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Research Article

REVIEW OF SANNIPATAJ PANDU ROGA W.S.R. TO SICKLE CELL ANAEMIA

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A B S T R A C T

Sannipataj Pandu Roga (SPR) is one of the diseases mentioned in Ayurveda which is characterized by the changes in the skin colour to white (Shweta), yellowish (Peeta), greenish (Harita) etc. which is one of the "Varnopalakshita Roga" i.e., a disease characterized by the change in the colour due to involvement of all the three doshas i.e., Vaat, Pitta and Kapha. The clinical condition of SPR in Ayurveda can be co-related with Sickle Cell Anaemia (SCA) described in Modern Medical Science, due to the resemblance in the clinical signs and symptoms. SCA is a genetic condition, basically it is a pathological haematological condition.SCA, or sickle – cell disease or drepanocyte, is a life-long blood disorder characterized by RBC that assume an abnormal, rigid, sickle shape. Sickling decreases the cells flexibility and results in a risk of various complications. Life expectancy is shortened & hampered a lot. SCA causes significant morbidity and mortality and affects the economic and healthcare status of many countries. Quality of life hampers due to its chronic nature and painful crisis.

SCA, one of the most common inherited diseases worldwide, the cells die an early age leaving scarcity of healthy red blood cells & later blocks blood flow that results in pain. In Ayurveda concept of sannipataj Pandu is mentioned in various literature. The knowledge of this concept is very beneficial to treat different disorders where sannipataj Pandu is a symptom and disease both ways. This article presents the Ayurvedic concept of SPR as well as Sickle Cell Anaemia. Hence, in this article an attempt has been made to review various available Samhita, Sangrahagrantha to find out the different descriptions about Pandu and bring all of them in a single place.

INTRODUCTION

The mechanism of sickle formation, observing that the sickle haemoglobin in its deoxygenated state assumed the characteristic shape, the sickle, that gives the disorder its name.[1] Cells containing deoxygenated haemoglobin not only forms the rigid shape but are also dehydrated.[2] They had an abnormal cell surface and distinct migratory characteristics, were sticky and prone to adhesion, and had abnormal rheologic properties.[3]

The normal shape of red blood cells (RBCs) has a round, biconcave shape, with the centre's diameter being smaller than the outermost portion. Sickle Cell Anaemia (SCA) is the disease in which the circular RBCs transform into sickle shape due to production of faulty beta chain. Morbidity and mortality rate due to sickle cell anaemia is alarming and created the need to substitute the only left blood transfusion method with the help of traditional practice means – Ayurveda.

Sickle cell disease, occurs more commonly in people from parts of tropical & subtropical regions. The clinical manifestations of sickle cell anaemia in India much milder than other countries like Africa & Jamaica. Sickle cell trait or carrier state occurs in 10-30% of many predominantly tribal populations throughout central India. Chhattisgarh is newly created state of central India belonging mostly to tribal & backward classes where malaria is endemic in many pockets of state, a large population is suffering from Sickle Cell Disease. 15% of population of Chhattisgarh being Sickle trait (AS) and 1.27% Sickle cell anaemia.[4]

Etiology / Nidaan [5,6]

It is mentioned in Charka, Sushruta and other Samhitas which can be broadly classified into 3 groups.

1. Aharaj Nidana.
2. Viharaj Nidana.
3. Mansik Nidana.
4. Other diseases i.e., Nidanarthaka Roga.

1. **Aharaj Nidana/ Food/ diet** plays an important role in the normal development and maintenance of different Dhatus as well as in the vitiation of Dosha.

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- Excess intake of Kshaar (alkaline), Amla (sour), Lavan (salt), Ushna (hot) and Teekshna (penetrating) Ahar.
- The food /Ahar which is Virudhha (incompatibles) and Asatmya (unwholesome).
- Intake of Nishpav, Masha, Pinyak and Til Tail in excess.
- Excess consumption of wine (Madya).
- Eating mud (Mrida) and Mridu Ahar.

