A CLINICAL STUDY ON THE EFFECT OF KAMADUGHA RASA IN GARBHINI PANDU (IRON DEFICIENCY ANAEMIA)

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ABSTRACT

A woman is treasured by the richness of continuing the human race. Pregnancy is a state in which all the physiological functions are hyper stimulated in order to meet the demands of the growing fetus. Anaemia during pregnancy i.e. the fall in the hemoglobin concentration is a very common condition. Ayurvedic classics explain Panduroga under the Rasa Pradoshajavikara. The common Clinical presentation of Anaemia in pregnancy is pallor of skin, pale nails, pale tongue, glossitis, stomatitis and other symptoms include lassitude, fatigue, anorexia, indigestion, palpitation, dyspnoea, giddiness, oedema and pica. These features share lot similarities with lakshana of Panduroga. Panduroga is a varnopalakshitavyadhi due to alparakta, alpameda, nissara and sithilendriya. In this open labelled clinical trial, 50 pregnant women fulfilling the diagnostic and inclusion criteria of Panduroga / Iron Deficiency Anaemia (IDA) were administered with Kamadugha rasa with a dose of 250mg thrice a day orally for 4 weeks. This study has revealed that Kamadugha rasa provided statistically significant improvement in a maximum of the cardinal features of Garbhinipandu as well as it has showed good effect on Agni and nourishment of pregnant woman without any side effects to foetus and pregnant woman. The qualities of the ingredients of Kamadugha rasaasAmapachaka, Srotoshodhaka, Raktavardhaka and Rasyana, does pittashamana and causes Raktavriddhi quickly thus relieving Pandu.

Keywords: *Garbhinipandu*, Iron Deficiency Anaemia (IDA), *Kamadugha rasa*

INTRODUCTION

Anaemia is defined as reduction in circulating haemoglobin below the critical level. The normal haemoglobin (Hb) concentration in an adult female is between 12-14 grams percent. WHO has accepted up to 11gm percent as the normal haemoglobin level in pregnancy In India and most of the other developing countries the lower limit is often accepted as 10 gm%1. Anaemia is often classified according to Haematocrit (PCV) % as mild degree (9-11 gm %), moderate (7-9 gm %), severe (4-7 gm %) and very severe (<4gm %).2

Anaemia in pregnancy is present in very high percentage of pregnant women in India. Acc. to WHO in India, incidence of Anaemia pregnancy has been noted as high as 40-80%.3

Among pregnant women, Iron Deficiency Anaemia (IDA) during the first two trimester's results in increased incidence of preterm labor and low-weight births .The prevalence of Anaemia in low-income pregnant women in the 1st, 2nd and 3rd trimesters is 9%, 14% and 37%, respectively. Iron deficiency Anaemia re-

sults in decreased work productivity increased child mortality; increased maternal mortality, slowed child development, and mild-to-moderate Anaemia may increase susceptibility to infectious disease4. Sociodemographic factors, Obstetrical factors, Behavioral factors, Medical conditions are the common risk factors of Anaemia in Pregnancy. The common Clinical presentation of Anaemia in pregnancy is pallor of skin, pale nails, pale tongue, glossitis, stomatitis and other symptoms include lassitude, fatigue, anorexia, indigestion, palpitation, dyspnoea, giddiness, oedema and pica5.These features share lot similarities with lakshana of Panduroga.

Acharya Harita has described eight Garbhopadravas6 (Complications of pregnancy) and included Vivarnatva, which appears to be pallor that accompanies anemia. Panduroga is a varnopalakshita vyadhi, where pandutwa or pallor of the skin is the predominant feature and the other lakshana are alparakta, alpameda, nissara and sithilendriya. In addition there will be Dourbalya, Karshya, Karna Kshweda, Gatrapeeda, akshikoota shotha, Sheernalomata, Hridrava, Shwasa, Bhrama and Annadwesha7.

Panduroga Chikitsa includes both shodhana and shaman.8Garbhini should be treated just like a pot filled with oil, slightest oscillation of such pot causes spilling of oil. Similarly greatest care should be showered to the pregnant woman to prevent complications. In classics, Shodhana is always contraindicated in pregnant ladies but shodhana is followed by Shamana oushadhis. In shamana Chikitsa, various single and compound preparations are told which include herbal, mineral and herbo-mineral preparations. The analysis of the formulations mentioned in the context of Pandu improves the metabolism and Agni and thus relieve the Pandu. Kamadugha rasa9, mentioned in Rasayogasagara is a herbo-mineral preparation with ingredients Gairika (Fe_2O_3), Dhatri and Ghrita, has Deepana, Pachana and Rasayana properties, improves proper metabolism, helps in dhatuposhana correcting lakshana of pandu. Kamadugha rasa is with easily available ingredients, easily dispensable and cost effective. Hence, this study is planned to assess the therapeutic effect of Kamadugha rasa on Panduroga /IDA in Garbhini.

