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CLINICAL ROLE OF INDIGENOUS DRUGS IN KULAJ PANDU (THALESSEMIA) - A SCIENTIFIC STUDY

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ABSTRACT

The thalessemia is a heterogeneous group of disorders with a genetically determined reduction in the rate of synthesis of one or more types of normal hemoglobin polypeptide chain. This results in a decrease in the amount of the hemoglobin involving the affected chain. In some forms of thalessemia, the genetic mutation results in the synthesis of structurally abnormal hemoglobin, which is produced at a reduced rate. *Kulaj Pandu* (Thalessemia) is quite fearful hereditary pediatric disease, which certainly ends the life of affected child. Pediatrics world is constantly following up of this notorious hereditary pediatric disease but still they are not in position to realize the mysterious factor of this disease because of this mysterious situation; scientists of pediatric world feel their inability to root out this fatal pediatric problem. The only remedy with them is to transfuse blood as a compensatory phenomenon. There is no specific drug and none of the pathies has conquered over this fatal pediatric disease up till now. The present study 'role of some indigenous drugs in Kulaj Pandu (Thalessemia)' is highlighted as - Patients of Group B treated with Amalki Rasayan and Gomed Bhasma were observed in better improving condition in comparison to patients of Group A, treated with only Amalki Rasayan. In both treated groups symptomatic improvement was observed but basic pathological structure remained unchanged. This reveals that significant symptomatic relief may be observed as a "Prabhavas" of virtuous properties of the drugs. Blood picture of the relevant study did not show any significant change; simultaneously duration of blood transfusion was also remained as such.

KEYWORDS: Amalaki Rasayan, Gomed Bhasma, Kulaj Pandu, Thalessemia.

INTODUCTION

Kulaj Pandu (Thalessemia) is quite fearful hereditary pediatric disease, which certainly ends the life of affected child. Pediatrics world is constantly following up of this notorious hereditary pediatric disease but still they are not in position to realize the mysterious factor of this disease because of this mysterious situation; scientists of pediatric world feel their inability to root out this fatal pediatric problem. The only remedy with them is to transfuse blood as a compensatory phenomenon. There is no specific drug and none of the pathies has conquered over this fatal pediatric disease up till now.

Clinical scientists all over the world are in search of a technique or pharmacological method to at least slow down the rate of destruction of immature erythrocytes and to prolong the interval of blood transfusion. Due to the repeated blood transfusion patients suffers from iron overloading which produces serious liver damage and multiple endocrine problems. These patients are vulnerable to various infections due to impaired immunity.

In India hardly any patient of Thalassemia survives up to third decade of his life. There are hardly any alternatives, which are superior to the conventional treatment with respect to quality of life and longevity of life.

As no specific treatment is available for *Kulaj Pandu* (Thalassemia), keeping objective to relieve patients from sufferings. Study and management of the disease is registered under the title **"Clinical Role of Indigenous Drugs in Kulaj Pandu (Thalassemia) - A Scientific Study".** For this study, drugs like '*Amalki Rasayan*' and '*Gomed Bhasma*' were selected which are known for their *Raktavardhak* and *Balrakshak Guna*.

OBJECTIVES

1) To evaluate the effects of *Amalki Rasayan* and *Gomed Bhasma* in patients of Kulaj Pandu (Thalassemia).

2) To eradicate the causative phenomenon of this pediatric disease.
3) To increase the duration of Blood Transfusion (the only remedy for this disease) by strengthening acquired immunity.
4) To minimize complications.

MATERIAL AND METHODS

The research study was conducted on selected established pediatric patients of *Kulaj Pandu* (Thalassemia) major who attended OPD/IPD, Department of Kaumarbhritya, Pakwasa Rugnalaya Shri Ayurveda Mahavidyalaya Nagpur and All India Ayurveda Research Institute Hanuman Nagar Nagpur.

Written consent of parent/guardian of each and every pediatric patient was taken before the initiation of treatment. Due to fatal nature of disease patients were allowed to take oral iron chelating agents (and emergency treatment if required) as per their regular schedule.

