CLINICAL EFFICACY OF NISHALAUHA VATI AFTER VIRECHAN KARMA IN PANDU ROG W.S.R TO IRON DEFICIENCY ANEMIA

Dr. Vishal Saxena*1 and Dr. Sanjay Kumar Tripathi2

1PG Scholar, Dept. of Kaya Chikitsa, Rishikul Govt. Ayurvedic College and Hospital, UAU, Haridwar.

2Professor, Dept. of Kaya chikitsa, Rishikul Govt. Ayurvedic College and Hospital, UAU, Haridwar.

ABSTRACT

Pandu Roga can be effectively compared with Anemia on the ground of its similar signs and symptoms. The main characteristic features of the disease is Panduthwa i.e. pallor. The clinical features of anemia like pallor, weakness, giddiness etc are similar with Panduroga mentioned in Ayurvedic classics. Iron deficiency is the commonest nutritional deficiency world over and its prevalence is highest in Indian population. According to survey 30% adult males, 45% adult females, 80% pregnant females and 60% children in India are suffering from Anemia. This article is based on the clinical efficacy of Nishalauha Vati after Virechna Karma in Pandu Roga. Hence a trial will be taken on total 60 patients of Pandu Roga. Three groups i.e. 20 patients in each group will be made on the basis of inclusion & exclusion criteria depending on the detailed clinical history, physical examination & other necessary investigations & irrespective of their gender caste or creed. Three groups will be given medicines-Group A Nisha lauh vati, Group B Nisha lauh vati after virechana karma and Group C Tab Iron, comparision will be made on the basis of result.

KEYWORDS: Pandu Roga, Panduthwa, Nishalauha Vati, Virechna Karma, Pallor, Weakness.

INTRODUCTION

Ayurveda is enriched with the variety of clinical presentations, each having abroad umbrella of systemic disorders described in modern science. Among them, Pandu is a Rasa
Pradoshaja vikara described by Acharya Charaka (Cha. Su. 289). It is characterized by pallor of the body. The signs of Pandu are described as:-

“सोल्ऩयक्तकोअल्ऩभेदस्कोननस्साय: शिथथरेन्द्रिम्। |(Ch. Chi. 16/6)

This description avails the correlation of Pandu with Anemia of Modern science. Iron deficiency is the commonest nutritional deficiency world over and its prevalence is highest in Indian population. According to survey 30% adult males, 45% adult females, 80% pregnant females and 60% children in India are suffering from Anemia. Therefore, the management of the disease is one of the top priorities in Health care plans of Government of India. Pandu causes extreme debility as it is dominated by the symptoms like Palpitation, Fatigability, Dyspnœa on exertionetc.

“तस्मशरङ्गंबविष्मत: हृद्मस्ऩरदनंयौक्ष्मंस्िेदाबाि्श्रभस्तथा। (Ch. Chi. 16/12)

Due to the vitiation of Rasa and Rakta Dhatu, which are the essential factors for nourishment of every cell in the body.

Pandu disease symptomatically correlated with anemia of modern science. Anemia is considered as a blood disorder characterized by low Hemoglobin (Hb) level. Hb is Iron bearing Protein in Red Blood Cells, which delivers oxygen to tissues throughout the body. Indian women are also prone to anemia. At least 60 to 70 percent of rural women and 30 percent of urban women are anemic. Anemia affects an estimated 50% of the population. Surveys in different parts of the country reveal that 87% of pregnant women suffer from anemia and about 10% have severe anemia (Hb<8.0 g/dl).

For the management of Pandu iron preparation are given in both system of medicine. According to classics of modern medicine iron preparation were introduced for management of Pandu in 1829 by physician Gabriel Andral but in Ayurvedic classics use of iron preparation with some herbal drugs is mentioned in different formulations in Charaka Samhita, Sushruta Samhita, Ashtang Hridaya, Ashtang Sangraha, Bhaishajya Ratnavali etc. 30% population of world may be affected by anemia at some time in the life. The most common cause world wide is iron deficiency. As anemia is affecting a large proportion of population and decreasing their quality of life so we planned the present study titled as “CLINICAL EFFICACY OF NISHALAUHA VATI AFTER VIRECHAN KARMA IN PANDU ROG W.S.R TO IRON DEFICIENCY ANEMIA”
Iron deficiency anemia develops when the supply of iron is inadequate for requirement of hemoglobin synthesis. Initially, the negative iron balance is made good by mobilization from the tissue stores so as to maintain Hb synthesis. It is only after the tissue stores of iron are exhausted that the supply of iron to the bone marrow become insufficient for Hb formation so that a state of iron deficiency anemia develops. The development of iron depends on one or more of the following factors:

