World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

Check for updates

An Ayurvedic management of the Sickle Cell Anaemia: A Case Study

Sachinkumar Sahebrao Patil [1,*] and Mukul Shamrao Pawar [2]

[1] *Department of Kayachikitsa, M.A.M.'s Sumatibhai Shah Ayurved Mahavidyalaya, Malwadi, Hadapsar, Pune-411028, Maharashtra State, India.*
[2] *M.A.M.'s Sumatibhai Shah Ayurved Mahavidyalaya, Malwadi, Hadapsar, Pune-411028, Maharashtra State, India.*

World Journal of Advanced Research and Reviews, 2023, 18(01), 648–654

Publication history: Received on 01March 2023; revised on 12 April 2023; accepted on 14 April 2023

Article DOI: https://doi.org/10.30574/wjarr.2023.18.1.0621

Abstract

Sickle Cell Anaemia is a genetic disease-causing high morbidity and mortality. Quality of life hampers due to its chronic nature and painful crisis. Permanent cure is not possible till now, except successful bone marrow transplantation. Considering symptomatology and nature of disease, it can be correlated with *Pandu Vyadhi*, under the heading of *Adibala Pavrutta Vyadhi.* The chronicity indicates *Asadhya* nature of the disease. If some medication improves the quality of life and maintain the health of SCA patient, then such medications and efforts may become helpful to serve the society. A 22-year-old male patient diagnosed to besuffering with sickle Cell Anaemia with symptoms of severe pain in hip joints, knee joints body ache, weakness, anorexia, and weight loss came to the OPD, department of Kayachikita at Sane Guruji Arogya Kendra, Hadapsar, Pune. Mother and father are sickle Cell trait (HbAS). They are the residents of Northern Maharashtra lives in Pune for 8 years. Patient has tried modern medicine but no relief in pain crisis. So, they came here and treated with Ayurvedic medications for 6 months, during which he had not experienced any pain crises. Weight is improved from 47 kg to 53 kg. Patient is now playing outdoor games without any sickle Cell crisis. So, this case study is intended to study the pathophysiology and management of sickle Cell Anaemia from Ayurvedic perspective and to explore the probable mode of action of ayurvedic medications that are used in Sickle-Cell Disease (SCD).

Keywords: *Adibala Pravrutta Vyadhi; Pandu;* Sickle Cell Disease; Genetic blood disorder

1. Introduction

Sickle-Cell Disease (SCD) or Sickle Cell Anaemiais agenetic disease among various tribal populations of India that affects the haemoglobin. Sickle Cell Anaemia is a homozygous state for the Hb-S gene (Hb-SS). It is transmitted as an autosomal recessive disease[1] It results in an abnormality in haemoglobin of red blood Cells. This leads to a rigid, sickle-like shape under certain circumstances. Signs and Symptoms in sickle Cell disease typically begin around 6 months of age. Several health problems may develop, such as attacks of pain (sickle-Cell crisis), Anaemia, bacterial infections, and stroke. [2] An attack can be triggered by temperature changes, stress, dehydration, and high altitude. The average life expectancy in the developed countries is 40 to 60 years. The highest frequency of disease is found in tropical regions, particularly sub-Saharan Africa, India, and the middle East.[3] Prevalence of Sickle Cell gene (%) in Maharashtra is 0 to 45.4 % [4]

Management of SCD includes infection prevention with vaccination and antibiotics, high fluid intake, folic acid supplementation and painmedication.[5] Other measures are blood transfusion, and the medication with hydroxycarbamide (hydroxyurea).[6] A small proportion of people can be cured by a transplant of bone marrow Cells.

As per the symptomatology and nature of disease, this clinical condition can be compared with Pandu Vyadhi (Anaemia) under the heading of Adibala Pavrutta Vyadhi (hereditary). Contributory factors like inappropriate Ritu (ovulation cycle), Kshetra (Uterus), Ambu (Amniotic fluid and Nutrients for foetus) and Bija (Sperm & Ovum)[7], Dauhrida

*Corresponding author: Sachinkumar Sahebrao Patil

Avamanana[8] (negligence of urges during Dauhrida stage of pregnant women), presence of Garbhopaghatkar bhava (substances that can cause defect or death of foetus),[9] incompatible Garbha Vriddhikara bhava (normal requisites for growth and development of foetus)[10] and improper following of Garbhini Paricharya (Antenatal regimen) may possibly have undesirable effects on the foetal genomes and causing genetic diseases like sickle Cell Anaemia. Chronicity indicates the Asadhya (incurable) nature of disease. [11] If some medication improves the quality of life and maintain the health of SCD patient then such medications and efforts become helpful to serve the society. Here an effort was made to treat a 22-year-old male with known case of sickle Cell Anaemia by Ayurveda treatment management.

