



The Role of *Raktbasti* Treatment in Thalassemia Major

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Abstract

Thalassemia is an inherited blood disorder in which the body is unable to make adequate and proper hemoglobin. Hemoglobin is present in the Red Blood Cells (RBC). Normally red cells survive for 120 days, but in Thalassemia red cell survival is reduced. In α Thalassemia there is a deficient synthesis of α chains and the manifestations are due to the excessive β chains. While in β Thalassemia β chains are reduced and excess of α chains causes reduced survival. In our country β Thalassemia is very common. The line of treatment of PanduRoga has different formulations mentioned in the classics but in severe blood loss condition, CharakAcharya mentioned Raktbasti treatment. Keeping this in view the Raktbasti treatment is selected from the CharakSamhitaSiddhithana Chapter-6. Patients with signs and symptoms as per proforma were selected from the OPD of the intitution. Minimum 30 patients for treated and 30 patients for control group were selected with inclusive and exclusive criteria To evaluate the efficacy of Raktbasti treatment in Thalassemia Major. Patients treated with conventional medical treatment were taken in control group whereas patients treated with only Raktbasti were taken in treated groups.

Keywords

Thalassemia, Iron Chelation, Raktbasti, Goat blood



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INTRODUCTION

Thalassemia is a major genetic disorders inherited from a person's parents¹. The two main types of thalassemia are alpha thalassemia and beta thalassemia². The severity of alpha and beta thalassemia relies on the fact as to how many of the four genes for alpha globin or two genes for beta globin are missing.

In India the combined carrier rate of β Thalassemia, Hemoglobin E & Sickle Cell Anemia is 3.9%. i.e., 3 crore Indians are Thalassemic carriers and 8000 to 10,000 Thalassemia major are born every year in our country³. The prevalence for β Thalassemia carrier state varies 0-17% in different ethnic groups. It is very high among certain communities like Punjabis, Sindhis, Gujaratis, Bengalis, Parsis and Lohanas. However, it has been found up to 15% in Punjabis & Sindhis who have migrated from West Pakistan. According to a study conducted by Indian Council of Medical Research (ICMR) in the year 2009, Gujarat shows second highest rate of mutation seen in thalassemia. Thus the morbidity and mortality of this disease has aroused a lot of research for its alleviation and cure. *Basti* treatment is *Vaysthapan*, *Balya*, *Brihan* and *Rasayan*. *Rakt dhatu* is

also *Jivan* means life saver and *Ras dhatu* is *Prinan* means *Rasayan*. So, here we used *Raktbasti* treatment for Thalassemia major patients which is an authentic treatment mentioned in Ayurveda. The present study is an attempt to analyze the efficacy of *Raktbasti*⁴ in the management of Thalassemia.

MATERIALS AND METHODS

The *Sampraptighataka*, signs, and symptoms produced in particular disease and the lines of treatment laid down are to be considered for the selection of drug or combination. This approach has been accepted for this study. The main clinical features of diseases Thalassemia is *Panduta* for which parents seek treatment and other symptoms like *Alparakata*, *Alpameda*, *Nihasara* and *Sithilendriya* described, in *Pandurogadhikara*⁵ are found to be much nearer to the symptoms of Thalassemia. The line of treatment of *Pandu Roga* has different single and combined formulations mentioned in the classics but in the severe blood loss condition, *Charak Acharya* mentioned *Raktbasti* treatment. All the Ayurvedic texts had also described about the role of *Rakt dhatu* in life. *Maharshi Sushrut* mentioned that *Rakt* is *Jivan*⁶ and life is



possible only when *Rakt dhatu* is in proper quantity and quality in the body. Keeping in view the above facts the *Raktabasti* treatment is selected from the *CharakSamhita*.

RATIONALE OF AJA RAKTBASTI

The therapeutic use of different types of animal blood like *Mrug* (Deer), *Gau* (Cow), *Mahish* (Buffalo) and *Aja* (Goat) are described in *Charak Samhita*. Here, we used *Aja Rakta* (Goat blood, *Capra Aegagrus Hircus*). Goat is the healthiest animal on earth. No infections or viruses are detected in the goat blood. So it is very safe for use in human body. Goat blood is also available freely and in required quantity from Government or Municipal Slaughter house. The collection procedure was performed under the supervision of the Veterinary Superintendent at the Slaughter House taking all necessary measures for sterilization. The blood was collected in sterilized glass containers with Ayurvedic *Raktskandhvarodhak* and transported in temperature controlled setting with ice bags to prevent hemolysis. It was allowed to return to body temperature before administration. The blood was tested for all microorganisms at the laboratory of the

Animal Husbandry Department, Ahmedabad.

RAKTBASTI PROCEDURE

Collected and stored blood was administered by ano rectal route. Goat blood was filled up in well sterilized glass bottle. A special blood transfusion set made from suction tube was attached with the bottle. End of the set was attached with a catheter of required size. Patient with prior shuddhi with *Haritakyadi Yog* which was given on the day before were guided to lay down in left lateral posture. *Raktbasti* was given in this posture. Total 250ml blood was administered in 30 minute by drop system. Drops and speed was controlled by a cock in the prepared transfusion set. After *Basti*, patient was advised to lay down in same posture for 30 minutes. *Basti* was administered on alternate days for four weeks. And regular pre and post procedure investigations were carried out.