1. Increased blood loss
2. Increased requirement
3. Inadequate dietary intake
4. Decreased intestinal absorption

**DISEASE REVIEW**

*Ayur vedic view*

*Vyutpati*

According to Shabdakalpadruma The word "Pandu"is derived from root ‘pifnazne’ with suffix "k…” and elaboration through “in”

पाणु: - पड़नाशने + कुप्रत्यय

*Nirukti of Pandu Roga*

According to Acharya Charaka

पाणुनावक्षयभामहितातिदिवर्णेभ्यः प्रधाननवर्णोपोपलक्षितरोगः पाणुरोगः॥

This means, while describing the signs and symptoms of different types of Pandu, Several types of complexion like Harita (green) etc. are described. But all of these are dominated by Panduta (Pale-Yellowcolour) because of which this disease is called Pandu Roga.

According to Acharya Sushruta

पाणुवर्णाधिक्यात्सर्वेवपाणुरोगः: प्रोत्यन्ते॥

There is dominancy of Pandu Varna, so this disease is known as Pandu Roga.

*NIDANA*

*Aharaja Nidana*

“क्षारामलवणात्युष्णविश्रासात्म्यभोजनात्।

निष्पावमाषपिण्याकतिलतैलनिषेवणात्”॥(च. चि. १६५६)
• Excessive intake of Kshara, Amla, Lavana, Ati ushna anna.
• Virrudha Bhojana.
• Asatmya Bhojana.
• Excessive intake of Nispava, Masha, Pinyaka, Tilatail
• Excessive intake of Madhya
• Mrid bhakshana
• Excessive intake of Kashaya Rasa, Katu

Viharaja Nidana
According to Acharya Charaka

“विदग्धेन्द्रेदिवास्वचनाद्वयायामां मैथुनात्मथा। प्रतिकर्मं वैषम्याद्वयागामः च विधारणात्।”

कामचित्ताभ्ययक्रोधशीकोषहतचेतसः”| (च.चि.१६/८-९)

Sleeping, Exercise and Sexual Intercourse even before the food is not properly digested (Vidagdhe Anne Diwa swapna, Vyayama, Vyavaya). Suppression of natural urges (Vega Vidharana). Affliction of mind with Kama, Chinta, Bhaya, Krodha, Shoka, Improper administration of Pancha Karma Therapies (Pratikarma), Transgression of prescribed seasonal regimen (Ritu-Vaishmaya).

According to Acharya Sushruta

“व्यायाममतिलबणानिमथं मृदं दिवास्वचनतीव तीक्षणः।”| (सु.उ.४४/३)

Rakta gets vitiated by Amla lavana Bhojana, Ati Maithuna, madhya sevan, Diwa swapna etc.

PURVARUPA

हृदयस्पन्दनं संकर्षयस्वेदाभावः श्रमस्तथा।”| (च.चि.१६/१२)

RUPA

संभूतेःसम्भवेतस्वरः कर्ष्ट्वेडिकहतालः।दुर्वलः सदनोःन्नदिवकश्रमभुपितः॥

गात्रशून्यज्वरसाखिसाकुरातिमानः।मृदितीर्णगातिकिपोदितमितिरितः॥

शून्याक्षिकूटहः।शीर्षालोमातमः।कोपनः शिशिरेवेजिनिद्रालः।ष्टीवनोऽल्पवाकः॥

पिण्डकोद्वेषतः स्वप्नपदस्यनन्तनानिच अवन्त्यारोहणायासैविश्वेष्ठायायक्ष्यते।”| (च.चि.१६/१४-१६)
SAMPRAPTI

dosha: मित्रप्रथानायुतमुन्मय्यमनोनिधातुषु।शैविल्यांत्स्थधातुतुनांगौरंचोपजायते॥

tattvarṇंबलस्नेहायतादिये प्योक्षासयुग्रः।वज्जितिशस्त्रयस्त्वदश्रूप्रधूषणात्॥

sādhakaprabhaśaścāraṃ: सार: शिहितेन्द्रिय:।वैवर्यक्षत्रे, तसस्थ्याहंगृणसस्करण॥ (च. च. १६/४.६)

