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भारतीय चिकित्सा केन्द्रीय परिषद्  
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To,  
All the Teachers of Ayurveda, Unani and Siddha colleges

Dear Colleague,  
Greetings,

You all know that, CCIM has come up with the revamped Online Teachers Management System (OTMS) and issued Unique Teachers Code to all the teachers and now all teachers are in direct contact with the council. The purpose of this is not only limited to visitation but this will be extended for academic purpose too. Two way communication is always better than the one way communication, therefore Council is developing an e-learning platform to improve the academic communication within teachers' fraternity.

To begin with, CCIM has decided to recommend minimum one good article every month to all ASU teachers. Teachers can also suggest good articles to be circulated among all teachers. Despite being an internal circulation, all teachers take care by ensuring that there should not be any copyright violation before sending any article for circulation. You can also send your scholarly articles for such type of internal circulation. But please remember, this will not be considered as publication. You can also create a news item out of the latest research published & the council will circulate it with a link (URL) to the original article.

Initially CCIM will send some articles, but with the inputs from you, we will constitute a committee of the teachers who will scrutinize the recommended articles/research papers and will select few of them for internal circulation.

The only aim of this activity is to keep us well informed & to update our knowledge, which is need of the hour. Please spare your valuable time for reading these articles and I hope everyone of us will participate in this activity with enthusiasm.

With warm regards,

(Vaidya Jayant Yashawant Deopujari)

## **Title page**

Title of article: To evaluate role of Raktabasti in treating severe anemia due to End Stage Renal Disease: A clinical trial

Original research article; author has not given copy right of this article to any journal.

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**To evaluate role of Raktabasti in treating severe anemia due to End Stage Renal Disease: A clinical trial**

Abstract: A clinical trial was undertaken in Ayurvedic Research Department of Sassoon hospital, Pune to evaluate the effect of Raktabasti in 39 patients with severe Anaemia due to End Stage Renal Disease (ESRD). The average age of study subjects was found to be 44.74 years. 60 ml. of blood of a previously screened donor (a close relative) was given to the patient per rectally. The same procedure was repeated after 48 hours. The Haemoglobin rise after two Raktabasti given 48 hours apart was studied after next 48 hours. Raktabasti of total 120 ml blood has showed statistically significant rise in the Haemoglobin level on an average by 1.65 gm/ dl. The 6 months follow up demonstrated, stabilized Hb level. Further we found **inverse/ negative correlation between Haemoglobin and Creatinine** that indicated that as Haemoglobin rises, there is reduction in Creatinine value. The present study proved that. **Raktabasti is an alternate, simple, safe and economical method of treating severe Anaemia in ESRD patients.**

**Key words:** ESRD, CKD stage 5, Anemia, Ayurved, Raktabasti

## To evaluate role of Raktabasti in treating severe anemia due to End Stage Renal Disease: A clinical trial

*Sarita Gaikwad\**

**Introduction:-** Chronic Renal Failure is a hidden epidemic and its prevalence is increasing in alarming proportions taking heavy toll of lives<sup>1</sup>. There is progressive and irreversible damage to the nephrons leading to End Stage Renal Disease (CKD stage 5) that warrants survival only on Renal Replacement Therapy (RRT).

Anemia remains a major challenge in treating cases of End Stage Renal Disease, as the pathology is still not fully understood. Anemia in CKD is associated with reduced quality of life, increased risk of cardiovascular disease leading to poor outcomes. Erythropoietin is the hormone that is produced by mainly kidneys (90%) & liver (10%), which stimulates bone marrow to produce more number of Red Blood cells (RBCs) & initiates the synthesis of Haemoglobin inside RBCs. In CKD due to diseased kidney, erythropoietin production is inadequate which causes reduction in RBC production & reduced lifespan of RBCs. Further, this anemia is mostly refractory to oral iron therapy due to poor dietary absorption.

