



### Review Article

## AN AYURVEDIC PERSPECTIVE OF PANDUROGA -A REVIEW

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**KEYWORDS:** *Pandu*, Anaemia, *Rakta*, *Rasa*.

### ABSTRACT

*Pandu Roga* was well known to Indian people science since *Vedic* Period. It is described in full length by all the *Acharyas* of Ayurveda as a specific disease with its own Pathogenesis and treatment. In *Panduroga* change the color of the body like pallor of skin, sclera, nail, tongue etc. due to *Rakta-alpata* means Hemoglobin level decrease than the normal level. It is related with both important *Dhatu Rasa* and *Rakta*. We can correlate this disease to Anaemia in modern science. Anaemia is the world's second leading cause of disability and is responsible for about 1 million deaths a year. It is therefore important for *Ayurvedic* scholar to search scientific reason behind the disease. With this research interest the present study has been undertaken thoroughly review of *Panduroga*. Three general principles of treatment have been mentioned in *Charaka Samhita*. They are *Daivavyapashraya*, *Yuktivyapashraya* and *Satvawajya*. Here only *Yuktivyapashraya Chikitsa* has been mentioned. Single drugs which have been used in *Pandu* are - *Lauha Bhasma*, *Mandura Bhasma*, *Pure Kaseesa*, *Shilajita*, *Vardhamana Pippali* etc. Compound drugs which are of vegetable origin e.g. *Triphala*, *Phalatrikadi Kwatha*, *Punarnavashtaka Kwatha*, *Vidangavaleha* etc. Here also made some efforts to discuss every aspect of *Panduroga* in *Ayurvedic* point of view.

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### INTRODUCTION

*Panduroga* is known from the *Vedic* Period. This disease was described in ancient Hindu treaties like in *Ramayana*, *Mahabharata*, *Agnipurana*, *Garuda Purana* etc. In *Mahabharata*, *Pandu* has been described as the father of Five *Pandvas* and as the son of *Ved Vyasa*. *Pandu* has been described by the name of *Vilohita*. It is to be appreciated here that *Lohita* is the synonym of *Rakta Dhatu*. The term *Lohita* probably indicates the importance of *Lauha Dhatu* or Iron in its development. In *Garuda Purana*, there is a reference in which "*Takra*" mixed with *Lauha Churna* has been advocated for the treatment of *Pandu*.<sup>[1]</sup> This shows that *Panduroga* was prevalent in that period and physicians were able to diagnose and treat it. It is therefore apparent that the use of Iron preparation for the treatment of *Panduroga* was well known since ancient times.

While describing the pathological aspect of the diseases, *Dhatu Pradoshaja Vikaras* have been mentioned. *Pandu* is the disease of *Rasavaha Srotas* according to *Charaka Samhita*<sup>[2]</sup> and *Raktavahasrotoviddha Lakshana* and *Rasadoshaja Vikara* as per *Maharshi Sushruta*.<sup>[3,4]</sup> Thus it is related with both important *Dhatu Rasa* and *Rakta* Principal function of both these *Dhatu* has been described as *Preenana* (providing nourishment) & *Jeevana* (life activity) *Karma*.<sup>[5]</sup> This is how disease *Pandu* can be the choice of disease to assess the *Dhatuposhana Krama*.

*Acharya Charaka* described *Pandu* after *Grahanidosha Chikitsa* due to aggravation of *Pitta* in *Grahani*, and the aggravation of *Pitta* constitutes a predominant factor in the causation of *Pandu*. *Acharya Sushruta* has mentioned after *Hridaroga* due to Same *Samkhya Samprapti* and treatment of *Hridaroga* like *Tikshna*, *Amla*, *Katu* etc may cause for development of *Pandu*. *Acharya Vagbhata* mentioned after *Udararoga* due to Same *Doshasanghata*.