SAMPRAPATI GHATAKA

Udbhava- Hridaya
Adhisthana- Rasa Dhatu
Vyakti- Twaka
Sanchara- Rasayani
Dosha- Sadhaka, Ranjaka Pitta
VyanaVayu, KledakaKapha
Dushya- Rasa, Rakta, Mamsa
Srotasa- Rasavaha, Raktavaha

MODERN VIEW

Anemia means a deficiency of red blood cells, which can be caused by either too rapid blood loss or too slow production of red blood cells or may be defined as a state in which the blood hemoglobin is below the normal range for the patient’s age and sex (male < 12 gm/dl, female <10 gm/dl).

WHO has defined the anemia when hemoglobin male <13 gm/dl and in female <12 gm/dl.

Clinical features of anemia reflect the diminished oxygen carrying capacity of blood. The severity depends on the degree of the anemia and the rapidity of its development but is independent of its cause.

In adults the lower extreme of the normal hemoglobin is taken as 13.0 gm/dl in male, 11.5 gm/dl in females.

New born infants have higher level and therefore 15 gm/dl is taken as lower limit at birth whereas at 3 months lower limit is 9.5 gm/dl.
As many as 30% of the world population may be affected at some time. The most common worldwide cause is iron deficiency and it is estimated that half a billion people are affected.

Iron deficiency is one of the most prevalent forms of the malnutrition. Globally, 50% of anemia is attributed to iron deficiency and accounts 8,41000 deaths annually worldwide. Africa and parts of Asia bears 71% of the global mortality burden, North America represents only 1.4% of total morbidity and mortality associated with iron deficiency.

**CLINICAL FEATURES**
1. Fatigue
2. Fever
3. Paleness
4. Shortness of breath
5. Palpitation
6. Anorexia
7. Anxiety
8. Hair loss

**REVIEW OF LITERATURE**

**In Vedic Kala**

*Pandu Roga* had been mentioned in *Rigveda* and *Atharveda* by the name of *Halima* and *Harima* respectively.

**In Pauranika Kala**

In *Mahabharata*, *Pandu* was depicted as the father of Five *Pandvas* and as the son of *Ved Vyasa*.

In *Garuda Purana*, there is a reference in which "Takra" mixed with *Lauha Churna* has been advocated for the treatment of *Pandu*.

**In Samhita Kala**

- *Charaka Samhita* - *ChikitsaSthanaA.16*
- *Sushruta Samhita* - *UttaratantraA.44*
- *Astanga Hridaya* - *NidanaSthanaA.13*, *Chikitsa SthanaA.16*
- *Astanga Samgraha* - *NidanaSthanaA.13*, *Chikitsa SthanaA.18*
- *Sharangadhara Samhita* - *PurvaKhaA.7/17*
PREVIOUS RESEARCH WORK DONE

- Jain Sangeeta- A study on Pandu Roga w.s.r. to Anemia and its management With Shodhana and Yograja Rasayana (2000)
- Sarkar P K- A comparative pharmco pharmaceuticoclinical study of Lauha Bhasma and Mandoora Bhasma w.s.r. to Panduhara effect (2005)
- Bhaveshpatel- A comparative pharmacetico pharamaco clinical study of Kasisbhasma w.s.r to its effect on pandu (iron deficiency anemia) (2006)
- Vyas Madhuri- A comparative study of Hansamandur and Phalatrikadi Kwathain the management of Pandu w.s.r to Iron deficiency Anemia.(2008)
- Deepmalapatal- A comparative study of NISHALOHA VATTI and NAVAYASA LOHA VATTI in the management of panduroga.(2008)
- Madhavisubhash Chandra-Apharmaceutico clinical study of Dhatyarishta prepared by Dhatriswaras and Dhatrikwatha w.s.r to its effect on pandu(iron deficiency anemia)(2009)
- Monica aggarwal- A clinical study on the effect of virechan karma and pandughanivatti in the management of pandu w.s.r to iron deficiency anemia (2011)
- Preetisharma- A comparative clinical study to evaluate the efficacy of Navayasachurana and Mandura Vatti in the management of pandu w.s.r to iron deficiencyanemia.(2016)

Drug review & Treatment review

A. निषादोष

“लोहदृष्टिनिषादयुगमन्त्रिवाराधिनीयुगम्|प्रतिहान्मधुसर्थिभायोकामलापाणुषाधन्तयेः”॥ (७५४.१२/२९)

