD, Where blood supply is cut off (avascular) partially or completely to a bony area of the body, most commonly in the head of femur bone that obstruct capillaries and restrict blood flow to the distal part of bone, resulting in ischemia, pain, necrosis and often bone damage. But in ayurveda there was no encouraging management available to manage and cure this kind of complications, So keeping all this in mind, Majja Basti was applied as a trial to manage the femoral head necrosis in sickle cell disease to find a better therapy in ayurveda science to combat its late complications which was appeared to be very efficacious and safe during the treatment period.

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#### Introduction:-

Avascular necrosis (AVN), also known as osteo-necrosis, aseptic necrosis or ischemic bone necrosis is a disease that may affect several different bones as a result of temporary or permanent loss of the blood supply to these bones. <sup>[1][2]</sup> The ischemia causes the death and eventual collapse of the bone tissue, with its overlying joint surface. Ever since,

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scientists have found out more and more about the complex physiopathology of this disease which to this days remains largely unknown. The femoral head is most commonly affected by this disease. Usually, the patients are in their third, fourth or fifth decade of life at the time of diagnose. Men are more prone to this disease than women, the sex ratio being about 4:1.<sup>[3]</sup> Initially, patients are asymptomatic, but, in time, AVN leads to joint destruction, requiring surgical treatment and, in latter stages, total hip replacement (THR).<sup>[4]</sup> Although treatment has been facilitated by using a widely accepted international classification system, effective earlier diagnosis using MRI, and more aggressive surgical management, no universally satisfactory therapy has been developed, even for early disease. It is essential that AVN of the femoral head is diagnosed early because delaying this disease by joint preserving measures have a much better prognosis and because the results of joint replacement are poorer in young individuals.

Avascular necrosis of bone, a common skeletal complication of sickle cell disease (SCD), presumably arises when stiff and abnormally adherent red blood cells repeatedly impair blood flow to susceptible articular surfaces, causing bone infarction at the epiphyseal plates and early onset degenerative arthritis. Although multiple joints can be simultaneously affected by osteonecrosis in SCD, the femoral head is most commonly involved because it lacks collateral blood flow and is most vulnerable to vascular insults.<sup>[5][6]</sup>

Concept of necrosis in ayurveda:- There is no exact clinical entity mentioned in classics for the AVN. 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.<sup>[7][8][9]</sup>

### **Material and methods:-**

Majja is the next in the line after Asthi dhatu, hence in the process of kshaya, Majjakshaya also occurs along with asthi kshaya in AVN associated with SCD.<sup>[10]</sup> In such case there was need to focus on srotoshodhan, combating ruksha guna of vata and dhatu-poshana hence here matra basti of majja sadhit Panch tikta guggulu ghrita (PTG) was decided to be given to the patient rationally to cope with the source cause along with symptomatic complications.

### **Clinical Presentation:-**

A 14year old male child attending Kaya chikitsa OPD of Rajiv Lochan Ayurveda medical college and hospital, Chandkhuri, Durg Chhattisgarh with complaints of pain in Right hip region, pallor, lassitude and generalized body ache since last two months. He described the pain as dull aching, worsened with walking long distances and on prolonged standing, relieved by rest and simple analgesics. It was a pre diagnosed case of homozygous sickle cell disease since last 5 years .The patient had a history of blood transfusion before 3 years. Full blood count results (Hemoglobin: 7.4 g/dl, White Blood Cell: 15100/cumm, Platelet:2.7 lac, ESR: 30 mm/h) Hemoglobin electrophoresis, Hb SS (Homozygous sickle cell disease) with HbF (Foetal hemoglobin) were noted. Plain radiographs of the pelvis and hips showed hypoplasia, sclerosis, articular marginal irregularity and subarticular cystic changes.

Patients was given panchtikta guggulu (PTG)ghrita sadhit Majja basti (Bone marrow of goat) in the dose of 30 ml daily for 15 days with gap interval of 15 days, like this the medication regimen was continued continuously for total of 45 days within the period of 90 days.

Observation of improvements in Radiographic findings:



**Image 1:-**(Before start of T/t)  
90 days)

**Image: 2** (After 45 days of T/t)

**Image: 3** (After completion of T/t i.e.

**Image 1:-**Irregular necrosed area with marginal irregularities of Rt. Femoral head

**Image 2:-**Plain radiographs of the pelvis and hips showed hypoplasia, sclerosis, articular marginal irregularity and subarticular cystic changes partially.

**Image 3:-**Bony granulosomatous formation indicates Rt.femoral head marginal healing of necrosed tissue

### Discussion:-

Panchtikta guggulu(PTG) ghrīta is of mainly tikta and kasaya rasa which cleanses the pathway of dhatus specifically in asthi and majja dhatu and provides space for rakta dhatu to enter the minute srotas to work in tissue and cellular level. Majja having high quality sneha possessing qualitatively guru guna works as carrier of vitamins, protein and minerals. Majja sadhit PTG is a double standard (yamaka) sneha dravya where majja contributes unique qualities of sneha blended with compound form of sneha present in PTG in ghrīta form which is told as sanskarvahi in ayurveda. Hence it works in cellular to molecular level. Palliative care in Ayurvedic management gives effective results in handling the case of AVN of femoral head. Progression of disease slows down within few months and improved quality of life in the concern patient was observed.

The haematological picture after medication is (Hemoglobin: 8.5 g/dl, White Blood Cell: 8000/cumm, Platelets:2.74 lac, ESR: 15 mm/h, Early). Radiological features after medication were highly significant, the necrosed area seen bony granulosomatous formation these changes indicate the marginal healing of necrosed tissue. Pain and other symptoms were absent as per the patient response.

### Learning point:-

Genetic causes cannot be ruled out while diagnosing AVN resulting from late complications of SCD. Necrosed Osteoarthritis can mimic the AVN.

X-Ray and MRI play a vital role in the diagnosis and treatment of AVN.

### Footnotes:-

Contributors: C.P. Sinha and P.K.Panda did the writing of the manuscript. N Parida and A Sharma were responsible for the editing and revision of its contents and A Patel provided the prepared Medicine.

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**Patients consent:-** Obtained

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