*Pandutva* has been mentioned as cardinal symptom of the disease which is related with the colour and complexion of the body. *Pandu* develops due to vitiation of *Bhrajaka Pitta* and *Rakta* which are mainly responsible for the *Prakrita Varna* of body. *Acharya Charaka* has mentioned the word "*Vaivarnaya*" in this regards. *Acharya Chakrapani* has described it as *Shweta*, *Dhusara*, *Shwetavabhasa*, *Peetavabhasa*. All of these opinions points towards various kind of discolouration of the body but not specifying any one particular colour like pallor.

### Vyutapatti

The word "*Pandu*" is derived from root "*Padi-Nashane*" by adding "*Ku*" *Pratyaya* in it.

*Pandu* has been described as - A white colour mixed with yellowish tinge by *Amarakosha*.<sup>[6]</sup>

According to *Vachaspatyam*<sup>[7]</sup> *Pandu* is like whitish yellow colour of pollen grains of *Ketaki* Flower.

Monier William<sup>[8]</sup> has taken Pallor from *Pandu Varna*.

After considering all these descriptions, one may find it difficult to decide about actual colour by "*Pandu Varna*" but if one gives a due consideration of *Samprapti* of *Pandu* given by *Acharya Charaka* who has mentioned that in *Pandu* there is *Kshaya* or loss of *Varna* or general complexion. *Acharya Charaka* has also mentioned the word "*Vaivarnaya*" in this regard. Commentator-*Gangadhara* has described it as *Mlana Varna*. All of these opinions of commentators points towards various kind of discolouration of the body but not specifying any one particular colour like pallor.

### **Nirukti of Panduroga**

According to our Acharyas, among the different kinds of colours such as *Pandu*, *Haridra* and *Harita*, *Pandu* being more common among this so, disease is called as *Panduroga* itself.

**Nidana:** *Nidana* is most important as the avoidance of etiological factor forms the first and foremost line of treatment. *Nidana* of *Panduroga* can be classified into following three categories.

1. *Aharaja Nidana*
2. *Viharaja Nidana*
3. *Nidanarthakara Roga*

### **1. Aharaja Nidana**

*Acharya Charaka* has described following etiological factors regarding *Ahara*.

- Excessive intake of *Kshara*, *Amla*, *Lavana*, *Ati Ushnaanna*, *Virruddha Bhojana*, *Asatmya Bhojana*.
- Excessive intake of *Nishpava*, *Masha*, *Pinyaka*, *Tilataila*.
- Excessive intake of *Madya*
- Excessive intake of *Kashaya*, *Katu Rasa*

### **2. Viharaja Nidana**

According to *Acharya Charaka: Vidagdhe Anne Diwaswapna*, *Vyayama*, *Vyavaya*, *Vega Vidharana*, Affliction of mind with *Kama*, *Chinta*, *Bhaya*, *Krodha*, *Shoka*, *Pratikarmaritu* – *Vaishmaya* are the *Viharaja Nidanas*.

According to *Acharya Harita: Harita Samhita* described few new *Viharaja Nidana* and modified some of the *Nidana* of ancient texts. All these have been enlisted below.

- *Nidranasha* (Loss of sleep)
- *Atinidra* (Excessive sleep)
- *Avyayama* (Not doing any Exercise)
- *Atishrama* (Excessive exercise)
- *Snehavibrama*, *Snehatiyoga* and *Amatisara* have also been taken as the causes of this disease.

*Manasa Nidana* of *Panduroga Chinta*, *Bhaya*, *Krodha*, *Shoka* are described in different classical texts.

**Nidanarthakara Roga:** In *Ayurvedic* literature *Panduroga* has been indicated either as a symptom of many diseases or as *Upadrava*. So, all these diseases can

be considered as *Nidanarthakara Rogas* of *Panduroga*. Some of which are *Raktarsha*, *Kaphaja Arsha*, *Raktarbuda* etc. Following table presents *Nidanarthakara Roga* for *Panduroga* according to various classical texts.