It contains the following drugs
01. Haritaki 1 Part
02. Bibheetaki 1 Part
03. Amalaki 1 Part
04. Haridra 1 Part
05. Daruharidra 1 Part
06. Kutaki 1 Part
07. Lauha Bhasma 6 Part
### Table Containing Following Drugs

<table>
<thead>
<tr>
<th>Drug</th>
<th>Botanical name</th>
<th>Family</th>
<th>Rasa</th>
<th>Guna</th>
<th>Virya</th>
<th>Vipaka</th>
<th>Chemical constituents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haridra</td>
<td>Curcuma longa</td>
<td>Zingiberaceae</td>
<td>Tikta, Katu</td>
<td>Rukshalaghu</td>
<td>Ushna</td>
<td>Katu</td>
<td>Volatile oil, curcumin, vit A, protein etc.</td>
</tr>
<tr>
<td>Daruharidra</td>
<td>Berberis aristata</td>
<td>Berberidaceae</td>
<td>Tikta, Kashaya</td>
<td>Laghu, ruksha</td>
<td>Ushna</td>
<td>Katu</td>
<td>Berberinkshar, chichamla, sevamla.</td>
</tr>
<tr>
<td>Haritaki</td>
<td>Terminaliachebula</td>
<td>Combretaceae</td>
<td>Pancharasa(lavana-varjita) kashayapradhana</td>
<td>Rukshalaghu</td>
<td>Ushna</td>
<td>Madhura</td>
<td>Tanim, chebulagic acid, chebulnic acid, corilagil, sugar, 18 amino acid, succinic acid, phosphoric acid.</td>
</tr>
<tr>
<td>Bibheetak</td>
<td>Terminaliabellerica</td>
<td>Combretaceae</td>
<td>Kashaya</td>
<td>Rukshalaghu</td>
<td>Ushna</td>
<td>Madhura</td>
<td>Galic acid, ellagic acid, phyllemblin, ethylgallate &amp; galloyl glucose.</td>
</tr>
<tr>
<td>Amalaki</td>
<td>Emblica officinalis</td>
<td>Euphorbiaceae</td>
<td>Pancharasa(lavana-varjita) amlapradhana</td>
<td>Laghu, ruksha, sheeta</td>
<td>Sheeta</td>
<td>Madhura</td>
<td>Gallic acid, tannic acid, sugar, albumin, cellulose, calcium, vit-C</td>
</tr>
<tr>
<td>Katuki</td>
<td>Picrorhizakurroa</td>
<td>Scrophulariaeae</td>
<td>Tikta</td>
<td>Rukshalaghu</td>
<td>Sheeta</td>
<td>Katu</td>
<td>Picrorhizin, kutkin</td>
</tr>
<tr>
<td>Lauhabhasma</td>
<td>____</td>
<td>_____</td>
<td>Tikta, kashaya</td>
<td>Ruksha guru</td>
<td>Sheeta</td>
<td>Madhura</td>
<td>____</td>
</tr>
</tbody>
</table>
B. Virechan karma

Virechana karma will be done depending on the patient’s koshtha and agnibala.

- Deepanpachana (1st-3rd day)
- Snehapana (4th-8th day)
- Bahyasnehana and swedana (9th-10th day)
- Virechana (11th day)
- Sansarjanakarma (12th-15th day)

“साध्मानाशभतेय षां तु प्रिक्ष्माशभ थचककन्द्त्सतभ्।
तत्र ऩाण्‌्िाभमी न्द्स्नग्धस्तीक्ष्णैरुधिाानुरोशभकैः”॥ (च.चि.१६/३९)

Role of virechna karma in panduroga (iron deficiency anemia):- The virechana karma is very effective in pandu roga (iron deficiency anemia), iron is absorbed in our body in small intestine. If there is obstruction in strotas (strotavarodha) then the iron will not be properly absorbed & the benefit of drug will not completely established. The iron absorbed from small intestine and the virechana is the samsodhan procedure for small intestine. So we can think that if we use the iron preparation with samshodhan then iron absorption should be increased and the total time of recovery process of a patient will reduced. So the classical virechan karma will be done.