Patients were advised to take low iron diet with maximum intake of chelating drinks like tea, coffee etc. Iron overloading is a main problem in thalassemic patients and extra iron deposited in liver, kidney and other vital organs leads the patient to death. Food like tea, coffee are useful to excrete overloaded iron.



Raktbasti Karmukatva :

All the Ayurved *Acharyas* said that *Dhatu* loss should be replaced by same *Dhatu*. *Rakta Kshay* means blood loss should be replaced by blood. *Basti* is a safe and painless procedure with scientific value.

Ayurvedic Iron Chelation (Punarnavadi Vati) :

Thalassemia major, there is premature breakdown of RBCs and hence serum ferritin is deposited in various organs of the body leading to multiple organic failure, hence along with blood transfusion in allopathy, iron chelation therapy is administered to reduce serum ferritin. Hence the above formulation was given orally with AjaRaktabasti to reduce organic iron, i.e. serum ferritin to prevent organ failure.

Combination of herbs in *Punarnavadi Vati* enhances activity of liver and spleen.

Tecomella undulata (Rohitak) – Stem, bark

Boerhavia diffusa (Punarnava) - Root

Tephrosiapurpurea (Sharpunkh) - Root

These herbs are Immunomodular, Hepatoprotective and Restorative. In combine form it helps in Iron Chelation and thus, reduction in Serum Ferritin level.

Dosage – 250 mg twice a day for the age up to five years, 500mg twice a day empty for the age of 5 to 12 years, 500 mg three times

a day empty for the age of 12 years above. Doses may vary in case of high level of serum ferritin in blood.

Majjasiddh Ghruta :-

Along with this drug as per basic principle of Ayurved i.e. feed with whatever is deficit in body. *Majjasiddha ghruta* is made from *Asthimajja*(Bone Marrow) of goat, processed in *Gau Ghruta*. This *ghruta* is effective in defective *majja* and *Gau Ghruta* is itself rejuvenator.

Dosage – 10 ml. one time in a day for age up to five years, 20ml. two times a day for the age of five years and above.

Patients with signs and symptoms as per proforma were selected for clinical study from the OPD and IPD of the institution. Minimum 30 patients for treated and 30 patients for control group were selected with inclusive and exclusive criteria. Patients treated with conventional medical treatment were taken in control group and the patients treated with only *Raktbasti* treatment were taken in treated group.

Inclusive Criteria:

Patients having Hb 5 gm % to 10 gm % were selected having general symptoms of the Thalassemia. In proforma, the cardinal symptoms and associated symptoms of the patients were defined.



Investigations:

Hemoglobin

R.B.C. Morphology

C.B.C.(Complete Blood Count)

Preparation of Raktbasti Material and

Method of Raktbasti:

The patients of treated group were given *raktbasti* according to the method described above.

Duration of Raktbasti Treatment:

Raktbasti was given on alternate day for four weeks. Follow up study was carried out weekly for three months as per various parameters of the performa. So the complete study was carried out for four months.

Study design:

The patients were selected randomly and divided into two Groups, namely Trial & Control Group, and examined clinically along with laboratory investigations.

(1) Trial Group: (Group A)

All thirty patients in this group completed the course. The patients were administered *Raktbasti* in scheduled dose.

Dose: 250 ml Goat blood by method of Basti. *Raktbasti* was given on alternate days

for four weeks. Follow up study was carried out weekly for three months.

(2) Control Group: (Group B):

Thirty patients were registered in this Group with modern medical treatment for four weeks and follow-up study for three months. The modern medical treatment included Blood transfusion and Iron chelation therapy according to the individual patient requirements by medical practitioners.

PATHYA-APATHYA:

Patients were advised to take low iron diet with maximum intake of chelating drinks like tea, coffee etc.

CRITERIA OF ASSESSMENT:

By observing clinical improvement in *Vatik*, *Paitik*, and *Kaphaj* signs & symptoms among the *Tridoshaj Panduroga* as well as *Thalassemia Major*, assessment of the symptoms like *Panduta*, *Krishna nakhtva*, *Swas*, *Sunakshikutata*, *Jwar*, *Daurbalya* and *Hrid dravatva* which are mentioned in proforma were assessed with gradation system.

RESULTS:

Table 1 "Paired 't' Test : Group A"

Investigation (n= 30)	Mean		Mean Difference	% change	S.D.±	S.E.±	't'	P
	B.T.	A.T.						