**Purvarupa:** *Avipaka*, *AkshikutaShohta*, *Aruchi*, *Alpavahnita*, *Angasada*, *Gatrasada*, *Hridspandaman*, *Mutra Pitata*, *Mridbhakshanaechcha*, *Panduta*, *Rukshata*, *Swedabhava*, *Shrama*, *Sthivanadhikya*, *Twakasphutana*. It is to be noted that *Acharya Sushruta* has mentioned *Mrudabhakshanaechchha* as *Purvarupa* of *Pandu*. *Acharya Harita* has mentioned *Panduta* in the *Purvarupa* of *Pandu*.

**Rupa:** *Pratyatma Ling* of this disease is *Panduta* or *Pandubhava*, which is invariable feature. Various types of discolouration have mentioned by almost all *Acharyas*. They have also described *Rupa* in different types of *Panduroga*. *Pandu* doesn't occur only due to lack of *Rakta Dhatu* but along with it other *Dhatu*s also get vitiated due to aggravated *Dosha* in certain stage.

### **Samanya Rupa of Panduroga**<sup>[9,10]</sup>

*Acharya Charaka* and *Vagbhata* have mentioned the *Samanya Rupa* of *Pandu*. The following table shows different *Samanya Rupa* of *Panduroga*. *Akshikutashohta*, *Aruchi*, *Arohaneayasa*, *Alpawaka*, *Annadweshha*, *Balakshaya*, *Bhrama*, *Durbalya*, *Dhatugaurava*, *Dhatushithilya*, *Gatramarda*, *Gaurava*, *Hatanala*, *Hatprabhatva*, *Jwara*, *Kopana*, *Karnashweda*, *Katiurupadaruka*, *Medalpata*, *Nidraluta*, *Nisharata*, *Ojagunakshaya*, *Pindikodweshhana*, *Panduta*, *Raktalpata*, *Shishiradweshha*, *Shwasa*, *Shirnalomata*, *Sadana*, *Shrama*, *Sthivanadhikya*, *Shithilendriya*. These features communicate to that of *Mandagni*, *Rasa Kshaya*, *Rakta Kshaya* and their further consequences i.e. effects of deficient nourishment to other body tissue.

### **Classification of Panduroga**

*Acharya Sushruta* has classified *Panduroga* in 4 varieties:

1. *Vataja Panduroga*
2. *Pittaja Panduroga*
3. *Kaphaja Panduroga*
4. *Tridoshaja Panduroga*

*Acharya Charaka* has mentioned one additional variety of *Panduroga* that is *Mrida Bhakshanjanya Pandu*. *Harita Samhita* has mentioned *Halimaka* and the two varieties of *Kosthashakhashrita Kamala* in the classification of *Pandu*. This addition brings up the number to eight varieties. However, some *Acharyas* opine that *Halimaka* and *Koshta Shakhasrita Kamala* are secondary to *Pandu* and cannot be included in disease. Similarly they also opine that *Mrid-bhakshanjanya Pandu* should not be treated as fifth variety but should be included within *Vatajadi* three varieties since *Mrid-bhakshanjanya Panduroga* comes into manifestation through the vitiation of *Vatajadi Dosha*. If viewed logically, the classification given by *Acharya Charaka* seems to be more rational and acceptable.

### **1. Vataja Panduroga**

Due to *Vata* provoking diet and activity, the *Vata* gets provoked and *Pandu* occurs.

## 2. Pittaja Panduroga

After taking *Pitta Prakopaka Ahara-Vihara* *Pitta Dosh* gets vitiated and accumulated in the body of the person of *Pitta Prakriti*, vitiates the *Rasa & Rakta* along with *Mamsa Dhatu* and causes *Pittaja Panduroga*.

## 3. Kaphaja Pandu

Due to *Kapha* aggravating *Ahara* and *Vihara*, *Kapha* gets vitiated and causes *Kaphaja Pandu*.

## 4. Sannipataja Panduroga

In person who indulges in *Tridosha* vitiating *Ahara*, *Vihara*, all the three *Doshas* get simultaneously aggravated and causes *Tridoshaja Pandu*, which shows all the symptoms of *Vataja*, *Pittaja* and *Kaphaja Pandu*.

