

REVIEW ARTICLE ON AYURVEDIC APPROACH TO *PANDU* IN CHILDREN – IRON DEFICIENCY ANEMIA

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ABSTRACT

Today's era is dominated by disorder of lifestyle and Ayurveda is the oldest system of medicine. *Panduroga* is one of the major diseases described in Ayurveda by many *acharyas* like *Charak*, *Sushruta*, *Vaghabhata*, *Harit*, *Madhav nidan* and *Kashyap* with its own specific pathogenesis and treatment. In *Panduroga*, *Panduta* is the main distinctive feature and hence the disease *Pandu* is named after it. All the description related to *pandu* is available in different *sanhita* such as *charak chikitsa 16*, *sushrut uttartantra 44*, *Vaghabhat nidan 13*, *vaghabhat chikitsa 16*, *harit trutiya sthan*, *kashyap sanhita*, *madhav nidan*. *Pandu* is the disease of *rasvaha strotas* as stated by all *acharyas* except *Sushrut* who consider it as disease of *raktawaha strotas*. According to WHO anaemia affects globally 1.62 billion people which

corresponds to 24.8% of population. 47.4% is the highest prevalence found in preschool children and 25.4% in school age children. *Pandu* runs parallel with the causes of iron deficiency anemia mentioned by the system of modern medicine. Defective absorption of iron and inappropriate and deficient dietary intake are the causes of iron deficiency anaemia. Various ayurvedic formulations have been described in ayurvedic literature under the heading *Pandu* which mainly focuses on correcting metabolism rather than supplementation of iron. In the Ayurvedic literature *Nidanparivarjana*, *Shodhana* and *Shamana* line of treatment forms the complete treatment of *Pandu*. Among these procedures, the *Shamana* line of treatment that includes oral administration of medicine is of most importance as the administration is very easy and also effective compared to *Shodhana* in children.

KEYWORDS: *pandu, rasvaha stotas, raktawaha strotas, anaemia.*

INTRODUCTION

There are 7 *dhatu*s in human body in which *Raktadhatu* plays an important role such as *Jeevana*, and *Varna prasadan karma* of the body.^[1]

Rasavaha and *Raktavaha strotas* are chiefly involved in pathogenesis of *Panduroga*. *Rakta* get vitiated by *doshas* mainly by *Pitta dosha* as *Rakta* is *Pittavargiya* and hence disease like *Pandu* appears.^[2]

Hence body metabolism is grossly affected in this conditions which is evident from the main general clinical features such as *Karnakshweda* (ringing in ears), *Hataanala* (poor digestion), *Daurbalya* (general debility), *Angasada* (weakness of body), *Annadwesha* (aversion towards food), *Shrama* (fatigue), *Bhrama* (giddiness), *Gatrashula* (bodyache), *Aruchi* (anorexia) and *Akshikootashotha* (swelling over periorbital area).^[3]

Anaemia is the current perspective and can be compared under the title of *Panduroga* due to similarity of a number of clinical features such as general weakness, tiredness, shortness of breath, palpitations, koilonychia, glossitis, dysphagia and altered sensation of taste.^[4]

Generally children take the intake of small quantity of iron rich food which makes it difficult to attain adequate iron consumption.^[5] In adolescents there is high requirement of iron due to growth spurt, dietary deficiencies and menstrual blood loss. Hence they become susceptible to IDA. All these parameters clearly indicate that treatment of IDA needs correction of metabolism, iron supplementation and treatment of any related diseases.

AIMS AND OBJECTIVE

AIMS: To study *hetu, purvaroop, samprapti, samprapti ghatak, roop, chikitsa, upshay, anupshay of pandu.*

OBJECTIVES: Reviewing various literature related to *pandu* and its management.

MATERIALS AND METHODS

Various literature and *sanhitas*.

ETIOLOGY: Anemia is a clinical manifestation of imbalance between production and loss of RBCs, due to any cause.