2. Material and methods

2.1. Case History

A 22 yearold male, Hindu patient diagnosed to be suffering with sickle Cell Anaemia with symptoms of repetitive severe pain in hip joints, knee joints, body ache, weakness, anorexia, and weight loss approached the OPD. Resident of Northern Maharashtra, India. Socioeconomic status was middle.

2.2. History of present illnesses

Patient was not aware about his disease before 8 years. He developed sudden pain crisis and investigated for the same and came to know about the disease (HB SS). Mother and father were also screened at that time and both were found to be sickle Cell trait (Hb AS).

Initially he was treated with various analgesics as advised by physician, during which, Pain crisis occurs with interval of 1 to 2 months which last for 5 to 7 days and required hospital visits and sometime even admission. This medicine was stopped by patient after few years, as relief was not achieved totally.

+Then he started Ayurvedic medicinefor almost 1 year given by Vaidya in village. The medicines given by them could not be named by parents, but interval between pain crises increased and got no relief. That medicines were also stopped by us; to know the efficacy of given treatment during study period.

2.3. History of past illness

Nothing significant related to present condition.

2.4. Birth history

No any major medical. intervention required during pre-natal, natal, and post-natal period. Immunization was done as per thenational schedule.

2.5. Personal history

Aharaja: Vegetarian and appetite was poor.

Viharaja: Patient likes to play outdoor games but could not play due to fatigue. Sleep was disturbed.

2.6. Examination

Vitals were within normal range. No any abnormality found in cardio vascular system, respiratory system and per abdomen examinations. Prakruti was *Vatadhika Kapha*. Weight was 47 kg and height was 153 cm.

2.7. Ashtavidha Pariksha

Nadi (Pulse) was *Vatadhika Tridoshaja*. No complaint regarding *Mala* (Stool - once a day, soft in consistency) and *Mutra* (Urine- normal in frequency and no any associated complaints.) was observed. *Jihva* (Tongue) was *Sama* (coated) due to improper digestion. *Shabda* (Speech) was normal. *Sparsha* (Touch) was normal (No any tenderness, as currently patient does not have pain crisis). *Drik*a(Eyes) are normal with mild pallor in conjunctiva but sclera is normal (no icterus). *Akriti* (appearance) was lean and thin.

2.8. Differential Diagnosis

Sickle beta Thalassemia, Sickle alpha Thalassemia, HbASTrait

2.9. Diagnosis

Homozygous Sickle Cell Anaemia

2.10. Laboratory Investigations

Complete blood count (CBC) of patient reveals haemoglobin of 8.2 g/dL, MCV 72.7 cu micron, platelet count 213,410/cmm, white blood Cell counts 6,200 /cmm, neutrophil count 60%,Haematocrit 30%, RDW (Red Cell distribution width) 15.5 %. Blood. film revealed numerous sickle Cells along with few teardrop elliptical Cells. Sickle solubility test is positive. Blood group is 'B' Rh positive.

2.11. Treatment Protocol

2.11.1. Total duration

6 months as given below

2.11.2. Internal Drugs

Raktaposhaka Vati (250 mg)[12] 2 tablets, twice a day, before meal,

Tablet SC3 (500 mg) [13] 2 tablets, twice a day, after meal.

Raktaposhaka Vati was discontinued after 3 months of treatment. Contents of all above drugs are given in table no. 1 and 2.

2.11.3. Anupana

Lukewarm water.

The effect of therapy is given in table no.3.