## 5. Mridbhakshanajanya Panduroga

*Acharya Charaka*, *Vagbhata* and *Madhava* have given this type of *Pandu* where *Mridbhakshana* stands as causative factor. The soil of *Madhura Rasa* vitiates the *Kapha Dosh*, the soil of *Lavana Rasa* vitiates the *Pitta Dosh* and the soil of *Kashaya Rasa* vitiates *Vata Dosh*. **Samprapati of Panduroga**

General *Samprapati* of *Panduroga* is as per *Acharya Charaka*:

When the *Pitta* located in its normal abode of heart, become expelled by the vitiated *Vayu*, into the *Dasha Dhamani* and is mobilized throughout the body. It gets localized in between the *Twak* and *Mamsa* and vitiates the *Kapha*, *Vata*, *Asrika*, *Twaka* and *Mamsa* subsequently causing a variety of colour in the skin such as *Pandu*, *Haridra*, *Harita* etc. This condition is known as *Panduroga*.

*Acharya Sushruta* has mentioned that *Pandu Bhava* is caused by vitiation of *Twak* through the vitiated *Rakta* in one who indulgence in *Ahita Ahara Vihara*.<sup>[11]</sup> *Acharya Vagbhata* has mentioned the *Samprapati* given by *Acharya Charaka*.

The pathology of *Panduroga* is mainly concerned with vitiation of *Pitta* which in turn vitiates the *Rakta*, leading to condition of *Pandubhava*. Thus, *Pitta* being the *Pradhan Dosh* or main factor in the causation of *Panduroga*, all the fivefold functions of it are affected more or less, but as the main seat of the disorganization is the *Rakta*, the *Ranjana* function of *Pitta* is to bear the brunt. Thus *Pitta Dosh* takes leading part in the production of *Dhatushaithilya* and *Dhatugaurava*. This leads to *Balakshaya*, *Varnakshaya* and *Ojakshaya*. Ultimately, the *Panduroga* is stated to be afflicted with *Raktalpata*, *Medalpata*, *Nihsarata*, *Vivarnata* and *Shithilendriyata*.

The role of *Dosha- Dushya* in the manifestation of *Panduroga* is described as below:

### Role of Vata Dosh

Though *Pitta* is *Pradhana Dosh* in *Panduroga*, *Vata Dosh* also plays an important role in manifestation of *Panduroga*. Out of five types of *Vata*, mainly *Vyana Vayu* is related with the *Samprapti* of *Panduroga*. Vitiated *Vata* is responsible for *Kampa*, *Angasada*, *Gatrashula*, *Raukshya*, *Twak Parushya*, *Kati-Uru-Pada Ruka* etc.

### Role of Pitta Dosh

*Pitta* is responsible for the normal colour of body but when it vitiates due to the same quality in nature it also vitiates *Rakta*, and causes *Panduroga* which ultimately leads to *Panduta* of the body.

### Role of Kapha Dosh

*Kapha* seems to play a vital role in the development of *Panduta*. According to *Acharya Charaka*, *Panduroga* occurs due to vitiation of all three *Doshas*. Aggravation of *Kapha Dosh* causes *Mandagni* which leads to *Uttarottara Dhatu Aposhana* due to *Srotorodha* and ultimately leads to *Panduta* of the body.

It has also been stated that *Santarpana* which broadly means anabolism, brings about an increase in *Kapha* which intern may cause the disease by generating *Ama* and causing *Mandagni*. Thus, any diet which increase *Kapha Dosh* or any disease associated with increase in *Kapha* can cause a change in complexion or *Panduta*. Vitiation of *Kapha Dosh* is responsible for *Gaurava*, *Nidraluta*, *Mandagni*, *Alasya*, *Alpavaka* etc.