ETIOLOGICAL CLASSIFICATION OF PANDU^[6]**A. INADEQUATE BONE MARROW PRODUCTION**

- a) Aplastic anemia (pancytopenia)
- b) Pure red cell aplasia
- c) Transient erythroblastopenia
- d) Chronic infections /inflammation /renal disease

B-SUBSTRATE DEFICIENCIES (NUTRITIONAL ANEMIA)

- a) Iron deficiency anemia
- b) Megaloblastic anemia (folic acid, vitamin B 12)
- c) Other nutrient deficiencies (PEM, VITAMIN C, Zn)

C-INCREASED DESTRUCTION (HEMOLYTIC ANEMIA)***INTRA CORPUSCULAR (CONGENITAL)**

- a) Membrane defects (hereditary spherocytosis)
- b) Enzyme defects: G6PD deficiency
- c) Hemoglobinopathies: thalassemia, sickle cell anemia

***EXTRA CORPUSCULAR (ACQUIRED)**

- a) Autoimmune hemolytic anemia
- b) Isoimmune hemolytic anemia
- c) Mechanical injury: Malaria, hemangioma, HUS

D-Increased blood loss

- a) Acute: Trauma, surgery, systemic disease
- b) Chronic: Hook worm infestation

HEMATOLOGICAL CLASSIFICATION OF ANEMIA^[7]**A-MICROCYTIC HYPOCHROMIC**

- a) Iron deficiency anemia
- b) Lead poisoning
- c) Thalassemia trait
- d) Pyridoxine deficient /dependent anemia
- e) Sideroblastic /dyserythropoietic anemia

B. NORMOCYTIC NORMOCHROMIC

- a) Aplastic hypoplastic anemia
- b) Minor hemoglobinopathies or traits
- c) Acute /chronic blood loss
- d) Chronic infections /inflammation /renal disease
- e) Auto immune hemolytic anemia

C. MEGALOBLASTIC

- a) Vitamin b12 deficiency
- b) Folic acid deficiency
- c) Myelodysplasia
- d) Orotic aciduria

CLINICAL SYMPTOMS

A.PALLOR- first visible over conjunctiva and oral mucosal membrane

B.SIGNS OF CELLULAR HYPOXIA-

- a) Easy fatigability
- b) Growth failure
- c) Lack of attention span
- d) Dizziness etc

C. SIGNS OF CARDIAC DECOMPENSATION

- a) Tachycardia
- b) Collapsing pulse
- c) Functional cardiac murmurs
- d) Cardiomegaly
- e) CCF ETC

D.SIGNS OF COMPENSATORY ERYTHROPOIESIS

- a) Hepatosplenomegaly
- b) Hemolytic species
- c) Skeletal changes

HETU OF PANDUROGA

The factors responsible for developing the signs and symptoms of *Panduroga* can be classified as-

- 1) Aaharaj Hetu
- 2) Viharaj Hetu
- 3) Manasik Hetu
- 4) Others

Samhita Grantha

1: *Charak Samhita*^[8]

A: Aaharaj: Kshar, Amla, Lawan

Atiushna, Virudha, asatmya aahar nishpav(shimbi dhanya), maash, pinyak(til pend) til tail adhik sewan, vidaghdha anna

B: Viharaj: Diwaswap, Ati maithun, chikitsa vaishamya, rhytu vaishamya, dharan of adharniya veg, Ati vyayam.

C: Mansik: kaam, chinta, bhay, krodha, shoka

2: *SUSHRUT SAMHITA*^[9]

A: Aaharaj: Amla, Lawan, madya, mrudam, tikshna

B: Viharaj: Vyavay, Diwaswap

3: *Madhav Nidan*^[10]

Guna pradhanata

4: *Yoga Ratanakar -Atitikshna, Madya, Mrudam*

PURVARUPA OF PANDUROGA

The signs & symptoms which give the earlier idea about disease which is to be developed in future are called as *Purvarupa* i.e. prodromal symptoms of the disease.

Acharya Sushrut has described six stages i.e. *Shatkriyakala*^[11]:

Chaya, Prakopa, Prasara, Sthansanshrya, Vyakti and Bheda.