Inflammation is commonly observed in CKD that impairs both the early erythropoietin-dependent period of erythropoiesis and the later iron-dependent period. In addition, inflammatory cytokines stimulate hepatic release of 'hepcidin', produced by the liver; it is the hormone responsible for maintaining systemic iron homeostasis, which simultaneously blocks iron absorption in the gut and thereby promoting iron-deficiency erythropoiesis<sup>2</sup>. Thus, the anemia in CKD is hypoproliferative and iron-deficiency erythropoiesis<sup>3</sup>.

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### Causes of Iron deficiency<sup>4</sup>:

1. Blood loss for laboratory tests, aggravated by hospitalizations
2. Gastrointestinal losses (may be exacerbated by systemic anticoagulation during dialysis, and/or the use of maintenance oral anticoagulants or anti -platelet drugs used for the treatment or prevention of cardiovascular disease)
3. Blood losses associated with the hemodialysis procedure, including dialyzer blood loss and blood loss from the arteriovenous fistula or graft puncture site and from catheters
4. Reduced intestinal iron absorption, at least in part due to increased hepcidin levels, and medications (e.g., proton pump inhibitors and calcium-containing phosphate binders)
5. Reduced intake due to poor appetite, malnutrition, and dietary advice (e.g., protein restriction)

#### Definition of Anemia:-

Indian CKD guidelines (2014) defined Anemia in Chronic Kidney Disease. The Hb concentration is < 13 g/dl in males and < 12 g/dl in females<sup>5</sup>.The severe anemia is defined as < 7 gm/dl as mentioned below.

Table No. 1: Definition of Anemia in terms of Hb%

Normal Hemoglobin $\geq 13$ g/dl in males and $\geq 12$ g/dl in females.	Mild 10 gm /dl to cut off point of normal for male & female	Moderate 7-10 gm/dl	Severe < 7 gm/dl
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It is advocated that in CKD, the aim of maintaining Hb at 11-12 g/d<sup>6</sup>, as over correction may lead to stroke & thromboembolic phenomenon.

**Samprapti:-**

According to Ayurved, Vrikka is a Matruj organ, it is formed by cream portion of Rakta and Medadhatu. Vrikka is the moolsthan of Medovahsrotas. Vrikkavikarars have been associated with the cream part of Rakta & meda from mother, genetically linked and after birth; the host factors also do play a major role. In Chronic Renal Failure - there is depletion of the cream portion the dhatus from which Vrikka has been formed, i.e. Raktadhatu is depleted causing Raktakshaya/ Anaemia. This Anaemia is due to Raktadhatvagnimandya.

As per the principles of '*Samane-samane-vridhhisham*,' i.e. Like cures like, to save life due to heavy blood loss/ Raktakshaya (Anaemia), either Raktabasti or Rakta-prashan (Drinking blood of goat) may prove to be a wonderful lifesaving tool as prescribed by Charak in Raktatisar-chikitsa. However Rakta-prashan may not be acceptable to the recipient, in that case to save life due to blood loss/ Anaemia, either blood transfusion or Raktabasti these are the only two options available. Blood transfusion requires sophisticated blood bank, blood of correct blood group of donor i.e. typing- cross matching procedure, of donor and recipient blood, to avoid transfusion reactions. However here, the main advantage is that we have liberal option of accepting donor's blood of any blood group in Raktabasti. Further, 60 ml. of blood given by Raktabasti twice, 48 hours apart, is readily acceptable to the donor. It was my personal experience that Raktabasti increases Haemoglobin concentration by 1.5 - 2 gm% within 48 hours. However to establish this fact, it was decided to evaluate role of Raktabasti in treating severe Anaemia in ESRD patients by taking clinical trial.

**Aims and objectives:-**

1. To explore role of Raktabasti in treating Anaemia in End stage Renal Disease cases.
2. To find out alternative to blood transfusion in treating severe Anaemia in End stage Renal Disease

**Material and methods:-**

Study design: - A clinical trial was undertaken in 20 bedded Ayurvedic ward, Sassoon General Hospitals, Pune ,the teaching hospital of B.J. Medical College, Pune.

Study period:- June 2010 to Dec 2012

Study subjects: - 57 Patients having End stage Renal Disease were admitted to 20 Bedded Ayurvedic ward of Sassoon General Hospitals, Pune in the given study period and out of them 39 patients satisfying the selection criteria were included in the present study.