Criteria of diagnosis

The criteria of diagnosis were based on presence of signs and symptoms of Kulaj Pandu (Thalasaemia). These Clinical Features Comprises of Pandutva (Progressive Pallor), Agnisad (Loss Of Appetite), Nabhya Samnatha Shotha (Increase Abnormal Girth), Sharir Vivarnata (Increased Pigmentation Of Skin), Yakrit Vridhi (Hepatomegaly), Pliha Vridhi (Spleenomegaly), Jwara (Fever), Aruchi (Anorexia), Daurbalya, Shramaj Shwas, Recurrent Respiratory Infection, Lasika Granthi Vridhi (Lymphodenopathy), Blood Transfusion Interval, Amount of Blood transfused were taken into consideration.

Diagnosis of Kulaj Pandu (Thalasaemia) was confirmed by hematological studies as Hb%, electrophoresis, erythrocytes count etc.

Inclusive Criteria

- Patients with confirmed diagnosis of Thalassemia major
- Pre-transfusion hemoglobin level between 5 to 8 gm %
- Patients of any socio-economic status, both sexes and all ethnic origins
- Patients with age below 16 years

Exclusive Criteria

- Patients with Thalassemia minor, Thalassemia intermediate and sickle cell anaemia
- Patients having complications like diabetes mellitus, poor cardiac function, hypo-parathyroidism leading to hypocalcemia and tetany, dwarfism, cirrhosis of liver, massive enlarged spleen causing serious abdominal discomfort.

Groups of treatment

The 22 pediatric patients of this study entitled, *"Clinical Role of Indigenous Drugs In Kulaj Pandu (Thalassemia) - A Scientific Study"* were divided randomly in two groups. These groups were termed as Group A and Group B.

Group A: Patients were given **Amalki Rasayan** in prescribed doses with honey.
Group B: Patients were given **Gomed Bhasma and Amalki Rasayan** in prescribed doses with honey.

Diet regimen

While prescribing the diet of the patients concept of *Pathya-apathya* related to *Pandu* was kept in mind. Observing the vitiated *Doshik* status and general condition of patients, light diet was advised as per status of *Agni*. Fresh foodstuff was advised while the foodstuffs prepared earlier and kept for time was restricted.

Criteria of assessment

Criteria adopted for assessment of therapy was divided into following categories.
i. Clinical parameters.
ii. Hematological parameters.

All the above-cited parameters were noted down before and after the treatment. The score system for evaluation of Pandutva (pallor), Agnisad (loss of appetite), Nabhya Samanthatha Shotha (increased abdominal girth), Sharir Vivarnata (increased pigmentation of skin), jwara (fever), Aruchi (Anorexia), Daurbalya, Shramaj Shwas, Recurrent Respiratory Infection, Lasika Granthi Vridhi (Lymphodenopathy) was adopted.

1) ***Pandutva (Pallor (progressive))***

Pandutva is an indispensible feature of anemia i.e. it is a "Pratyatmalinga" of Pandu. It is most prominent and characteristic sign. It is seen in the skin, nail beds, mucous membranes and conjunctivae. Pallor of the palms of the hands, particularly on the skin creases hands were examined while warm. Pallor of the nail beds, mucous membranes of the mouth and conjunctivae is taken in consideration. Conjuctival pallor is sought by turning down the lower eyelid.

As the all patients in this study were on blood transfusion pre-transfusion pallor was considered.

1)	No pallor	0
2)	Pallor with shallow pink color	1
3)	Pallor with slight yellowish tint	2
4)	Pallor with ash yellowish tint	3

2) Agnisad (loss of appetite)

In Pandu the 'agni' is always depressed due to "Raktalpata". Due to the decreased raktalpata "pachak agni" is dull. And whatever ingested is not properly digested. Agnisad is assessed by Abhyavaran Shakti & Jaran Shakti. It is graded as "pravar", "Avar", & "Madhyam".

1) Intake and digestion is normal (as per age) 0
2) Slightly depressed 1
3) Moderately depressed 2
4) Severely depressed 3

3) Sharir Vivarnata (increased pigmentation of skin)

The color of normal skin depends primarily on its content of melanin, carotene and blood. Pathologic changes in skin color results from deposition of endogenous or exogenous pigmented compound such as bile pigments, hemosiderin, heavy metals and tatoo pigment.

In Kulaj Pandu (thalassemia) deposits of hemoseridin in dermis are responsible for the pigmentation of skin. The color changes created by hemosiderin range; from copper to dark brown. It is graded as follows,

1) Normal skin color 0
2) Slightly brown skin color 1
3) Brown skin color 2
4) Dark brown skin color 3

4) Fever (Jwara)

Pyrexia occurs in Kulaj Pandu (thalassemia) due to hemolytic phenomenon and hyperplastic bone marrow. Ayurveda considers Pitta pradhan dosha responsible for pandu, which manifest in the form of "jwara".