HB (gm%)	7.47	9.92	2.45	32.81	0.97	0.18	13.86	<0.001
WBC (/cu.mm)	6455.00	7103.33	648.33	10.04	328.98	59.96	10.81	<0.001
Neutrophils (%)	71.27	75.67	4.40	6.17	2.76	0.50	8.73	<0.001
Lymphocyte(%)	20.63	23.90	3.27	15.83	1.66	0.30	10.78	<0.001
Eosinophil (%)	1.67	3.20	1.53	92	0.78	0.14	10.82	<0.001
Monophil (%)	3.67	4.67	1.0	27.27	0.91	0.17	6.02	<0.001
Basophil (%)	0.10	0.33	0.23	233.33	0.50	0.09	2.54	<0.01
ESR (mm/hr)	11.70	9.63	2.07	17.66	2.41	0.44	4.70	<0.001

HB : Hemoglobin

WBC : White Blood Cell Count

ESR : Erythrocyte Sedimentation Rate

Table 2 “Paired ‘t’ Test: Group B”

Investigation (n= 30)	Mean		Mean Difference	% change	S.D.±	S.E.±	‘t’	P
	B.T.	A.T.						
HB (gm%)	7.57	10.30	2.43	30.93	0.85	0.15	15.71	<0.001
WBC (/cu.mm)	6033.33	6850.0	816.67	13.54	441.07	80.53	10.14	<0.001
Neutrophils (%)	71.60	75.43	3.83	5.35	3.10	0.57	6.78	<0.001
Lymphocyte (%)	20.80	23.47	2.67	12.82	1.18	0.22	12.33	<0.001
Eosinophil (%)	2.13	3.90	1.77	82.81	0.77	0.14	12.50	<0.001
Monophil (%)	3.53	4.57	1.03	29.25	0.89	0.16	6.36	<0.001
Basophil (%)	0.07	0.27	0.20	300	0.41	0.07	2.69	<0.01
ESR (mm/hr)	11.73	10.10	1.63	13.92	2.20	0.40	4.06	<0.001

HB : Hemoglobin

WBC : White Blood Cell Count

ESR : Erythrocyte Sedimentation Rate

Table 3 “Unpaired ‘t’ test”:

Investigation	Mean Difference Group A	Mean Difference Group B	S.D.±	S.E.±	‘t’	P
HB (gm%)	2.45	2.43	0.910	0.235	0.071	<0.1
WBC (/cu.mm)	648.33	816.67	388.83	100.40	-1.68	<0.1
Neutrophils (%)	4.40	3.83	2.93	0.76	0.75	<0.1
Lymphocyte(%)	3.27	2.67	1.442	0.372	1.61	<0.1
Eosinophil(%)	1.53	1.77	0.78	0.20	-1.17	<0.1
Monophil (%)	1.0	1.03	0.90	0.23	-0.14	<0.1
Basophil (%)	0.23	0.20	0.46	0.12	0.28	<0.1
ESR (mm/hr)	2.07	1.63	2.31	0.60	0.73	<0.1

HB : Hemoglobin

WBC : White Blood Cell Count

ESR : Erythrocyte Sedimentation Rate

Table 4 “OVERALL RESULT”

Result	Group A	Group B
Maximum Improvement (>75%)	8	0
Moderate Improvement (50 to 75%)	20	17
Mild Improvement (25 to 50%)	2	13



No Improvement (<25%)	0	0
Total	30	30

Table 5 “OVERALL RESULTS (WILCOXONS MATCHED UNPAIRED TEST)”

Groups	Mean B.T.	Mean A.T	Mean Diff.	% Change	‘W’	‘N’	‘P’
A(n=30)	19.12	6.22	12.90	67.57	465	30	<0.0001
B(n=30)	19.01	9.03	9.98	52.50	465	30	<0.0001

DISCUSSION:

Effect on Signs and Symptoms:

In subjective criteria 67.57% improvement was seen in group A (Table 1), whereas 52.5% improvement was seen in group B (Table 2). Significant difference was found between the two therapies based on the results of the objective criteria. Maximum improvement was seen in eight patients in group A and in no patients in group B (Table 1 & 2). Moderate improvement was seen in 20 patients in group A (Table 1) and in 17 patients in group B (Table 2). Mild improvement was seen in two patients of group A and 13 patients in group B. Whereas, there were no patients in both groups without any improvement.

Effect on Hematological and Bio-chemical parameters:

The data of hematological and biochemical parameters exhibits difference in the values, before and after treatment in both the groups. There is statistically significant change in the pre and post values for

Hemoglobin%, Total Leucocyte Count, Differential Leucocyte Count and Erythrocyte Sedimentation Rate (Table 3). Therefore analysis of the data obtained indicate that the treatment does not produce any undesirable effect and gives significant improvement.

Overall effect of therapy:

In Group A 8 patients improved markedly, 20 patients improved moderately and only two patients showed mild improvement after 60 days of treatment while in Group B no patients improved markedly, 17 patients improved moderately and only 13 patients showed mild improvement. (Table 4 & Table 5)

Ajarakta proved to be an effective alternative for blood transfusion and increased haemoglobin and RBCs. Basti is an effective method for administration of the Ajarakta and correction of the deformity.

Treatment given in Group A was effective in comparison to Group B. Here the treatment was given to only 30 patients. On the basis of the result of such a small sample it is very



difficult to draw a final conclusion in this regard. This work is just a beginning in the field of Ayurveda. Further study on this treatment is invited which will be beneficial to this burning problem.



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