### Dushyas of Panduroga

*Acharya Charaka* and *Vagbhata* have mentioned *Twak*, *Rakta* and *Mamsa* as the dominant *Dushyas* in *Panduroga*. *Dhatu* involved in the pathogenesis of *Panduroga* can also be understood by a detailed study of symptoms.

The symptoms such as *Aruchi*, *Jwara*, *Panduta*, *Gaurava* and *Tandra* are indicative of *Rasa Dhatu Dushti*. *Angamarda* indicates the involvement of both *Rasa* and *Rakta Dhatu*. *Karshya* is indicative of *Mamsa Dhatu Dushti*. *Atisveda* and *Svedabhava* are suggestive of involvement of *Twak*, *Mamsa Dhatu* and *Medo Dhatu*. *Shirnalomata* is an important indicative of *Asthidhatu Dushti*. The loss of luster and debility are suggestive of depletion of *Oja*. Thus among *Saptadhatus* mainly *Rasa* and *Rakta Dhatu* are involved in this disease.

- 1. Rasa Dhatu:** According to *Acharya Charaka*, *Sushruta* and *Vagbhata*, *Rasa Dhatu* undergoes a change to produce *Pandubhava*.<sup>[12]</sup> *Acharya Charaka* and *Acharya Sushruta* have mentioned *Panduta* as one of the disease associated with the vitiation of *Rasa* <sup>[13]</sup>. *Acharya Charaka* has already stated that vitiated *Doshas* get lodged in *Rasadi Dhatus* and produce the disease<sup>[14]</sup> whereas *Acharya Sushruta* has mentioned that when the vitiated *Vata* as well as *Amadosha* affect the *Rasa Dhatu*, the disease is produced.
- 2. Rakta Dhatu:** *Acharya Charaka* and *Acharya Sushruta* have clearly mentioned that the vitiation of all the three *Doshas* leads to *Rakta Dushti* and thereby *Twak* becomes pale in colour. According to *Acharya Harita*, there is a decrease in the blood volume, as is clearly indicated by "*Nayati Rudhirashoshana*"<sup>[15]</sup>. *Acharya Charaka* has mentioned the word *Alparakta* for this condition.

### Complication (Upadrava)

Any factor which in early part causes development of diseases, if the same factor in late part produces any other severe manifestation, then it is called

*Upadrava*. Acharya Sushruta only has described the *Updravas of Pandu*.

### Treatment of Panduroga

In Ayurveda, three general principles of treatment have been mentioned in *Charaka Samhita*.<sup>[16]</sup> They are *Daivavyapashraya*, *Yuktivyapashraya* and *Satvawajya*. Here only *Yuktivyapashraya Chikitsa* has been mentioned which is as follows.

1. *Nidana Parivarjana* (Avoidance of aetiological factors)
2. *Snehana* (Oleation therapy) and *Swedana* (Fomentation therapy)
3. *Shodhana* (Eliminating the factors responsible for producing the disease).
4. *Shamana* (Palliative treatment) to correct the deficiency or abnormality and also treat the allied symptoms.

In *Pandu Roga* both *Shodhana* and *Shamana Chikitsa* can be performed. Keeping the above view in mind various method have been prescribed, some of which act as *Snehana*, some as *Shodhana* and some act specifically on *Panduroga* along with *Snehana* and *Shodhana Gunas* importance.

**Snehana-** In case of *Pandu*, there is diminution of *Rakta*, *Meda*, *Oja* etc. and the body becomes dehydrated, emaciated and deficient in lipid substances; which provoke *Vata* causing further deterioration the condition. For *Snehana Karma*, various preparations have been mentioned in *Ayurvedic* text. For example, *Rajnighrita*, *Triphala Ghrita*, *Tilavaka Ghrita*, *Dadima Ghrita*, *Danti Ghrita*, *Draksha Ghrita*, *Panchgavya Ghrita*, *Mahatikta Ghrita*, *Panchatikta Ghrita* etc. They can be used in various types of *Pandu* according to the predominance of *Doshas*, variation in pathogenesis and in symptoms.