2. Viharaj Nidana

- Excessive Diwa Swapan, Vyayama, Maithun.
- Pratikarma Vaishamaya (faulty administration of Panchakarma) and Ritu Vaishamaya (faulty management of seasonal regimen).
- Suppression of natural urge (Vega Dharan)

3. Mansik Nidana

- Anxiety, fear, anger, and grief have a major role in the manifestation.

TYPES

Acharya Charak described the disease under five categories namely Vataja, Pittaja, Kaphaja, Sannipataja and Mridabhakshanajanya and Acharya Sushruta has accepted only four types of Pandu excluding Mridabhakshanjanya Pandu they are:

1. Vataj Pandu
2. Pittaj Pandu
3. Kaphaj Pandu
4. Sannipataj Pandu
5. Mrudikabhakshanjaya Pandu

Acharya Charak has mentioned the Samanya and Vishesh Rupa of Pandu Roga [7] in chapter 16 of Chikitsa Sthana according to the Dosha involvement which is mentioned below.

Samanya Rupa

- Loss of Indriye Bala, Tej, Veerya and Oja.
- Loss of Bala, Varna and Agni (power of digestion).
- Karnashveda (tinnitus), Daurbalya (general weakness), Annadwesha (aversion towards food), Shrama (fatigue), Gatrashula (body ache), Jwara (fever), Shwasa (breathlessness), Gaurva (heaviness), Aruchi (anorexia).
- Akshikutashoth (swelling over orbit), Shirnaloma (hair fall), Hataprabha (body complexion become greenish)
- Kopana (dislikes cold things), Nidralu (feeling of drowsiness), Alpawaka (avoid speaking), Shtheevan (spitting frequently).
- Pindikodveshthana (calf muscle pain), Kati-uru-Pad Ruka (pain and weakness in the lumbar, thighs and feet), Arohaneayasa (patient feels exhausted on climbing).

Vishishta Rupa

Acharya Charka had classified Pandu Roga into 5 types.[8]

1. **Vataj Pandu -** Krishna-Panduta (black and pale-yellow discolouration), Rukshata (roughness), Aruna-Angatam (Redness of the body), Angmarda (body ache), Ruja (pain), Toda (Pricking type of pain), Kampa (tremor), Parshvashiro-ruja (pain in chest-head), Varchashosh (dryness of stool), Aasyavairasya (distaste in mouth), Shopha (oedema over body parts), Aanah (constipation), Bala Kshaya (weakness).
2. **Pittaja Pandu -** Pita-Haritabhata (complexion become either yellow or green), Jwara, Daha (burning sensation), Trishna (excessive thirst), Murcha (fainting), Pipasa, Pitamutrashakruta (yellowish discolouration of urine and stool), Sweda (profuse sweating), Sheetakamta (increased urge to take cold things), Katukasayta (feeling pungent taste in mouth), Ushnaamlanupashyata (uneasiness for hot and sour things), Vidahi vidagadhe Anne (feeling of burning sensation during indigestion of food), Daurgandhya (foul smell of body), Daurbalya (weakness), Bhinn-varcha (diarrhoea) .
3. **Kaphaja Pandu** - Gaurava (heaviness), Tandra (Drowsiness), Chhardi, Shvetavbhasta (whitish complexion), Praseka (excessive salivation), Lom Harsha (Horripilation), Murchha (Fainting), Bhrama (giddiness), Klama (mental fatigue), Sada (looseness of body parts), Kasa, Shwasa (dyspnoea), Alasya (laziness), Aruchi (anorexia), Vaka-swaragraha (obstruction of speech and voice), Shukla Mutra-Akshivarchasa (whitish discolouration of urine, eye and stool), Katurukshoshna Kamta (feeling to take pungent, Hot and dry things), Shwayathu, Madhurasyata (sweetishness in mouth).
4. **Sannipataj Pandu** - Sign and symptoms of all the three vitiated Doshas are present, and this is extremely intolerable because of developing complications.
5. **Mridbhakshanajanya Pandu -** Bala-Varna-Agni Nash (loss of strength, complexion, and power of digestion metabolism), Ganda-Akshikuta-Bhru-Pad-Nabhi-Mehan Shoth (oedema) on cheek, eye socket, eyebrow, feet, umbilical region, genital parts), Krimi Koshta (Appearance of intestinal worm), Atisaryet Mala Sasruka Kapha (diarrhoea associated with blood and mucus).