2.12. Drug Review

Table 1 Contents of *Raktaposhaka Vati*

No.	Drug Name	English/ Botanical Name	Ratio
1	*Haritaki*	*Terminalia chebula* Retz.	1
2	*Bibhitaki*	*Terminalia bellirica* Roxb.	1
3	*Aamalaki*	*Terminalia emblica* L.	1
4	*Shunthi*	*Zingiber Officinale* Rose.	1
5	*Maricha*	*Piper nigram* Linn.	1
6	*Pippali*	*Piper longum* Linn.	1
7	*Musta*	*Cyprus rotundus* Linn	1
8	*Chitraka*	*Plumbago zelanica* Linn.	1
9	*Vidanga*	*Embeliaribes burm* F.	1
10	*Bilwamagaja*	*Aegle marmelos*	2
11	*RoupyaBhasma$*	Silver oxide	½
12	*LouhaBhasma$*	Iron Calx	¾
13	*Suvarna Makshika Bhasma$*	Copper iron sulphide	1

$-Processed ash

Table 2 Contents of Tablet SC3

No.	Drug Name	English/Botanical Name	Ratio
1	*Bilwa*	*Aegle marmelos* L.	½
2	*Guduchi*	*Tinospora cordifolia*	1
3	*Kumari*	*Alove vera*	1
4	*Bhumyamalaki*	*Phyllanthus amaruslinn.*	QS*
5	*Sharpunkha*	*Tephrosia purpurea* L.	QS*
6	*Bhringaraja*	*Eclipta alba L.* Hassk.	QS*

QS- Quantity Sufficient for *bhavana*

3. Results and discussion

Patient did not show any symptoms till 12-14 years of age, which is somewhat differs from the nature of this disease. But here it shows the milder nature of disease.

The patients suffering from *Panduroga* should be given *Vamana* (emetic) and *Virechana* (Purgation) therapies with *Tikshna* drugs for *Shodhana*(cleansing of the body) as per Acharya Charaka.[14]

3.1. Probable mode of action of drugs

Raktaposhaka Vati improves *Agni* of patients by virtue of *Ushna Virya* of drugs like *Chitraka*,[15]*Pippali,*[16]*Maricha.*[17]Improvement in *Agni* helps to normalise the *Dhatwagni* and ultimately help in the reversal of *Pandu Samprapti*. It was stopped after 3 months, as proper state of *Agni* was achieved. Improvement in weight could be due to correction of digestion. Other components of *Raktaposhaka Vati* like *Triphala,*[18]*Trikatu,*[19]*Vidanga*[20]are having appetizer, digestive and carminative properties. The contents like *Haritaki*, [21] act as purgative. *Amalaki*[22] possess antioxidant activity and important dietary source of vitamin C, which is powerful antioxidants and helps in increasing iron absorption from the gut.

The properties and action on body of ingredients of Tablet SC3 as follows-

Bilwa,[23] the action of *Bilwa* is *Agnideepana*, *Pachana*, *Samgrahi*, *Yakrittotejaka* and *Raktastambhaka*. As *Yakrit*a (Liver) and *Pleeha* (Spleen) are the *moolasthana* of *Raktavaha Strotas* it must have a definite action on *Raktavaha srotasa*. It improves *Raktadhatwagni* hence good quality of *Raktadhatu* (blood component) is formed. *Shothahara* (anti-inflammatory) and *Vedanasthapana* (analgesic) effect is useful for reducing the pain in SCD. *Guduchi*[24] having properties like *Rasayana* (Immuno-modulator) *Balya* (tonic), *Agnideepana*, and pacifies all the three dosha. Also, it is useful in conditions like Pain (indicated in *Vatarakta* where *Parvasandhishoola* is a cardinal symptoms), Jaundice and Anaemia which are the three main symptoms of Sickle Cell Disease. *Sharpunkha*[25] one of the synonyms of '*Pleehashatru*' indicating that this is useful and promising drug in all pathological conditions of spleen. More ever it is useful in disorders of liver and haematological conditions. In SCD deformity in red blood Cells, early destruction and ultimately splenomegaly occurs. *Sharapunkha* is the best medicine to treat splenomegaly. *Bhumyamalaki*[26] is useful in diseases which cause debility like *Raktapitta*, *Kshata*, *Kshaya* etc.