Mode of action of drug

Pandu or Iron deficiency anaemia Treatment require adequate bioavailability of Lauha. Iron salts when taken it causes constipation. In nishalauhavati iron is present. katuki is a pitta virechaka  havingshodhan property. Triphala in this drug is rasayan& also have the property of shodhan karma. Haridra and daruharidra present in nishalauhavati is tikta-katu and tikta-kashaya rasa pradhan respectively and also ushnavirya having good effect on liver function. Because of all these drug present innishalauhavati, we can think that their is increased absorption of iron in the body result in rapid formation of haemoglobin.

AIMS AND OBJECTIVES

1. To evaluate the effect of nishalauha in the management of panduroga
2. To evaluate the effect of virechana karma in the management of panduroga.
3. To provide the reliable, effective, and low cost Ayurvedic treatment for pandu.

**Plan of study**

- **Selection of patients** - 60 diagnosed patients of pandu with female- 6-10 gm% & male- 6-12 gm% Hb will be selected for study from O.P.D & I.P.D unit of P.G department of kayachikitsa as well as panchkarma department, Rishikul Ayurvedic Campus, Haridwar with informed consent. The study will be conducted on patient randomly divided into 3 groups of 20 patients each on the basis of inclusion and exclusion criteria depending on hemoglobin level detailed clinical history, physical examination and other necessary desired investigation.

A. **Selection of Drug**
   a. Nishalauhavat
   b. Virechana karma

B. **Dose of drug**
   1) Nishalauhavat – two tablets each of 250mg twice daily with luke warm water.
   2) Virechana karma after samayaka snehna & swedana.

C. **Duration of study** - 60 days

D. **Type of study** - open randomized trial.

E. **Follow up** - the follow up of the patients will be done at the interval of 15 days.

F. **Drug trial schedule**

   **Group 1** - patients(N-20) will be treated with nishalauhavati- 2 tablets B.D with luke warm water after meal.

   **Group 2** - patients(N-20) will be treated with Nisha Lauha Vatiafter virechna karma.

   **Group 3** - patient (N-20) will be treated with ferrous sulfate (tab. Iron)100 mg BD.

G. **Inclusion criteria**

Diagnosed patients without any complication will be included.

- Patients having Hb% as follows-
  - For female- 6-10 gm%
  - For male- 6-12 gm%
- Patient between the age group of 15 to 60 years will be taken.
- Primary- the patients will be selected on the basis of the presence of classical symptomatology along with some laboratory parameters of panduroga.
H. Exclusion criteria

✓ Patients suffering from AIDS, cancer, tuberculosis, Diabetes Mellitus and other severe disease
✓ Age below 15 years and more than 60 years.
✓ Hb<6gm%
✓ Anemia due to causes other than iron deficiency.
✓ Pregnancy
✓ IBS

I. Criteria for withdrawal

1. Personal matter
2. Aggravation of complaints
3. Intercurrent illness
4. Any other difficulties
5. LAMA (patient leave against medical advice)

J. Criteria for assessment

The assessment of the drug trial will be done on the basis of the following parameters.

1) Subjective
2) Objective

**Subjective** - the assessment of drug trial will be done on the basis of improvement in the following symptoms –

1. Pallor
2. Reduced exercise capacity
3. Fatigue
4. Breathlessness
5. Palpitation
6. Dizziness
7. Headache
8. Irritability
9. Anorexia
10. Weakness
The symptoms are graded as per their severity. The detail assessment of clinical sign and symptoms are discussed below:

1. Pallor

<table>
<thead>
<tr>
<th>In twaka, nakha, netravartma, jihva, hastapadatala</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
</tr>
<tr>
<td>In any 2 of these</td>
</tr>
<tr>
<td>In any 3 of these</td>
</tr>
<tr>
<td>In any 4 of these</td>
</tr>
<tr>
<td>In all</td>
</tr>
</tbody>
</table>

2-Reduced exercise capacity

<table>
<thead>
<tr>
<th>No change in exercise capacity</th>
<th>0</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in heavy exercise</td>
<td>1</td>
<td>Mild</td>
</tr>
<tr>
<td>Difficulty in moderate exercise</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>Difficulty in mild exercise</td>
<td>3</td>
<td>Severe</td>
</tr>
<tr>
<td>Difficulty in routine work</td>
<td>4</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

3- Fatigue

<table>
<thead>
<tr>
<th>Absent</th>
<th>0</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue during hard work</td>
<td>1</td>
<td>Mild</td>
</tr>
<tr>
<td>Fatigue during moderate work</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>Fatigue during light or routine work</td>
<td>3</td>
<td>Severe</td>
</tr>
<tr>
<td>Continuous fatigue even in lying position</td>
<td>4</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