Fourth stage of *Kriyakala* i.e. *Sthansanshrya* represents the prodromal phase or phase of *Purvarupa* of the disease. In this stage the *viguna doshas* or *Prakupit doshas* are vitiated to other place in the body where they got suitable place i.e. *Khavaigunya* and development of disease takes place at that site.

Purvarupani of panduroga has mentioned by different *Granthkaras*, these are as follows-
Charak-^[12]

- i) *Hridaya Spandan.*
- ii) *Roukshya*
- iii) *Swedabhava*
- iv) *Shrama*

Sushrut-^[13]

- i) *Twaksphotanam*
- ii) *Shthivan*
- iii) *Mrid Bhakshanechha*
- iv) *Prekshankut Shotha*
- v) *Mutrapitata*
- vi) *Purishpitata*
- vii) *Avipak*
- viii) *Gatrasada*

Type equation here

3) *VAGHABHAT*^[14]

- i) *Hridayaspandanam*
- ii) *Twak Rukshata*
- iii) *Aruchi*
- iv) *Pitamutrata*
- v) *Swedabhava*
- vi) *Alpavanhita*
- vii) *Sada*
- viii) *Shrama*

Madhav Nidankar^[7], *Sharangdhar* and *Bhavprakash* have also mentioned the same.

PURVANUPANI OF THE DISEASE PANDUROGA

These are as follows-

Purvaroopani described by *Laghutrayi*-

- i) *Twak sphotanam*
- ii) *Shthivan*
- iii) *Gatrasada*

- iv) *Mridbhakshaneccha*
- v) *Prekshan Kuta Shotha*
- vi) *Purishpitata*
- vii) *Mutrapitata*
- viii) *Avipak*

RUPA OF PANDUROGA

(GENERAL SIGNS AND SYMPTOMS OF PANDUROGA)

Signs and symptoms which give the proper idea of present disease are known as *RUPI*. These are noted in fifth *kriyakala* i.e ‘*VYAKTI*’

In case of “*PANDUROGA*” the following signs and symptoms are noted in various *samhita granthas*. These are explained below

A) *CHARAK SAMHITA*^[15]

Karnakshweda, hatanala, daurbalya, gatrashool, sadan annadwesh, shram, bhram, jwara, swas, gaurav, aruchi, angamarda, gatrapeda, gatron unmathan, shunakshikutha, haritvarnata, sheerna lomata, hataprabhatawa, kopanatwa, shishir dwesha, nidralutwa, shthivantwa, alpa wakatwa Pindikodweshtan, katiruk, katisad, padruk, padsad, ururuk, urusad, dhatu shaithilya, ojo kshaya, alparaktata, alpamedoskata, nissarta, hrid drav, shithilendriyata, twak panduta, shwetakshitwa, shwet nakhatwa, shwet vakrata,

B) *VAGHABHAT*^[16]

Karnakshweda, hatanala, daurbalya, annadwesh, shram, bhram, jwara, swas, angamarda, shunakshikutha, panduta, sheerna lomata, hataprabhatawa, shishir dwesha, nidralutwa, shthivanatwa, alpa wakatwa, dhatu shaithilya, ojo kshaya, alparaktata, alpamedoskata, nissarta, hrid drav, shithilendriyata, twak panduta, shwetakshitwa, shwet nakhatwa, shwet vakrata.

C) *KASHYAP*

shwetakshitwa, shwet nakhatwa, shwet vakrata.