Types	Charak	Sushruta	Ashtang sangrah	Ashtang hridya	Madhav nidan	Bhav Prakash
Vataj	+	+	+	+	+	+
Pittaj	+	+	+	+	+	+
Kaphaj	+	+	+	+	+	+
Sannipataj	+	+	+	+	+	+
Mridbhakshanajanya	+	-	+	+	+	+

In Harit Samhita 8 types of Pandu roga Described [9]

1. Vataja

2. Pittaja
3. Kaphaja
4. Sannipataja
5. Mridbhakshanajanya
6. Kamla
7. Kumbh Kamla
8. Halimak.

CLINICAL FEATURES [10]

Sickle-cell anaemia covers a wide spectrum of illness. Most affected people have chronic anaemia with a haemoglobin concentration of around 8 g/dl. The main problems arise from the tendency of the red blood cells to become sickle-shaped and block capillaries at low oxygen tension. In children, sickle-shaped red blood cells often become trapped in the spleen, leading to a serious risk of death before the age of seven years from a sudden profound anaemia associated with rapid splenic enlargement or because lack of splenic function permits an overwhelming infection.

Between 6 and 18 months of age affected children most often present with painful swelling of the hands and/or feet (hand-foot syndrome).

Survivors may also suffer recurrent and unpredictable severe painful crises, as well as "acute chest syndrome" (pneumonia or pulmonary infarction), bone or joint necrosis, priapism or renal failure. For most patients the incidence of complications can be reduced by simple protective measures such as prophylactic administration of penicillin in childhood, avoiding excessive heat or cold and dehydration, and contact as early as possible with a specialist centre. These precautions are most effective if susceptible infants are identified at birth. Some patients have such severe problems that they need regular blood transfusion and iron-chelation therapy.

MANAGEMENT [11]

In most countries where sickle-cell anaemia is a major public health concern, its management has remained inadequate, national control programmes do not exist, the basic facilities to manage the patients are usually absent, systematic screening is not a common practice and the diagnosis is usually made when a patient presents with a severe complication. Simple, cheap and very cost-effective procedures such as the use of penicillin to prevent infections are not widely available in many countries.

The most important challenge is, thus, to improve the prospects for the patients with sickle-cell anaemia in developing countries. The main aspect of comprehensive care for patients is early intervention for preventable problems with pain medication, antibiotics, nutrition, folic acid supplementation and high fluid intake. Treatment with hydroxyurea has reduced many of the major complications. There is evidence that the neonatal screening for sickle-cell anaemia, when linked to timely diagnostic testing, parental education and comprehensive care, markedly reduces morbidity and mortality from the disease in infancy and early childhood. Even well-organized holistic care including expert counselling and access to needed care, irrespective of patients' ability to pay, can significantly reduce illness and deaths and improve the quality of lives of people living with sickle-cell anaemia in developing countries. Over the past 10 years, progress has been made in several respects: long-term treatment with hydroxyurea has decreased the rate of painful crises and improved the quality of life of patients with sickle-cell anaemia; imaging studies can help in the prompt management of life-threatening complications, such as stroke and the chest syndrome; bone marrow transplantation, although not free of risk and not available for all patients, can cure sickle-cell anaemia; regular blood-transfusion programmes associated with iron chelation can prevent complications; gene therapy has been carried out successfully in animal models, but has yet to be tested in clinical trials in human subjects. Consequently, it is possible to provide a better quality of life, and, in some cases, a definitive cure for patients with sickle-cell anaemia. However, these advances, which are mainly applicable in highresource countries, have unfortunately widened the gap in terms of quality of life between patients in developed countries and those in developing countries, and that gap can be reduced only through a general improvement in health services.