Table3 Effect of therapy

	Before Treatment	**After Treatment**
Weight	47 Kg	53 Kg
Pain crisis	Once in every 1 to 2 months	Not experienced
Anorexia	Present	Absent
Splenomegaly	Not present	Not present
Weakness	Could not play outdoor games more than half an hour	Could play outdoor games without weakness for more than an hour

It has an action on *Raktadhatu* and *Pittadosha*. Hence this drug is included as one of the ingredients of Tablet SC3. *Bringaraj*[27] having properties like *Rasayana*, *Balya*, *Shothahara* and indicated in *Pandu* which is the common and cardinal symptom of SCD

4. Conclusions

The basic cause of the disease is *Bijadushti*, with consequences like *Agnimandya* (both *Jatharagni* and Dhatwagni), *Panduta*, *Nissarata* and *Kshaya* of *Dhatus*. The consequent *Tridosha Prakopa*, *Aama* generation (premature RBC destruction), along with *Dhatukshaya* complicates overall outcome of the disease.

The present case is seemed to be at manifestation type of Vaso-occlusive crisis. In this case no splenomegaly seen. This patient was treated with Ayurvedic medications and in the last 6 months he had not experienced any such pain crisis. Weight and anorexia are also improved. Patient is now performingoutdoor activities and games without any sickle Cell crisis.

Long term therapy and evaluation of the patient periodically will give definite conclusion; a study with large sample size may also be planned for further evaluation of the role of Ayurvedic medications.

Key message

Sickle Cell Anaemia causes high morbidity and mortality among patient especially in the northern Maharashtra. Quality of life hampers due to its chronic nature and painful crisis. Ayurvedic drugs are helpful to improve their quality of life.

Compliance with ethical standards

Acknowledgments

We express our gratitude to the Department of Kayachikitsa and Hospital Authority and Sickle Cell Division for giving us this opportunity to study this case of Sickle Cell Anaemia patient. Special thanks to Secretary of Maharashtra Arogya Mandal's Secretary, Hon'ble Mr. Anil Gujar, Hon'ble Principal Dr. Nilesh Phule and Faculty members for co-operating, also thanks to the teachers Dr. Yogesh Kotangale, Dr Vijayalakshmi Patil, Dr. Ritesh Damle, Dr. Kiran Ubhe, for guiding throughout to provide better management.

Disclosure of conflict of interest

This work is not published anywhere. The authors declare no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] K. George Mathew and Praveen Agrawal (2015), "Disease of the blood', Medicine-Prep Manual for Undergraduates, sixth edition, 1/29-30.

[2] What Are the Signs and Symptoms of Sickle Cell Disease? National Heart, Lung, and Blood Institute. Available online: https://www.nhlbi.nih.gov/health/ health-topics/topics/sca/signs (accessed on 22, December 2022).

[3] Haemoglobin- Beta Locus; HBB:0243 Haemoglobin S. Sickle Cell Anaemia, included, malaria, Resistance to, included. HBB, GLU6VAL- 141900.0243' Online Mendelian Inheritance in Man (OMIM)http:// nrhm.gujrat.gov.in/Sickle-Cell.html

[4] ickle-Cell disease and other haemoglobin disorders Fact sheet N°308. Available online: http:// www.who.int/mediacentre/factsheets/fs308/en/ (accessed on 22, December 2022).

[5] How Is Sickle Cell Disease Treated? National Heart, Lung, and Blood Institute. Available online: https:// www.nhlbi.nih.gov/health/health-topics/topics/sca/ treatment (Accessed on: 24 December 2022).

[6] Acharya Sushruta, Sushruta Samhita, Yadavaji Trikamji, Sharira Sthana (2:33), page no..348, Chaukhamba Sanskrit Sansthana, Varanasi, (2009)

[7] Agnivesha, Charaka, Dridhabala, Chakrapani, Charaka Samhita, Yadavji Trikamji, Ayurveda Dipika, Sharira Sthana (4:16), page no.320; Chaukhamba Prakashana, Varanasi, (2009)

[8] Agnivesha, Charaka, Dridhabala, Chakrapani, Charaka Samhita, Yadavji Trikamji, Ayurveda Dipika, Sharira Sthana (4:16), page no.320; Chaukhamba Prakashana, Varanasi, (2009)

[9] Agnivesha, Charaka, Dridhabala, Chakrapani, Charaka Samhita, Yadavji Trikamji, Ayurveda Dipika, Sharira Sthana, Mahati Garbhava Kranti Adhyaya (4:18), page no.320; Chaukhamba Prakashana, Varanasi, (2009)