MATERIALS AND METHODS

Study Design:Open label, Single blind clinical study with Pre and Posttest design:

Drug Source: The required herbal formulation Kamadugha rasa was prepared specially for the study in S.D.M. Ayurveda Pharmacy- Udupi.

Method of collection of data :

Patient Source: Pregnant women suffering from Panduroga (IDA) will be selected from OPD & IPD of S.D.M. Ayurveda Hospital, Udupi.

Sample Size: Minimum of 50pregnant women fulfilling the diagnostic and inclusion criteria of Panduroga (IDA), irrespective of their Caste, Economical and Educational status, were selected for the study.

Table1-Ingredients of Kamadugha rasa

Sl. No.	Drug	Technical Name & Family	Part used	Quantity	Action
1.	*Dhatri*	Phyllanthu-semblica Linn. Euphorbiaceae	Fruit pulp	Sufficient	*Chakshushya, Rasayana, Tridoshajit, Vrishya, Rochana, Deepana, Balya, Anulomana, Garbhasthapana* [10]

2.	*Ghri-ta*			Suffi-cient	*Chakshyushya, Vrishya, Agnikara, Ojotejo-vridhikara, Balyam, Ayushyam, Rasayanam, Tridoshaharam, Ruchyam[11]*
3.	*Gai-rika*	Fe_2O_3			*Chakshyu-shyam,Raktapittahara,Raktaghnam,Vishaghnam [12]*

Preparation of Kamadugha rasa

Procedure: Ghrita bharjita Suvarna gairi-ka was subjected to bhavana with Amalaki swarasa in end runner for 6hrs and the pro-cedure was repeated for 7 times then col-lect it in a clean Iron plates, allow it to dry, made into vati of 250 mg size through punching machine.

Observations:
- *Gandha:Amalaki*
- *Varna:Brown*
- *Sparsha:Ruksha*

Selection criteria:

a. **Diagnostics Criteria13:**
- Signs and symptoms of Panduro-ga/IDA
- Haemoglobin less than10 gm %
- RBC – less than 4 million /mm3
- PCV – less than 30%
- MCHC – less than 30%
- MCV – less than 75µ m3
- MCH – Less than 25 pg
- Blood picture with Microcytic Hy-pochromia and Normocytic Hypoch-romia

b. **Inclusion Criteria:**
1. Patients fulfilling diagnostic criteria
2. Patients aged between 18 – 40 years age
3. Both primi and multi in their 2nd tri-mester
4. Hemoglobin below 10gm% and above 7gm%
5. Blood picture with Microcytic Hy-pochromia and Normocytic Hypoch-romia

c. **Exclusion Criteria:**

- Patients with Anaemia other than Iron Deficiency Anaemia.
- Patients with Haemoglobin below 7g percent
- Patients suffering from Iron deficiency Anaemia due to other Systemic disord-ers/ Infections like Hepatic cirrhosis, Rheumatoid arthritis, Uremia, Malig-nant disorders.

d. **Intervention &Follow-up**
- Kamadugha rasa (KR)250 mg thrice a day for 4 weeks and followed Till deli-very

e. **Assessment Criteria:**
- All the data was collected and docu-mented as a detailed case proforma. Assessment of the disease was done adapting standard methods of scoring. Subjective and objective parameters were analyzed statistically.

f. **Subjective Parameters**:
- Arohanayasa (Exertional Dyspnoea)
- Dourbalya (Generalized weakness)
- Hriddrava (Palpitation)
- Pandutvaof Netra, Nakha (Pallor)
- Shotha (Oedema)
- Agnimandya(Loss of Appetite)
- Angamarda (fatigue)
- Shiroruja (headache)
- Rukshangata (Dryness)
- Alasya (Lassitude)

g. **Objective Parameters:**
- Red blood cell count (RBC or erythro-cyte count)
- Hematocrit (Hct)
- Hemoglobin (Hb)
- Mean corpuscular volume (MCV)

- Mean corpuscular hemoglobin (MCH)
- Mean corpuscular hemoglobin concentration (MCHC)