4- Breathlessness

<table>
<thead>
<tr>
<th>Absent</th>
<th>0</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breathlessness during hard work</td>
<td>1</td>
<td>Mild</td>
</tr>
<tr>
<td>Breathlessness during moderate work</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>Breathlessness during routine work</td>
<td>3</td>
<td>Severe</td>
</tr>
<tr>
<td>Breathlessness on rest</td>
<td>4</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

5- Palpitation

<table>
<thead>
<tr>
<th>Not present</th>
<th>0</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>After heavy work, relieved soon</td>
<td>1</td>
<td>Mild</td>
</tr>
<tr>
<td>After moderate work, relieved later</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>After mild or routine work, relieved later</td>
<td>3</td>
<td>Severe</td>
</tr>
<tr>
<td>Continuous palpitation even on lying position</td>
<td>4</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

6- Dizziness

<table>
<thead>
<tr>
<th>Absent</th>
<th>0</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present on excessive physical work</td>
<td>1</td>
<td>Mild</td>
</tr>
<tr>
<td>Present on moderate physical work</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>Present on mild physical work or on standing position</td>
<td>3</td>
<td>Severe</td>
</tr>
<tr>
<td>Continuous dizziness even on lying position</td>
<td>4</td>
<td>Very severe</td>
</tr>
</tbody>
</table>
7- **Headache**

<table>
<thead>
<tr>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>0</td>
</tr>
<tr>
<td>Headache during heavy physical work</td>
<td>1</td>
</tr>
<tr>
<td>Headache during moderate physical work</td>
<td>2</td>
</tr>
<tr>
<td>Headache during routine or mild physical work</td>
<td>3</td>
</tr>
<tr>
<td>Continuous headache</td>
<td>4</td>
</tr>
</tbody>
</table>

8- **Irritability**

<table>
<thead>
<tr>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No irritation</td>
<td>0</td>
</tr>
<tr>
<td>Early irritation during debates</td>
<td>1</td>
</tr>
<tr>
<td>Irritated early at work place</td>
<td>2</td>
</tr>
<tr>
<td>Irritated during routine work</td>
<td>3</td>
</tr>
<tr>
<td>Irritated every time</td>
<td>4</td>
</tr>
</tbody>
</table>

9- **Anorexia**

<table>
<thead>
<tr>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No anorexia</td>
<td>0</td>
</tr>
<tr>
<td>Take meal routinely without desire of food</td>
<td>1</td>
</tr>
<tr>
<td>Mild desire of not to eat</td>
<td>2</td>
</tr>
<tr>
<td>Hate to eat</td>
<td>3</td>
</tr>
<tr>
<td>Hate to even smell of food</td>
<td>4</td>
</tr>
</tbody>
</table>

10- **Weakness**

<table>
<thead>
<tr>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not present</td>
<td>0</td>
</tr>
<tr>
<td>Weakness during heavy work</td>
<td>1</td>
</tr>
<tr>
<td>Weakness during moderate work</td>
<td>2</td>
</tr>
<tr>
<td>Weakness during routine or mild work</td>
<td>3</td>
</tr>
<tr>
<td>Continuous weakness or even in lying position</td>
<td>4</td>
</tr>
</tbody>
</table>

**Objective** - the assessment will be done on the basis of change in relevant laboratory investigative parameters.

**K. Investigations**

- Hematological
- Hb%,
- TLC,
- DLC,
- ESR
- PCV Blood indices: MCV, MCH, MCHC
- Stool test
- GBP
- Serum iron level
- Serum ferritin level

**Observation**

✓ The observation of patients will be done before, during and after completion of trial.
✓ Little addition or exclusion may be done as per necessity of the study.

**CONCLUSION**

Conclusion will be made on the basis of observation done on subjective & objective parameters. The result will be analyzed statistically.

**List of important references & brief resume of relevant literatures on the proposed work**

- Charaksamhita
- Sushrutasamhita
- Ashtanghridaya
- Asthansangraha
- Madhavnidan
- Bhaishajyaratnawali
- Yogratanakar
- Harrison’s principles of Indian medicine.
- Text book of pathology by Harshmohan
- Manual of practical medicine by Alagappan
- Principles and practices of medicine by Davidson’s