Fever is assesed by keeping the thermometer in mouth & patient is asked to breathe through nose and keep the lips firmly closed. It is graded as follows,

1) 98.5 d f - 98.9 d f 0
2) 99 d f - 100 d f 1
3) 100 d f - 101 d f 2
4) 101 and above 3

5) Aruchi (Anorexia)

Anorexia or loss of desire to eat is a prominent symptom of Kulaj Pandu (thalassemia). It is graded as follows-

1) Normal desire to eat 0
2) Desire to eat is slightly depressed 1
3) Desire to eat is markedly depressed 2
4) Even thinking of food makes impatient 3

6) Daurbalya (Lasitude or fatigability)

It is a common feature of Kulaj Pandu (thalassemia). The severity of these symptoms is more likely to parallel the hemoglobin level of body. It is assesed as follows,

1) Normal active child 0
2) Playing and activities are reduced 1
3) Tiredness while playing 2
4) Easy fatigability while playing 3

7) Plihavridhi (Spleenomegaly)

In Kulaj Pandu (Thalasaemia) splenomegaly and hepatomegaly result from marked extramedullary hematopoiesis as well as over the span of years, excessive breakdown of red cells and ineffective erythropoiesis result in severe hemosiderosis. It is assesed by following methods.

The patient is put in supine position and palpated from right iliac fosse to the left hypocondric region the edge of the spleen may be felt on deep inspiration.

It is graded according degree of enlargement.

1) Non palpable 0
2) Mild spleenomegaly
(Palpable upto 2cm and/or slightly tender) 1
3) Moderate hepatomegaly
(Palpable upto 4cm and /or tender) 2
4) Massive hepatomegaly
(Palpable upto 4cm and above and/or tender) 3

8) Yakritvridhi (hepatomegaly)

Kulaj Pandu (thalassemia) patients have hepatomegaly due to haemosidrosis. To asses liver the patient must to be lying in the supine position with the hip and knee flexed. The examiner moves his right hand from the right iliac fossa gradually upwards until a sense of increased resistance is noted. The liver edge is accurately located by fingertips. It is normally sharp, firm and regular. The tenderness is also noted.

It is graded as follows.

1) Not palpable non tender 0
2) Mild hepatomegaly
(Palpable upto 2cm act or slightly tender) 1
3) Moderate hepatomegaly
(Palpable upto 4cm and or tender) 2
4) Massive hepatomegaly
(Palpable upto 4cm and above or tender) 3

9) ***Shramaj Shwas (Dyspnea***)

Dyspnea on excretion is common symptom of Kulaj Pandu (thalassemia). It is a clinical manifestation of the hematological changes on cardiovascular system.

To access, these patients were asked to step up 10 stairs. It is graded as follows,

1) Breaths with ease and comfortably 0
2) Little discomfort relieved after stop 1
3) Feeling of exhaustion after stop 2
4) Unable to perform the act 3

10) Recurrent respiratory infections

Due to suppressed immunity patients of Kulaj Pandu (Thalasaemia) are subjected to recurrent respiratory infections. It is graded according to time interval between the two attacks,

1) Interval one week & below 3
2) Interval between 7-15 days 2
3) Interval between 15-45 days 1
4) Interval more than 45 days 0

11) ***Lasikagranthi vriddhi (Lymphadenopeothy)***

The peripheral lymph nodes are looked for in the neck, axillae, epitrochlear region, groins and popliteal fossae. The assessment includes their location or site, size, consistency, tenderness, warmth, whether discrete or matted, mobile or fixed to the overlaying skin.

It is graded as follows

1)	Normal	0
2)	Enlarged with slight tenderness	1
3)	Enlarge with tenderness	2
4)	Gross enlargement with tenderness at almost all sites	3

12) Nabhya samanthatha shotha (Increased abdominal girth)

It is feature of Kulaj Pandu (Thalassemia) which is assessed by laying the patient on table & tape is encircled around his abdomen at level of umbilicus & it is measured in centimeters.

13) Blood transfusion interval

Blood transfusion is the only remedy in Thalassemia and the duration between the two successive transfusions is assessed under this heading in unit of days.