OBSERVATIONS

Out of 50 patients registered for the present study, maximum number of patients, i.e. 38% belonged to age group of 21-25years, 60% were of Hindu community, 76% were of Middle Income group, 58% patients were having high school education, 68% patients belonged to rural area, 60% were housewives, 86% were of mixed diet, 64% patients were having anoopamamsasevana, 40% patients had Pittakapha Prakriti and 62% had Mandagni. [Table – 2, 3 & 4]

Table 2- Demographic observations

Sl.No.	Observations	Maximum	No. of Patients	Percentage
1.	Age	Vivardhamana (21-25yrs)	19	38
2.	Religion	Hindu	30	60
3.	Education	High school	29	58
4.	Occupation	House Wife	30	60
5.	Economic Status	MIG	38	76
6.	Habitat	Rural Area	34	68
7.	Diet	Mixed	43	86
8.	Gravida	Primi	29	58
9.	Bowel Habits	Regular	43	86

Table 3- Observations of Ayurvedic Parameters

Sl.No.	Observations	Maximum	No. of Patients	Percentage
1.	*Prakriti*	*Pittakapha*	20	40
2.	*Satmya*	*Madhyama*	38	76
3.	*Sara*	*Madhyama*	50	100
4.	*Satwa*	*Madhyama*	50	100
5.	*Samhanana*	*Madhyama*	50	100
6.	*Pramana*	*Madhyama*	50	100
7.	*Ahara Shakti*	*Madhyama*	35	70
8.	*Vyayama Shakti*	*Madhyama*	33	66
9.	*Koshta*	*Madhya*	42	84
10.	*Agni*	*Mandagni*	31	62

Table 4- Observations of Nidana

Sl.No.	Nidanasevana	No. of Patients	Percentage
1.	*MatsyaSevana*	32	64
2.	*AmlaSevana*	24	48
3.	*AsatmyaAhara*	20	40
4.	*Viruddhabhojana*	22	44
5.	*AdhikaPayahSevana (consumption of excessive milk products)*	38	76

Table 5- Observations of Clinical Features

Sl.No.	Clinical Features	No. of Patients	Percentage
1.	Artavaadarsana (Amenorrhoea)	50	100
2.	Daurbalya(Weakness)	50	100
3.	Shrama(Fatigue)	50	100
4.	Bhrama (Dizziness)	44	88
5.	Sirasshola (Headache)	30	60
6.	Hriddrava (Palpitation)	45	90
7.	Arohanayasa(Dyspnoea)	46	92
8.	Irritability	32	64
9.	Aruchi(Tastelessness)	34	68
10.	Panduta (Pallor)	40	80
11.	Pica	17	34
12.	Jihwasotha (Glossitis)	10	20
13.	Oshtasotha (Stomatitis)	10	20
14.	Karnakshwedha(Tinnitus)	0	0

Out of 50pregnant women screened for present study, all patients (100%) were having the complaints of Daurbalya (weakness) and Shrama (fatigue), 88% patients had Bhrama (dizziness), 90% had Hriddrava(palpitations), 80% had Panduta (pallor), 92% had Arohanayasa (Exertional Dyspnoea), 60% had Sirasshola (headache) and 68% had the complaint of Aruchi (tastelessness). [Table -6]

RESULTS

Patients suffering from Garbhini Pandu / IDA were treated with Kamadugha rasa in a dose of 250 mg thrice a day for 28 days in this single blind, pre-test and post-test clinical trial. The effect of the treatment following medication was assessed in regards to Subjective and Objective Criteria before and after the trial period.

Statistical analysis was performed with Computer statistical package SIGMAS-TAT (Version 3.5). Datawas presented as mean ± SEM. The results were analyzed for statistical significance using paired 't' test. A P-value <0.050 was considered significant.

Table 6- Effect of Kamadugha rasa on Subjective Parameters

Parameter	Mean ± SE		Paired 't' test			
	BT	**AT**	**S.D**	**S.E**	**'t'**	**P**
Weakness	3.520±0.122	2.200±0.140	1.203	0.170	7.761	<0.001
Fatigue	2.600±0.139	1.520±0.0820	1.030	0.146	7.824	<0.001
Dizziness	1.600±0.121	0.840±0.100	1.061	0.150	5.067	<0.001
Headache	0.780±0.104	0.760±0.105	0.869	0.123	0.163	0.871
Palpitation	1.440±0.108	0.878±0.0806	0.941	0.131	4.219	<0.001
Dyspnoea	1.400±0.0904	0.820±0.0792	0.835	0.118	4.910	<0.001
Irritability	0.880±0.109	0.460±0.0867	0.859	0.122	3.456	0.11
Tastelessness	0.680±0.112	0.300±0.0655	1.019	0.144	4.719	<0.001
Pallor	1.140±0.114	0.820±0.0842	0.844	0.119	2.682	0.010
Pica	0.400±0.0857	0.280±0.0758	0.824	0.117	1.030	0.308
Glossitis	0.240±0.0732	0.160±0.0524	0.566	0.0800	1.000	0.322