**Swedana:** After *Snehana*, *Swedana Karma* is done depending upon the patient's condition so as to bring the *Doshas* into *Koshtha*.

**Shodhana:** *Vamana* and *Virechana Karma* both can be performed in *Panduroga* after proper oleation. Commenting on the performance of *Vamana*, Acharya *Dalhana* has said that while performing *Vamana* in case of *Panduroga* one should always keep in mind about physical condition of the patients, the climate, time and place. Acharya *Charaka* has mentioned *Madanaphala* as most suitable drug for emesis in case of *Pandu*.<sup>[17]</sup> Similarly, for *Virechana* a long list of drugs has been mentioned in *Ayurvedic* texts but Acharya *Sushruta*<sup>[18]</sup> has given more stress on *Haritaki* in all types of *Pandu*.

### Shamana Chikitsa (Palliative treatment)

1. Treatment according to predominance of *Doshas*.
2. Specific treatment.
3. Treatment according to the predominance of *Lakshanas* (symptomatic treatment).
4. *Pathya-Apathya*

### I. Treatment according to predominance of Doshas

In cases of *Vatika Pandu* the substances having *Snigdha Guna*, in *Paittika* the substances having *Madhura*

and *Tikta Rasa* and in *Kaphaja Pandu* drugs having *Ushna Virya* and in *Tridoshja Pandu*, a mixture of all the above should be prescribed. In *Mridbhakshanajanya Pandu*, the *Mritika* which may be composed of various indigestible and inaccessible substances obstructs various canals. Thus, it is necessary to remove it by *Tikshna Virechana*.

**II. Specific treatment:** *Vishista Aushadhi* (Specific Drugs) - As already described that *Pandu* is predominantly due to lack of blood. The fact that *Lauha* is closely related with formation of blood was well realized and that is why *Rakta* has also been known by the word *Lohita*, and *Pandu* by the word *Vilohita*. Use of *Lauha* preparation in the treatment of *Pandu* is mentioned by almost all the *Ayurveda Samhita*. In this connection, a verse from Acharya *Vagbhata* <sup>[19]</sup> is important - *Pandvamaye Shreshtha*.

**Various forms of drugs which have been used in the treatment of Pandu in Ayurvedic texts:** In the treatment of *Pandu*, single drug or a combination of two or more drugs have been used. A description is given as:

1. Single drugs which have been used in *Pandu* are - *Lauha Bhasma*, *Mandura Bhasma*, *Pure Kaseesa*, *Shilajita*, *Vardhamana Pippali* etc.
2. Compound drugs which are of vegetable origin e.g. *Triphala*, *Phalatrikadi Kwatha*, *Punarnavashtaka Kwatha*, *Vidangavaleha* etc.
3. Drug which are a combination of vegetable origin and animal origin e.g. *Mahatikta Ghrita*, *Pathya Ghrita*, *Rajani Ghrita*, *Gomutraharitaki* etc.
4. Drugs which are a combination of vegetable and mineral origin e.g. *Yogaraja*, *Shilajatvadi Vati*, *Navayasa Lauha*, *Mandura Vataka*, *Punrnnavadi Mundura*.
5. *Asava* and *Arishta* e.g. *Lauhasava*, *Punarnavasava* etc. In brief the *Panduhara Yogas* are described in various forms such as *Churna*, *Vati*, *Asava*, *Arishta*, *Avaleha*, *Ghrita*.

### III. Pathya- Apathya

This includes diet and environmental factors which should be regulated according to the need of the body.

#### (A) Pathya - (Measures which are beneficial to the patients of Pandu)

Acharya *Sushruta* has mentioned the use of drink containing juice of *Amalaki*, *Ikshurasa*, salt and honey <sup>[20]</sup>. Similarly, vegetables and fruits which are beneficial in *Pandu* have also been mentioned in *Bhaishajya Ratnavali*. They are *Patola*, *Guduchi*, Leaves of *Chaulai* and *Punarnava*. *Pakva Amalaka*, *Kharjura*, *Rasona*, *Palandu* etc. are beneficial in *Panduroga*.