Ayurvedic management

The chronicity of Sannipataj Pandu indicates Asadhya (incurable) 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.

As per the symptomatology and nature of disease, this clinical condition can be compared with sannipataj 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). Avamanana (negligence of urges during Dauhridya stage of pregnant women), presence of Garbhopaghatkar bhava (substances that can cause defect or death of foetus), incompatible Garbha Vriddhikara bhava (normal requisites for growth and development of foetus) 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. 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.

Probable mode of action of choice of drugs

1. To improve Agni of patients due of Ushna Virya of drugs like-
   - Chitraka[12]
   - Pippali[13]
   - Maricha [14]
2. Improvement in Agni will help to rectify the dhatwagni and which ultimately helps in the reversal of its Samprapti. Once the state of proper Agni is achieved signs & symptoms will be reversed.
3. Use of drugs having appetizer, digestive and carminative properties.
4. Use of drugs having antioxidant activity and important dietary source of vitamin C, which is powerful antioxidants and helps in increasing iron absorption from the gut.

Pathya- apathy

Pathyahara

According to Acharya Charak [15] –

- Shalianna, Yava, Godhoom mixed with Yusha prepared from Mudga, Adhaki and Masur.
- Jangal Mamsa Rasa.
- Panchagavya Ghrita
- Mahatiktaka Ghrita
- Kalyanaka Ghrit (snehan Karma).

According to Acharya Sushruta [16] –

- Pandu Rogi must use Arishta prepared from Guda, Sharkara (Sugar) and Shahad (Honey)
- Asava prepared from Mutra and Kshara should be used
- Jangala Mansa Rasa added with Sneha (Fat) and Amalaka Swaras should be used.

Apathyahara

In Bhaishajya Ratnavali[17] following Apathya Aahar are mentioned:

- Rakta Sruti, Dhoompan, Vaman Vega Dharan, Swedan and Maithoon are to be avoided by Pandu Rogi.
- Avoid consumption of Shimbi, Patrashaak, Ramath, Masha, ati ambupaan, Pindyaak, Tambul, Sarshapa, and Sura.
- Intake of water of rivers like those originating from Vindhya and Sahyadri Mountain.
- All types of salt, sour edibles, Virudhha Anna (incompatible foods), food that is Guru (heavy to digest) and Vidahi (cause a burning sensation).

Preventive measures

- Role of shodhan before conception.
- Role of Rakta Basti in sickle cell anaemia
- Study of prevalence of sickle cell anaemia in doshaja prakruti and blood group.
- Use of drugs which are raktaprasadak.

DISCUSSION

According to WHO [18], Sannipataj Pandu or Sickle Cell Anaemia is linked as inherited illness. The prominent symptoms of sickle cell anaemia like jaundice, abdominal colic, palpitation, loss of appetite, fever, body ache, sternal pain, hand foot syndrome, hepatosplenomegaly, recurrent respiratory infections, recurrent blood transfusion, and pain in hip region can be directly compared with symptoms of Sannipataj Pandu as mentioned in ancient Ayurvedic literature. Nidana of sannipataj Pandu does not have any relation with modern science's sickle cell anaemia. Since, as it is an autosomal and hereditary disease. The samprapti (pathology) of sannipataj Pandu can be correlated with Sickle cell as in both types of Sroto dusti is Sanga (Vaso occlusion found in Sickle cell). Blood transfusion (BT) is the only treatment left to save the life of the patient, but ayurveda will help to avoid recurrent BT and increase the haemoglobin percentage in peripheral blood. The need for routine blood checks to evaluate the amount of haemoglobin is emphasized. The nutrition component needs to be routinely cross checked. Focus is required for remedial steps and iron deficiency needs to be combat before it reaches its severity

CONCLUSION

Sannipataj Pandu appears to be literally life-threatening disease which should be conquered on the basis of regular and routine checkups, proper consultation from an ayurvedic physician along with proper medications.

Footnotes

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