**Selection of patients:-**

1. Patient selected were End stage Renal Failure cases suffering for more than six months, (eGFR-  $< 15 \text{ ml/min/1.73 m}^2$ )
2. Haemoglobin level  $\leq 6 \text{ gm\%}$
3. Patients were not having piles/ hemorrhoids, anal fissure or local lesion in anal canal
4. Written consent was obtained and those who agreed, were included in the study
5. The relative of the patient is preferred as a voluntary donor. He/ she was screened for HIV, Hepatitis B and C, Malaria and Syphilis as done routinely for the blood donors.

**Investigations: -**

Renal function tests like Blood urea, serum Creatinine, C.B.C, LFT, Lipid profile , Urine RE estimation of serum electrolytes, Blood sugar- fasting and P.P., USG abdomen were carried out. Haemoglobin level was estimated by Sahli's method. Thus 39 cases were diagnosed as cases of End stage Renal Disease with severe anaemia and those satisfying selection criteria were included in the study. 31 of them had already put on Hemo-dialysis and needed frequent blood transfusions.

**Treatment prescribed:-** The ESRD state as such was treated by Ayurvedic line of treatment principally by Deepan, Pachan, for treating Agnimandya; Mrudu virechana, Raktashodhan-Prasadhan as done by author for treating Dhatu dusti and Dhatavagnimandya<sup>7,8</sup>. As per Ayurvedic principles "Mutra" is formed in Pakwashaya. Hence Basti chikitsa was given for improving Glomerular Filtration Rate.

For treating severe Anaemia, **Raktabasti was given with following procedure:-**

The patient was asked to take Laghu- supachyaaahar/ breakfast before undergoing the procedure. It was strictly observed that the stomach of patient was not empty but rectum is empty. The donor and the recipient were kept lying on adjacent beds. The donor was pricked from median cubital vein, taking all the aseptic precautions, and 60 ml. of blood was taken out slowly with 18 no. needle attached to 100 ml. sterilized syringe. The recipient stayed lying on left lateral position. As soon as 60 ml. blood was taken out from the donor, the needle is removed and a No. 10 sterilized rubber catheter was fixed to the nozzle of the syringe. The catheter was lubricated with sterilized Sahachar oil and immediately introduced per rectum. The syringe was emptied slowly and meanwhile patient was asked to take deep breathing. The same procedure was repeated after 48 hours. Haemoglobin level was estimated after 48 hours of second Raktabasti procedure.

**Observations and Discussion:-**

**Table No. 2 Classification of study subjects as per age**

Age group	No. of patients
25-29	2
30-34	3
35-39	5
40-44	11
45-49	7
50-54	4



55-59	3
60-64	2
65 and above	2
Total	39

Overall there were 31 males and 8 females in the study with mean age of 44.74 years (range 25- 73 years).

**Table No. 3. Etiology of Study subjects**

Cause	No. of patients	%
Diabetes	13	33.3%
Hypertension	12	30.76%
Repeated U.T.I	3	7.69%
Polycystic disease	3	7.69%
Drug induced	3	7.69%
Urinary tract blockages and reflux	2	5.1%
Other causes	3	7.69%
Total	39	100%

In majority of study subjects the cause of CRF/ESRD was Diabetes and Hypertension, followed by Repeated U.T.I, Polycystic disease of kidney, drug induced nephritis ( H/O use of Steroids, antibiotics and analgesics). Other causes were related to faulty life style.

It takes around 48 hours for formation of Rakta dhatu hence it was decided to study the Haemoglobin rise after 48 hours of giving the 2nd Raktabasti. It was observed that treatment with raktabasti showed significant raise in level of Haemoglobin by 1.65 ( $\pm 0.08$ ) gm/dl.

The mean Creatinine level of the study subject was 8.63 mg/dL  $\pm 3.49$  on admission. The Creatinine value after 6 month was noted to be 4.62  $\pm 1.52$  mg/dL- reduction of 46.47%. The eGFR was 7.8 ml/min/ 1.73 m<sup>2</sup> at the beginning of the study and it was 15.2 ml/min/ 1.73 m<sup>2</sup> at the end of 6 months.