[10] Agnivesha, Charaka Samhita, edited by RK Sharma & Bhagwan Dash, Vol.4, Chikitsa Sthana (16:31), page no. 90; Chaukhambha Sanskrit Series, Varanasi, (reprint 2005)

[11] Raktaposhaka Vati is a propriety ayurvedic formulations used by Sane Guruji Arogya Kendra, Malwadi, Hadapsar, Pune

[12] Dr Gunvant Yeola and Dr Prashant Dalvi, et al. A Pilot Study to Evaluate the Efficacy, Safety and Tolerability of Ayurvedic Drugs SC3 and CCRAS formulation AYUSH-RP in Sickle Cell Disease, Medical Journal of Western India, July 2013, Vol.4, Issue 2, Pp.40-45 0972-9798.

[13] Agnivesha, Charaka Samhita, edited by RK Sharma & Bhagwan Dash, Vol.2, Chikitsa Sthana, Pandhu (16:40), pg. 82; Chaukhambha Sanskrit Series, Varanasi, (reprint 2005).

[14] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Deepanadi Varga, Deepana-146, page no. 356, Chaukhamba Bharati Academy, Varanasi, reprint 2018

[15] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Chedanadi Varga, Kasahara-110, page no. 275, Chaukhamba Bharati Academy, Varanasi, reprint 2018

[16] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Deepanadi Varga, Deepana-147, page no. 362, Chaukhamba Bharati Academy, Varanasi, reprint 2018

[17] Bhavamishra, Bhavprasha Nighantu, edited by Mishra B S, 7th edition, Purvardha, Haritakyadi Varga, 1/42-43, page no. 12, Chaukhamba Sanskrita Bhavan, Varanasi, (1990)

[18] Bhavamishra, Bhavprasha Nighantu, edited by Mishra B S, 7th edition, Purvardha, Haritakyadi Varga, 1/63, page no. 19, Chaukhamba Sanskrita Bhavan, Varanasi, (1990)

[19] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Deepanadi Varga, Krumigna-207, page no. 503, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

[20] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Jwaraghnadi Varga, Rasayana-340, page no. 753, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

[21] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Jwaraghnadi Varga, Rasayana-341, page no. 755, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

[22] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Deepanadi Varga, Grahi-186, page no. 455, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

[23] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Jwaraghnadi Varga, Rasayana-342, page no. 761, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

[24] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Arshoghnadi Varga, Pleehagna-230, page no. 554, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

[25] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Mutraladi Varga, Mutravirechaniya-273, page no. 640, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

[26] Sharma Priyavat; Dravyaguna Vigyana, Vol. 2nd, Chakshushyadi Varga, Keshya-47, page no. 123, Chaukhamba Bharati Academy, Varanasi, reprint 2018.

Author's short biography

	**Dr. Sachinkumar Sahebrao Patil** M.D. (Kayachikitsa) Medicine, Ph.D. (Kayachikitsa) Medicine, M.B.A. (H.R.), M.A. (Sanskrit), P.G.D.E.M.S., D.Y.A. Professor and H.O.D., Ph.D. Guide, M.D. Guide, Department of Kayachikitsa, M.A.M.'s Sumatibhai Shah Ayurved Mahavidyalaya, Malwadi, Hadapsar, Pune – 411028, Maharashtra State, India. He is working as an Ayurved Physician and Panchakarma Specialist since last 18 Years. He is a BOARD OF STUDIES MEMBER for Paraclinical Ayurved Board of Maharashtra University of Health Sciences (M.U.H.S.), Nashik. He is a FACULTY MEMBER for Post Graduate Paraclinical Ayurved Board of M.U.H.S., Nashik. He is working as a Research Faculty for Research Methodology and Medical Statistics for M.U.H.S., Nashik. He is a Ph.D. GUIDE for 08 Ph.D. Kayachikitsa (Medicine) students and M.D. GUIDE for 28 M.D. Kayachikitsa (Medicine) students out of which 21 M.D. Kayachikitsa (Medicine) students have been already passed out. His research experience is 15 Years. His research interests in Anxiety disorder, Diabetes Mellitus, Obesity, Hyperacidity, Diarrhoea, Anaemia etc.