14) Amount of blood transfused

Amount of blood transfused in each seating is measured in units and mentioned in specified column in Proforma.

ii) Hematological investigations

Hematological investigations as electrophoresis, pre-transfusion, Hb%, ESR was done before & after treatment.

Criteria of assessing total effect

After completion of the treatment given to the patients of both groups the group A and group B of *Kulaj Pandu* (Thalassemia) were finally assessed and evaluated in terms of cured, markedly improved, improved, and unchanged. The same procedure or methods of assessment and evaluation was applied to the patient of both group of study described below.

Cured

Total relief and normal hematological status in electrophoresis.

Markedly improved

More than 50% improvement and increase blood transfusion interval.

Improved: 25% - 50% improvement
Unchanged: 0% to 25% Relief

Material

1. Amalki Rasayan

Fresh fruits of Amalki as recommended by Ayurvedic texts (Purna Rasa Virya) were selected and seed were taken out. These are dried under shadow and grinned to fine powder. This powder is triturated in fresh Amalki juice and dried. This process is repeated for 21 times to get fine powder of Amalki Rasayan. Amalki Rasayan was administered in the patients of Kulaj Pandu (thalassemia) according to age, vyadhibala, Rugnabala in dose of 250mg - 1gm twice a day before meals.

Doses of Amalki Rasayan

Sn.	Age	Dose
1	1 - 5 years	250 - 500 mg
2	5 - 10 years	500 - 750 mg
3	10 - 16 years	750 - 1 gm

Anupan (Vehicle): - Honey ***Duration of treatment:*** -3 month

2. Gomed Bhasma

According to Rasatarangini (23/124) Gomed should be added with equal quantity of each of purified realgar purified orpiment and purified sulphur. In an iron pestle and mortar, it should be triturated by adding lemon juice. Ther process of trituration should be continued for seven days.

Before trituration process gomed should be made into powder by pounding in an iron container. After trituration small cakes, should be made out of it, dried in sun, kept in Sarava Samputa and cooked in Gaja puta. This process should be repeated for eight times.

Gomed Bhasma was administered in the patients of Kulaj Pandu (thalassemia) age, vyadhibala, rugnabala, and recommendation of text, twice daily.

Doses of Gomed Bhasma

Sn.	Age	Dose
1	1 - 5 years	30 mg - 45 mg
2	5 - 10 years	45 mg - 60 mg
3	10 - 16 years	60 mg - 90 mg

Anupan: Honey ***Duration of treatment:*** - 3 months

OBSERVATION

In this study 9.09% patients were from pre-school group, 40.90% patients were from school age group and maximum 50.0% patients were from adolescent group. 54.54% patients were males and 45.45% females were noted in Group A. In Group B 45.45% patients were males and 54.54% patients were female. Economical status of the family of the pediatric patients was evaluated. Out of these 22 patients, 27.27% were from lower income group, 31.81% were from middle income group and 40.90% were from higher income group.

Table 1: Effect of *Amalki Rasayan* on symptoms of Kulaj Pandu (Thalassemia) by Kruskal Wallis Test (Group A)