**Table No.:4 Rise in Haemoglobin level observed after RaktaBasti**

Baseline Hb (Mean $\pm$ SD) (N= 39)	Post Interventional Hb (Mean $\pm$ SD) (N= 39)	Difference (Mean $\pm$ SD)	p value
5.43( $\pm$ 0.2) gm/dl	7.07( $\pm$ 0.5)gm/dl	1.65 ( $\pm$ 0.08)gm/dl	<0.001

(df=38, t= 20.07, p<0.001) p value calculated using paired sample t test

**Table No. 5. Classification of patients based on increase in Haemoglobin**

Rise in Haemoglobin gm/dl	No. of patients
1-1.4 gm	12
1.5 - 1.9gm	19
2-2.5gm	8

It was observed that those subjects having <4 gm Hb had maximum rise in Hb up to 2.5 gm.

**Table No. 6 Correlation between Hb% & Serum Creatinine**

Correlation between Hb% & serum Creatinine	r value	p value (2 tailed)
	-0.346	0.000
Correlation was statistically significant at the 0.05 level (2-tailed).		

There was statistically significant negative association found between Hb% & Creatinine.

The negative correlation coefficient -0.346 suggested that as Hb% increases, creatinine decreases.

Charaka has enumerated various types of Basti and one of them is Raktabasti.

*Rakte rakten pitte tu kashayswadu tiktakaihei* I Charak Sidhha 8/25

*Rakte rakteneti sarakte-atisaryamane Rakta bastirdeyah* II Chakrapani

Wherever there is blood loss in large quantity, then Rakta-basti has to be given.

*Tadev darbha mruditam raktam bastim pradapyeta* I

*Shyama kashmarya badri durvoughirehe shrutam payaha* II Charak Sidhha 6/83

Charaka advocated that before Raktabasti is given, the blood is to be mixed with Darbha, which acts as an anticoagulant. Charaka has further stated that fresh blood extracted from living deer, rabbit, ox, male buffalo, male goat etc. may be given orally (Rakta- prashan), to treat the conditions caused due to blood loss. Though Charaka prescribed Raktabasti for treating conditions occurring due to blood loss, we decided to explore treating severe Anaemia in Chronic Renal Failure/ CKD stage 5 i.e. ESRD by use of human blood which was rarely used in clinical practice.

*Sarvada sarvabhavanam samanyam vridhhikaranam I*  
*Rhashetu visheshashchya, pravrittir-ubhayasya tu II Charak Su. 1/44*

As per the principles of *Samane samane vridhhi sham*, i.e. Like cures like, to save life due to heavy blood loss/ Raktakshaya (Anaemia), either Raktabasti or Raktaprashan may prove to be a wonderful lifesaving tool as prescribed by Charak in Raktatisarchikitsa. However Raktaprashan may not be acceptable to the recipient, in that case to save life due to blood loss/ Anaemia, either blood transfusion or Raktabasti these are the only two options available. Blood transfusion requires sophisticated blood bank, blood of correct blood group of donor, matching- cross matching procedure, of donor and recipient blood, to avoid reactions. However here, the main advantage is that we can use donor's blood of any blood group in Raktabasti. Further, 60 ml. of blood given by Raktabasti twice, 48 hours apart, is not a difficult task for a donor and it was found quite acceptable. The total blood introduced by Raktabasti through rectum, raises Haemoglobin concentration by 1.5 - 2 gm% within 48 hours. Blood loss causes Raktakshaya i.e. Anaemia and in C.R.F. patients Anaemia is refractory to oral iron therapy. Anemia in ESRD subjects are treated either by ESA (Erythropoiesis Stimulating Agents) or by Intravenous Iron therapy. ESA have potential risk of stroke and thromboembolic phenomenon. Many clinical studies in CKD subjects

demonstrated that I/V Iron therapy promote oxidative damage to peripheral blood lymphocyte DNA<sup>9</sup>.