#### (B) Apathya - (Measures that aggravate the disease)

All those measures should be avoided which aggravate the disease. The various measures which are responsible for the development of *Panduroga* have been described previously.

### DISCUSSION

Causative factors of *Pandu* are widely described in *Samhitas*. According to Acharya *Sushruta* <sup>[21]</sup> *Rakta* gets vitiated by *Diwasvapa*, *Viruddha Bhojana* and *Krodha*. He

has also mentioned that *Krodha, Shoka, Bhaya, Vidagdha Anna Sevana, Ati Maithuna* and *Tila Tail* and *Pinyaka* leads to vitiation of *Pitta Dosha*<sup>[22]</sup>. *Ativyayama, Ratrijagarana, Nidranasha, Ativyavaya* and *Ati Adhvagamana* leads to *Vata Prakopa*<sup>[23]</sup>. *Acharya Charaka* has mentioned *Pandu Roga*<sup>[24]</sup> caused by suppression of *Chhardi, Vegavarodha, Viruddha Anna Sevana* and of excessive use of *Ati Amla* and *Lavana Rasa*<sup>[25]</sup>. Here a question may arise that how the psychological factors can affect *Dhatuposhana* which ultimately results in *Pandu*? In this context one should remember that *Acharya Charaka*<sup>[26]</sup> has emphasised bad effect of *Chinta, Bhaya*, etc. on digestion. All these causes improper digestion of food which leads to improper *Rasa Dhatu* formation and further hamper *Rakta Dhatu, Mamsa Dhatu* formation and so on and thus leads to *Pandu Roga*. *Nidanarthakara Roga* also play important role as cause of *Panduroga* according to various classical texts. Diseases like *Raktakshaya, Raktatipravartana, Raktarbuda, Raktarsha, Raktapradara, Yakritaplihedha* etc. condition are directly or indirectly related with *Rakta Dhatu Kshaya* which further results in all *Dhatu Kshaya*. While *Punaravartaka Jwara Grahani, Jeernajwara, Shotha, Udararoga, Rajyakshma* etc. involving vitiation of *Agni* and *Ama* production, which in next step obstructs the *Dhatuvaha Srotas* which leads to disturbance in *Dhatuposhan Krama* and ultimately produces *Pandu*. Also *Acharya Charaka* has mentioned *Pandu* as a *Santarpanoththa Vikara*<sup>[27]</sup>, for which *Samprapti* may be same as described above. Only difference is, in this case obstructing factor may be *Kapha* as it is related with *Santarpana*.

The features described as *Purvarupa* of the disease are some of the general feature itself as *Hridspandana* (palpitation), *Shrama* (fatigue), *Angasada* and *Gatrasada* (weakness). Some *Purvarupas* are related to features of digestive system or *Agni* as *Avipaka, Aruchi, Alpavahnita, Vidamutrapitata* etc., indicating that *Agni* is getting disturbed here and production of *Mala Swarupa Pitta* is increasing here resulting in the increased yellow coloration of urine and stool. *Raukshya* and *Twaksphutita* are the features of *Raktakshaya* which are developing here. There is vitiation of *Agni* resulting in features of *Mandagni* and decreased production of *Rakta Dhatu* with increased production of *Mala-Pitta*. *Sthivanadhikya* is a feature described in the manifestation of *Ama*.

*Mridabhakshana* is also the aetiology of the disease and viewing it is an individual could well forecast the future development of worm and anaemia is an individual. This is also a symptom found present in iron deficiency anaemia as pica or unusual cravings for eatables. *Sweda-abhava* is feature which interpreted by commentators as *Vyadhiprabhava*, meaning the effect of disease itself. In *Rupavastha*, there is also the simultaneous involvement of other *Dhatu*s of the body resulting in their decline in quality as well as quantity wise. It is appealing to note that though the disease is *Pitta* predominance, the features developing also here includes *Shishira Dwesha* which is neither a features of *Raktakshaya* or *Pitta Vriddhi*.