N0.	Clinical Parameters	Assessment	Median	Mean	SD	SE	P	Significance
1	*Pandutva (Progessive pallor)*	BT	2.00	2.27	0.47	0.14	-	-
		1 month	2.00	2.00	0.45	0.14	P>0.05	ns
		2 months	1.00	1.46	0.55	0.16	P<0.05	*
		3 months	1.05	1.27	0.49	0.14	P<0.01	**
2	*Agnisad (Loss of Apetite)*	BT	2.00	1.90	0.30	0.09	-	-
		1 month	1.00	1.27	0.65	0.19	P>0.05	ns
		2 months	0.50	0.82	0.60	0.18	P<0.01	**
		3 months	0.00	0.55	0.52	0.16	P<0.001	***
3	*Shramaj Shwas (Dyspnea on erertion)*	BT	2.00	1.73	0.47	0.14	-	-
		1 month	2.00	1.46	0.69	0.21	P>0.05	ns
		2 months	1.00	1.00	0.63	0.19	P>0.05	ns
		3 months	1.00	0.73	0.47	0.14	P<0.01	**
4	*Sharir Vivarnata (Increased pigmentation of skin)*	BT	2.00	1.91	0.94	0.29	-	-
		1 month	2.00	1.91	0.94	0.28	P>0.05	ns
		2 months	1.00	1.46	1.04	0.31	P>0.05	ns
		3 months	0.00	1.09	1.30	0.39	P>0.01	ns
5	*Yakrit Vridhi (Hepatomegaly)*	BT	2.00	1.91	0.30	0.09	-	-
		1 month	2.00	1.64	0.51	0.15	P>0.05	ns
		2 months	1.00	1.18	0.60	0.18	P>0.05	ns
		3 months	1.00	0.91	0.30	0.19	P<0.01	**
6	*Phila Vridhi (Spleenomegaly)*	BT	2.00	1.55	0.52	0.16	-	-
		1 month	2.00	1.46	0.69	0.21	P>0.05	ns
		2 months	2.00	1.18	0.98	0.29	P>0.05	ns
		3 months	2.00	0.82	0.87	0.26	P>0.05	ns
7	*Aruchi (Anorexia)*	BT	2.00	1.55	0.69	0.21	-	-
		1 month	1.00	1.27	0.79	0.24	P>0.05	ns
		2 months	1.00	0.64	0.51	0.15	P>0.05	ns
		3 months	0.00	0.18	0.41	0.12	P<0.05	*
8	*Daurbalya (Fatigability)*	BT	2.00	2.18	0.60	0.18	-	-
		1 month	2.00	1.91	0.54	0.16	P>0.05	ns
		2 months	1.00	0.46	0.55	0.16	P>0.05	ns
		3 months	1.00	0.09	0.54	0.16	P<0.05	*
9	*Recurrent Respiratory Infection*	BT	1.00	1.46	0.82	0.82	-	-
		1 month	1.00	1.82	0.87	0.87	P>0.05	ns
		2 months	0.00	0.46	0.69	0.68	P>0.05	ns
		3 months	0.00	0.27	0.47	0.46	P<0.05	*
10	*Lasika Granthi Vridhi*	BT	1.00	1.36	0.51	0.14	-	-
		1 month	1.00	0.73	0.65	0.15	P>0.05	ns
		2 months	0.00	0.36	0.51	0.19	P<0.05	*
		3 months	0.00	0.27	0.47	0.15	P<0.01	**
11	*Nabhya Samantata Shotha (Increased Abdominal Girth)*	BT	63.00	61.20	9.98	3.01	-	-
		1 month	62.50	60.86	10.06	3.03	P>0.05	ns
		2 months	62.50	60.59	10.07	3.03	P>0.05	ns
		3 months	61.80	60.15	10.05	3.03	P>0.01	ns

Table 2: Effect of *Amalki Rasayan* on haematological parameters of Kulaj Pandu (Thalassemia) by Kruskal Wallis Test (Group A)

Parameters	Assessment	Median	Mean	SD	SE	P	Significance
Blood Transfusion Interval	BT	30.000	25.000	5.495	1.657	-	-
	1 month	31.000	25.730	5.605	1.690	P>0.05	ns
	2 months	31.000	26.550	5.298	1.598	P>0.05	ns
	3 months	31.000	27.000	5.099	1.537	P>0.05	ns
Amount of Blood Transfused	BT	1.000	1.364	0.505	0.152	-	-
	1 month	1.000	1.364	0.505	0.152	P>0.05	ns
	2 months	1.000	1.364	0.505	0.152	P>0.05	ns

	3 months	1.000	1.364	0.505	0.152	P>0.05	ns
HB%	BT	6.300	6.364	0.661	0.199	-	-
	AT	6.800	6.782	0.660	0.199	P<0.01	**

Table 3: Effect of *Gomed Bhasma* & *Amalki Rasayan* on symptoms of *Kulaj Pandu* (Thalassemia) by Kruskal Wallis Test (Group B)