We are treating CRF and ESRD by Ayurvedic line of management, however we encountered Rakatakshaya that was not responding to the desired extent by Ayurvedic line of treatment, hence it was decided to explore the use of the Raktabasti in treating Anaemia in these patients.

#### **Advantages of Raktabasti over Blood transfusion<sup>10</sup>**

<b>Point No.</b>	<b>Blood transfusion</b>	<b>Raktabasti</b>
1.	Strict matching and cross matching of donor's blood and recipient blood is mandatory	Matching and cross matching of donor's blood and recipient blood is not at all required
2.	It may cause severe transfusion reactions	Totally safe and simple procedure
3.	Requires blood-bank, sterilized container, anti coagulants, cold chain, trained technician, physician etc	No need of a blood bank. No anticoagulant, no cold chain required. An Ayurvedic physician and assistant/ nurse can perform it
4.	Large quantity of blood is required to cover up the blood loss and to raise the Haemoglobin concentration	Small quantity of blood is sufficient to raise the Haemoglobin concentration
5.	Costly	Economical

However this excellent Panchkarma procedure has been rarely used by the modern Ayurvedic experts. It may be due to undue phobia of introducing HIV infection/ Hepatitis B and C. Certainly, we have to take all universal precautions to avoid transmission of blood transmissible diseases. If these precautions are followed, **Raktabasti does not have any extra risk than that of Blood transfusion.**

It is experimentally proved that the material introduced by basti is detected in ileum and even up to duodenum and stomach. Therefore blood introduced via rectum (Rakta basti) reaches

'Grahini' where Agni acts and forms the Rakta dhatu. Further the absorption potential of rectum is much more potent and the blood introduced by Raktabasti is readily absorbed. There is no urge to pass stools after giving Raktabasti. Even if the patient given Raktabasti passes stools, there is no trace of blood found in the stool. In CRF/ESRD there is insufficiency of Erythropoietin hormone and patients put on Dialysis are given Inj. Erythropoietin on regular basis but still the Haemoglobin is not stabilized and such patients do require whole blood transfusion frequently. If we transfuse a unit of whole blood (350 ml), it raises Haemoglobin level by nearly 1 gm/ dl.

In the present study Raktabasti of only 120 ml blood there was mean rise in Haemoglobin level by 1.65gm / dl. Ayurvedic management of CRF/ESRD takes some more time to raise the Haemoglobin level but here Rakta- basti increased the Haemoglobin within 48 hours, giving opportunity to increase the efficacy of the Ayurvedic management to a great extent. There were no adverse reactions or pyrexia and it went on very well in all the patients. This procedure was well accepted and tolerated by all the patients. Further, patients having earlier symptoms of lethargy, tiredness, breathlessness, loss of appetite etc., were relieved of these symptoms and felt sense of well being.

**Follow up: -**

Haemoglobin was estimated every month for 6 months for each and every patient and it was found that the Haemoglobin level was stable in all the patients. Raktabasti stabilized the Haemoglobin and this was noteworthy accomplishment of the study. The study subjects were treated by Ayurvedic line of treatment; it might be a combined effect of Raktabasti and Ayurvedic treatment. Does Raktabasti triggers the production of Erythropoietin, is a question that needs to be addressed by a separate clinical research.

As already discussed above, these patients were on similar Ayurvedic line of treatment, (the details were published in International J Ayu Pharm Chem<sup>6</sup> and Indian Journal of Applied Research<sup>7</sup>) and all were maintained on Ayurvedic treatment without dialysis.

Raktabasti is the simple route of administration and has exceptional results due to excellent absorption capacity of rectum but modern science has yet to take note of this wonderful route. Though it was not part of this study, it is expressed that thousands of victims of road traffic accidents die due to haemorrhage for not getting the right type of blood timely by blood transfusion. **Raktabasti can be a excellent solution to these victims as any type of blood timely given by Raktabasti will cover up the blood loss and may save thousands of lives.**

#### **Conclusion:-**

The present study proved that **Raktabasti is an alternate, simple, safe and economical method of treating severe Anaemia in ESRD patients.**

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