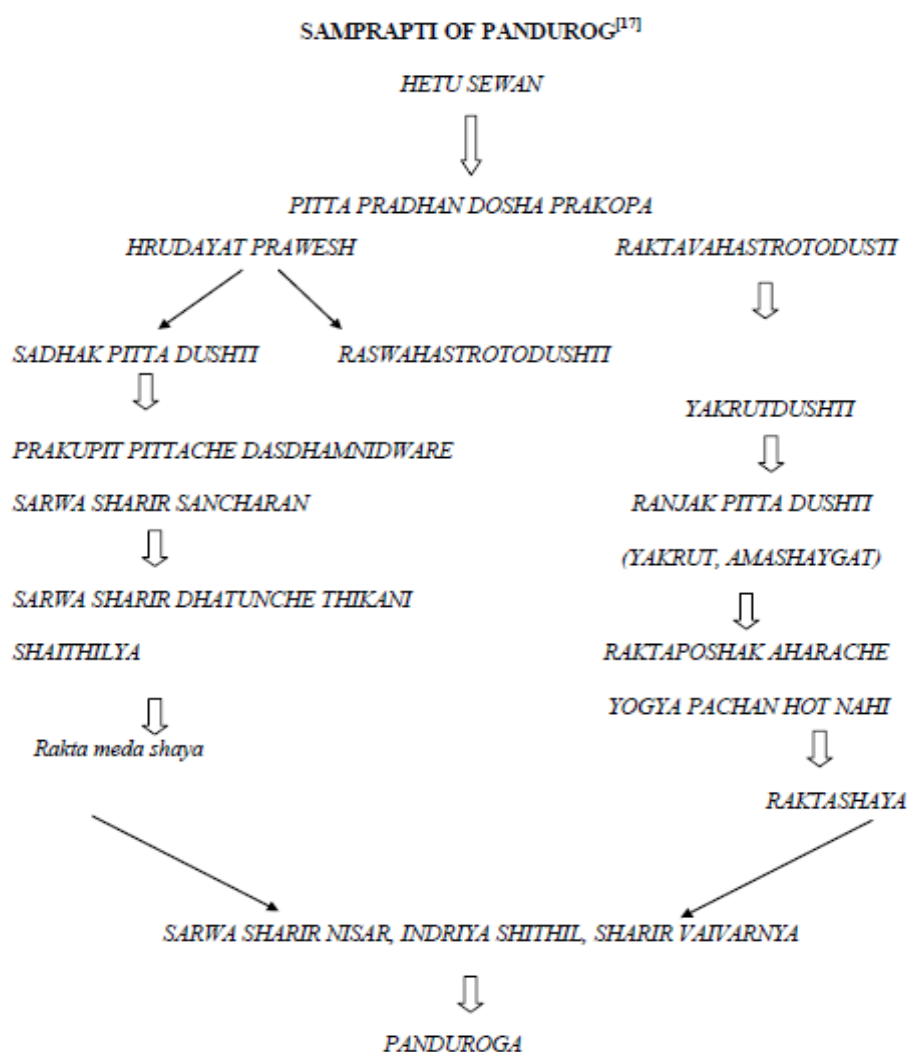
Nabhi shotha

D) *RAS RATNA SAMUCHAYA*

-sharir vaivarnya, Shotha, Karshya, Satwahani, Alasya

In Short *Pratyatma linga* (Cardinal symptom) of *Panduroga* are mentioned below-

1. *Panduta*
2. *Daurbalya*
3. *Hridspandan*
4. *Akshikuta Shoth*
5. *Bhrama*
6. *Annadwesh*
7. *Ayaseen shwas*
8. *Shram*
9. *Gatrasad*
10. *Angamarda*



PRAKARA OF PANDUROGA

According to *Sankhya samprapti* the classification of '*Panduroga*' is described in different *Samhita granthas* in different views.

Charak, Vagbhata, Madhav Nidankar, Sharangdhara, Yogratnakara, Kashyapa all have mentioned 5 types of '*Panduroga*'. These are as follows-

Type of *Panduroga*

CHARAK (5)

- 1) *Vataj*
- 2) *Pittaj*
- 3) *Kaphaj*
- 4) *Sannipataj*
- 5) *Mridbhakshanjanya*

Sushruta has claimed that there are only 4 types of '*Panduroga*' viz

- i) *Vataj*
- ii) *Pittaj*
- iii) *Kaphaj*
- iv) *Sannipataj*

According to *Sushrutacharya* different type of *mrid* produce particular *Doshvaishyama* or *Doshprakopa*. And afterwards get converted into *Doshaj Pandu*. Hence he has not included the *Mridbhakshanjanya Pandu* as 5th type of '*Panduroga*'

In *Harit samhita*, the types of '*Panduroga*' has been mentioned are of 8 types. These are as follows-

- i) *Vataj*
- ii) *Pittaj*
- iii) *Kaphaj*
- iv) *Sannipatik*
- v) *Mridbhakshanjanya*
- vi) *Kamala*
- vii) *Kumbhakamla*
- viii) *Halimaka*

Taking into consideration all these opinions we can say that there are 5 types of 'Panduroga' as described by Acharya Charak & Vagbhata.