*Acharya Sushruta* has classified *Panduroga* in 4 varieties but *Acharya Charaka* has mentioned one additional variety of *Panduroga* that is *Mrida Bhakshanjanya Pandu*.

*Acharya Sushruta* has mentioned that *Pandu Bhava* is caused by vitiation of *Twaka* through the vitiated *Rakta* in one who indulgence in *Ahita Ahara Vihara*.<sup>[28]</sup> *Acharya Vagbhatta* has mentioned the *Samprapati* given by *Acharya Charaka*. Thus the pathology of *Panduroga* is mainly concerned with vitiation of *Pitta* which in turn vitiates the *Rakta*, leading to condition of *Pandubhava*. So, *Pitta* being main factor in the causation of *Panduroga*, all the fivefold functions of it are affected more or less, but as the main seat of the disorganization is the *Rakta* and complexion of body, the *Ranjana* and *Bhrajana* function of *Pitta* is to bear the brunt. Thus *Pitta Dosha* takes leading part in the production of *Dhatushaithilya* and *Dhatugaurava*. This leads to *Balakshaya, Varnakshaya* and *Ojakshaya*. Ultimately, the *Panduroga* is stated to be afflicted with *Raktalpata, Medalpata, Nihsarata, Vivarnata* and *Shithilendriyata*. It has also been stated that *Santarpana* which broadly means anabolism, brings about an increase in *Kapha* and *Ama* production which leads to *Mandagni* and change in complexion of body i.e., *Panduta*. Vitiation of *Kapha Dosha* is responsible for *Gaurava, Nidraluta, Mandagni, Alasya, Alpavaka*. The symptoms such as *Aruchi, Jwara, Panduta, Gaurava* and *Tandra* are indicative of *Rasa Dhatu Dushti*. *Angamarda* indicates the involvement of both *Rasa* and *Rakta Dhatu*. *Karshya* is indicative of *Mamsa Dhatu Dushti*. *Atisveda* and *Svedabhava* are suggestive of involvement of *Twaka, Mamsa Dhatu* and *Medo Dhatu*. *Shirnalomata* is an important indicative of *Asthidhatu Dushti*. The loss of lustre and debility are suggestive of depletion of *Oja*.

Clinical presentation of *Pandu* can be correlated with anaemia of modern medical science. Anaemia is without blood/ pallor of the body. It is the most under diagnosed condition. If left untreated, it leads to many serious complications like CVD, compromised immune disease.<sup>[29]</sup>

*Nidanaparivarjana* is the best treatment for any disease. This principle also can be applied in the *Pandu* which will be the first step in the treatment of disease. Further as per condition of *Doshas*, treatment should be applied.<sup>[30]</sup> As mentioned in the early pages of disease part, *Pandu* is a *Pitta* predominant *Tridoshaja Vyadhi*. Chief pathogenesis taking place during *Samprapti* is *Srotorodha* which generates disturbance in *Dhatuposhana* and lastly *Dhatukshaya*. To correct obstruction of *Srotas, Shodhana* is indicated in *Samhitas*. It should be *Tikshna* and *Snigdha*.<sup>[31]</sup> For ignition of *Jatharagni* as well as *Dhatvagnis, Ghrita* is believed as one of the best remedy and this is why various kind of *Ghritas* have been described in the treatment of *Pandu*. *Ghrita* is *Jivaniya* and *Rasayana* too which helps in *Dhatukshaya*. As the disease is closely related with decrease of *Rakta*, many *Lauha* preparations also are described in the management of *Pandu*. All these treatment modalities correct metabolism and stimulates *Dhatuposhana*.

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**Cite this article as:**

Pooja Badani, Hitesh Vyas. An Ayurvedic Perspective of Panduroga -A Review. AYUSHDHARA, 2016;3(6):958-963.

**Source of support: Nil, Conflict of interest: None Declared**