Stomatitis	0.220±0.0657	0.240±0.0674	0.714	0.101	0.198	0.844
Tinnitus	0.000±0.000	0.000±0.000	0.000	0.000	0.000	1.000

Table7- Effect of Kamadugha rasa on Objective parameters

Parameter	Mean ± SE		Paired 't' test			
	BT	**AT**	**S.D**	**S.E**	**'t'**	**P**
Hb%	9.057 ± 0.0959	9.469±0.132	0.778	0.110	3.745	<0.001
RBC	3.452 ± 0.0353	3.560±0.0384	0.272	0.0384	2.811	0.007
PCV	28.478±0.516	28.966±0.522	2.831	0.400	1.218	0.229
MCV	79.412±0.974	81.636 ±0.926	3.540	0.501	4.443	<0.001
MCH	27.922±0.432	28.280±0.455	1.783	0.252	1.420	0.162
MCHC	31.400±0.456	38.350±6.034	42.300	5.982	1.162	0.251
WBC	10028.0±256.26	10020.60±209.29	1360.28	192.37	0.039	0.969

Effect on Subjective&Objective Criteria

In the present study, Kamadugha rasa provided relief in majority of the Subjective Parametersof Garbhinipandu. The result observed in Hriddrava (Palpitation), Daurbalya(Weakness), Shrama(Fatigue) and Bhrama(Dizziness)Aruchi (Tastelessness), Arohanayasa (Dyspnoea), were highly significant statistically (<0.001).Panduta (Pallor), Sirasshola (Headache) and Irritabilitywere found statistically significant (P< 0.05) [Table 6].

The Objective Parameters i.e. Hb%, MCV were found highly significant statistically (<0.001) whereas the RBC, PCV, MCH, MCHC and WBC shown the significance (P<0.05) [Table7].

DISCUSSION

Gabhinipandu (Anemia in Pregnancy) may be taken as a Rasapradoshaja vyadhi and it is a Santarpanothavikara, which is common in Garbhavastha (pregnancy). The excessive intake ofAmla, Lavana, Katu Rasa ahara Abhojana, Pramita bhojana etc., by the pregnant women due to dauhridavastha were found as etiological factors for Garbhini Pandu.

The excessive rakta, mamsa, bala and varna upachaya during 5th& 6th months of the gestational period leads to karshyat-wam (emaciation), loss of strength and complexion in the women made her more anemic13,14.

In the present study, majority of pregnant women (38%) were in between the age group of 21-25yrs. Indicates the vivardhamana dhatuavastha and increased demands of the growing foetus makes the mother Anemic. Patients were having the nidana like anoopamam sasevana (64%) andasatmya (40%) viruddhabhojana (44%) leading toMandagni (62%) creates Ama production and improper Rasadhatu formation, is the main cause for manifestation of Pandu. In the present study, the results observed statistically significant improvement in a maximum no. of cardinal features of Garbhini Pandu as well as the objective parameters and were due to qualities of the ingredients of Kamadugharasa such as, Amapachaka, Sroto shodhaka, Rakta vardhaka and Rasayana.

Probable mode of action:

Kamadugha rasa contains Dhatriphala rasa, Ghrita bharjita Gairika which is Deepana, Pachana, kaphavatahara, Pittashamana and has Balya property, which cause agnideepti and in turn it leads to proper metabolism as well as formation of proper Dhatus. Amalaki, which is a rich source of Vitamin C, is known enhancer of iron ab-

sorption. It is best pittashamaka so helps in proper formation of rakta.

Gairika i.e. Fe_2O_3 contains 70% of Iron and with its tikta and madhura rasa properties helps in agnideepana which leads to proper metabolism and dhatuposhana. Thus, the cumulative effects of the drugs lead to correction of metabolism, iron absorption, improved blood formation and correction of disease.

CONCLUSION

Garbhini Pandu may be correlated with Iron Deficiency Anemia in pregnancy, which is commonly seen due to increased demands of the growing foetus. In present study, Kamadugha rasa showed a significant improvement in terms of subjective and objective parameters. Because of the Pittashamana Amapachaka, Sroto shodhaka, Rakta vardhaka and Rasyana properties cause the correction of metabolism, iron absorption, improved blood formation in turn leads to relief of the symptomatology.

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