Kamala and *Halimaka* are the late stages when there is continuation in *Nidansevan*.

The treatment of *Mridbhakshanijanya Pandu* is quite different from *Doshaj Pandu* i.e. 'Shodhan', *Krimighna Chikitsa*, avoidance of eating the clay. Therefore we can consider of *Mridbhakshanijanya Panduroga* as one more type of *Panduroga*.

Types of Panduroga & Rupa

Prakara	Charak	Vagbhata
1. Vataj Pandu	Krushna Panduta ruksha Arunanga Angamarda Sarwang Ruja Toda,, Kampa Parshwa Shir Shoola, Varchyo Shosha Aasyavairasy Shopha Aanah balshayay	Gatraruk Gatratoda Gatrakampa Nakha, Mala, Mootradi, Rukshatwa, Krishnatwa, Arunata Anaha
2. Pittaj Pandu	Twak, Nakha, Netra, Peetvarni or Haritvani Jwar, Daha Trishna murcha, pipasa Mal, mootra peetata Atiswedan Aruchi Sheet Kamana Katukasyata Amlodgar Vidagdedhe anne vidaha Daurgandhya Bhinna varchatwa Tama, daurbalya	Aasyavairasya Vitashosha Parshwaruk Murdhwaruk Siradi Varna- Harit Peetabha Jwara Trut Sweda Pravartan Murchha Sheetchha Daurgandhya Katuvakrata Varchyobhed Amalaka Daha
3. Kaphaj Pandu	Anga, Gaurv Tandra Chhardi Twak, Nakh, Netra, Shuklawarni Praseka Lomaharsha	\ Siradi Suklatwa Tandra Lawan vakrata Romaharsha Swarkshaya Kasa Chhardi

	<i>Angasad</i> <i>Moorccha</i> <i>Bhrama</i> <i>Klama</i> <i>Shwas</i> <i>Kasa</i> <i>Aalasya</i> <i>Aruchi</i> <i>Vak-graha</i> <i>Swargraha</i> <i>Malmootra</i> <i>Shuklawarni,</i> <i>Katu,</i> <i>Ruksh,</i> <i>Ushna, Kamana,</i> <i>Shwayathu,</i> <i>Madhoorasyata</i>	
4).Sannipatik/tridoshaj pandu	<i>Tridosh Lingani</i> <i>Doosahata i.e. intolerable or</i> <i>Achikitsya</i>	
5. Mridbhakshan janya Pandu	<i>Indriya Bala-Ksheenata Bala nash,</i> <i>Veerya nash Ojo nash, Varana nash</i> <i>Agni nash Shunnganda</i> <i>akshikuta bhru ubhayapad</i> <i>shopha</i> <i>Nabhi shoth</i> <i>Krimi Koshtha</i> <i>Atisara</i> <i>Sarakta, Sakapha, malapravritti.</i>	<i>Shoon-Nabhi-pad-Mehan</i> <i>Purisha Krimi</i> <i>Sakapha, Sarakta,</i> <i>Bhinnamala.</i>

CRITERIA FOR DIAGNOSIS OF PANDU

WHO GRADING FOR ANEMIA^[18]

	HB(gm/dl)	Clinical pallor
Mild	>10	Mucosal pallor
Moderate	7-10	Skin pallor
Severe	<7	Pale palmar creases

SAMPRAPTI GHATAK

DOSH : pitta(sadhak pitta)

DUSHYA:, ras,rakta,meda, oja

STROTAS : rasvaha,raktavaha strotas

STROTODUSTI : rasvaha,raktavaha strotas

AGNI : dhatwagni

UDBHAVSTHAN : hriday

SANCHAR: rasvahini marfat sarwa sharir

VYAKTISTHAN: *twacha, nakh, netra,*

For the convenience of treatment of the *Panduroga*, it is classified in *dwandwaja* types also.

These are as follows-

- i) *Vatapittaj Panduroga*
- ii) *Pittakaphaj Panduroga*
- iii) *Vatakaphaj Panduroga*

Upadravas and Asadhya lakshanani of panduroga

Rog-Arambhak Dosh Prokopjanya Vikar is known as *Upadrava*^[19] of that particular disease.

When patients suffering from *Panduroga* continues the *Hetusevan* then they would be face the severe complications i.e. *Upadravas of Panduroga* which are described in *Ayurvedic Sanhitas* are as follows-

a) SUSHRUT SAMHITA

- | | |
|---------------------------|--------------------------|
| 1) <i>Aruchi</i> | 12) <i>Shwas</i> |
| 2) <i>Pipasa</i> | 13) <i>Ananabhilasha</i> |
| 3) <i>Chhardi</i> | 14) <i>Atisara</i> |
| 4) <i>Jwara</i> | 15) <i>Kasa</i> |
| 5) <i>Moordharuja</i> | 16) <i>Trishna</i> |
| 6) <i>Agnisad</i> | 17) <i>Shoola</i> |
| 7) <i>Kantha Shopha</i> | 18) <i>Shoka</i> |
| 8) <i>Abalatwa</i> | 19) <i>Avipak</i> |
| 9) <i>Moorchha</i> | 20) <i>Swarbhed</i> |
| 10) <i>Klama</i> | 21) <i>Swarsad</i> |
| 11) <i>Hridaya Peedan</i> | 22) <i>Hridroga</i> |

Asadhya Lakshanani of Panduroga

The *Lakshanani* which makes the disease '*Dushchikitsya*' or *Kashtasadhya* are called as *Asadhya Lakshanani*^[20] of the particular disease.

The *Asadhya Lakshanani* of *Panduroga* is as follows-

A) CHARAK SANHITA

- 1) *Chirotpanna i.e. Deerghakalin Panduroga*
- 2) *Kharibhuta i.e. Dhatu Roukshya.*

- 3) *Kala Prakarshatshoona*,
- 4) *Peetavdarshi Pandurogi*
- 5) *Sarwang Shoth*.
- 6) *Badhha Alpa vit, Sakapha, Haritam, Atisari Pandurogi*.
- 7) *Shwetati Dighdhang, chardi, moorchha, Trusha, ardit, Deen Pandurogi*.
- 8) *Asruk Kshayat Shwetataavaprapti*.
- 9) *Anteshu shoonam pariheen madhyama* – The oedema on four extremities except the trunk.
- 10) *Anteshu Mlanam Madhya Shoonam i.e. only Madhya Kaya i.e. Trunk Shothyukta*.
- 11) *Guda, Shef, Mushka, Shoonam*.
- 12) *Kupitochhavasi, TrishnaPeedit, Atikrush Pandurogi*.

Chikitsa of Panduroga^[21]

1) Snehan

In *Panduroga*, *Acharya Charak* has prescribed the *snehana* as *Abhyantar snehana* (14) as well as *Bahyya snehan*.

The *Snehas* use for the treatment of *Panduroga* are given below-

- i) *Panchagavya Ghrita*
- ii) *Mahatikta Ghrita*
- iii) *Kalyanak Ghrita*
- iv) *Panchatikta Ghrita*
- v) *Triphala Ghrita*
- vi) *Dadimadi ghrita*
- vii) *Katukadi ghrita*
- viii) *pathya ghrita*

Functioning of Snehana

- 1) Due to *Samyaka Snehana*, *Vatanuloman* takes place, *Agni* comes to its normal *sthan*, *snigdha varchaskata*, *snigdhata* and *mardavata* is also found out.
- 2) in *shodhan* *yogya Pandurogi*, *Snehana*, acts as *Poorvakarma* of the *shodhan vidhi*. (i.e. *Vaman*, *virechan* etc.)

2) Shodhan

Acharya Charak has described the *Urdhwa* as well as an *Adhoshodhan* in the treatment of *Panduroga*.

Shodhan Karmani-

Urdhwa shodhan i.e. Vamana

Adhoshodhan i.e. virechana are the excepted *shodhan karmas* in the disease *Panduroga*.

- *Vaman:* - According to *Dalhanacharya Mridu Vaman* can be given in disease *Panduroga* with respect to *Ritu, Desh, Kala, Rogibala* etc.
- *Virechana:* - *Virechana* is the best *shodhanopkarma* of *Pitta dosha*. In *Panduroga Pitta dosha* plays a great role in *Samprapti*. Hence *Virechana* is the best and most acceptable *shodhanopakrama* in disease *Punduroga*.

Acharya Sushrut has stated that *Siddha Ghritani* is to be used in *virechanapokrama*.

3) Panduhar Ghritas

Charak –

- 1) *Dadimadi Ghrita*
- 2) *Katukadi Ghrita*
- 3) *Pathya Ghrita*
- 4) *Danti Ghrita*
- 5) *Drakshadi Ghrita*

Sushrut

- 1) *Haridra Ghrita*
- 2) *Darvyadi Ghrita*
- 3) *Bruhatyadi Ghrita*

Vagbhata- Duralabhadi Ghrita

4) Dosh Vishishta Chikitsa

Vataj Pandu- Snehabhuyishtam

Pittaj Pandu- Tikta and Sheet Dravya prayog

Kaphaj Pandu - Katu, Tikta, and Ushna Dravya

Sannipatik Pandu- Vimishra Yoga prayoga

Mridbhakshanjanya- Mrittika Bhakshan Nivaran doshaj Chikitsa

5) Panduroga and Loha

Loha or Yogas of Loha are the best or the Vyadhi Pratyahnik Dravya of Panduroga

Loha Prayog as alone or Loha Prayog as yoga shuddha ayas or Loha bhasma

i) *Navayas Choorna*

ii) *Shuddha Mandoor Bhasma*

iii) *Tapyadi Loha*

iv) *Teekshna Loha*

v) *Mandoor Vatak*

vi) *Shuddha Kasis*

vii) *Punarnava Mandoor*

viii) *Suvarna Makshika*

xi) *Mandoor adyawaleha*

x) *Shuddha Shilajita*

xi) *Lohasav*

xii) *shuddha Gairika etc*

xiii) *Abhayarishta etc.*

6) Panduroga Pathya

Acharya charak

Puran Godhoom, Mudga, Masur Yusha, Jangal mansa as pathya Aahar after the shodhanopakrama.

Acharya Sushrut

Aamalaki swarasa, Ikshurasa, Mixture of sattva and Honey or madha^[16]

Phala Varga - Patol, Kushmanda, Kadali (Taruna), Vartak, Rasona, Bimbi.

Shaka Varga- Jeevanti, Guduchi, Punarnava, Dronpushpi.

Drava Varga -Dugdha, Takra, Ghrita, Navneeta Tail.

Anna Dravya Varga– Godhoom, Yava, Raktashali, Mudga, Adhaki

7) Panduroga (Apathya)

1) *Agnisevan and Aatapsevan*

2) *Ativyayam*

3) *Pitta prakopak Aahar*

4) *Maithuna*

5) *Krodha*

6) *Atimargagaman*.**CONCLUSION**

Pandu can be correlated with Anemia. With appropriate use of ayurvedic preventive measures such as *aharvidhi*, *pathya* and *apathya* and therapeutic measures it can be prevented. The symptoms of *pandu* decreases or subside slowly and progressively with continuous use of *ayurvedic* drugs. Modern drugs causes oral intolerance various GI complaints (nausea, flatulence, abdominal pain, Diarrhoea, constipation, black and tarry stools) have been reported.^[22] Hence ayurvedic formulations are safe because these drugs do not cause any side effects. In addition life style modification, with adopting proper food habits *yoga* exercise have very important role in management of *pandu*.

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