No.	Clinical Parameters	Assessment	Median	Mean	SD	SE	P	Significance
1	*Pandutva (Progessive pallor)*	BT	2.00	2.27	0.47	0.14	-	-
		1 month	2.00	1.64	0.50	0.15	P>0.05	ns
		2 months	1.00	1.36	0.50	0.15	P<0.05	*
		3 months	1.05	1.27	0.47	0.14	P<0.01	**
2	*Agnisad (Loss of Appetite)*	BT	2.00	1.91	0.54	0.16	-	-
		1 month	1.00	1.18	0.60	0.18	P>0.05	ns
		2 months	0.00	0.45	0.52	0.16	P<0.01	**
		3 months	0.00	0.18	0.40	0.12	P<0.001	***
3	*Shramaj Shwas (Dyspnea on erertion)*	BT	2.00	1.73	0.65	0.20	-	-
		1 month	1.00	1.27	0.65	0.20	P>0.05	ns
		2 months	1.00	1.00	0.45	0.13	P>0.05	ns
		3 months	1.00	0.64	0.67	0.20	P<0.01	**
4	*Sharir Vivarnata (Increased pigmentation of skin)*	BT	2.00	1.91	0.83	0.25	-	-
		1 month	2.00	1.91	0.83	0.25	P>0.05	ns
		2 months	1.00	1.73	0.90	0.27	P>0.05	ns
		3 months	1.00	1.27	1.01	0.30	P>0.05	ns
5	*Yakrit Vridhi (Hepatomegaly)*	BT	2.00	1.73	0.47	0.14	-	-
		1 month	1.00	1.36	0.50	0.15	P>0.05	ns
		2 months	1.00	1.00	0.45	0.13	P>0.05	ns
		3 months	1.00	0.73	0.47	0.14	P<0.01	**
6	*Phila Vridhi (Spleenomegaly)*	BT	2.00	1.73	0.47	0.14	-	-
		1 month	2.00	1.64	0.50	0.15	P>0.05	ns
		2 months	2.00	1.36	0.81	0.24	P>0.05	ns
		3 months	1.00	1.09	0.83	0.25	P>0.05	ns
7	*Aruchi (Anorexia)*	BT	2.00	1.73	0.47	0.14	-	-
		1 month	1.00	1.18	0.60	0.18	P>0.05	ns
		2 months	1.00	0.64	0.67	0.20	P<0.05	*
		3 months	0.00	0.09	0.30	0.09	P<0.01	**
8	*Daurbalya (Fatigability)*	BT	2.00	2.27	0.47	0.14	-	-
		1 month	2.00	1.46	0.52	0.16	P>0.05	ns
		2 months	1.00	1.18	0.60	0.18	P<0.05	*
		3 months	1.00	0.73	0.47	0.14	P<0.01	**
9	*Recurrent Respiratory Infection*	BT	1.00	1.09	0.70	0.21	-	-
		1 month	0.00	1.27	0.47	0.14	P>0.05	ns
		2 months	0.00	0.09	0.30	0.09	P<0.05	*
		3 months	0.00	0.00	0.00	0.00	P<0.01	**
10	*Lasika Granthi Vridhi*	BT	1.00	1.18	0.75	0.23	-	-
		1 month	0.00	0.55	0.69	0.21	P>0.05	ns
		2 months	0.00	0.36	0.50	0.15	P>0.05	ns
		3 months	0.00	0.18	0.40	0.12	P<0.05	*
11	*Nabhya Samantata Shotha (Increased Abdominal Girth)*	BT	65.00	64.04	5.88	1.77	-	-
		1 month	64.70	63.89	5.93	1.79	P>0.05	ns
		2 months	64.50	63.72	5.99	1.81	P>0.05	ns
		3 months	64.20	63.39	6.01	1.81	P>0.05	ns

Table 4: Effect of *Gomed Bhasma & Amalki Rasayan* on haematological parameters of Kulaj Pandu (Thalassemia) by Kruskal Wallis Test (Group B)

Parameters	Assessment	Median	Mean	SD	SE	P	Significance
Blood Transfusion Interval	BT	20.00	22.73	6.33	1.91	-	-
	1 month	21.00	23.36	6.28	1.89	P>0.05	ns
	2 months	20.00	23.36	6.39	1.93	P>0.05	ns
	3 months	21.00	23.73	6.05	1.83	P>0.05	ns
Amount of Blood Transfused	BT	1.000	1.36	0.50	0.15	-	-
	1 month	1.000	1.36	0.50	0.15	P>0.05	ns
	2 months	1.000	1.36	0.50	0.15	P>0.05	ns
	3 months	1.000	1.36	0.50	0.15	P>0.05	ns
HB%	BT	6.60	6.48	0.93	0.28	-	-
	AT	7.40	6.98	0.86	0.26	P<0.01	**

DISCUSSION

In group A patients got significant reduction in 8 (53.33%) manifested symptoms and slightly significant reduction in 1 (6.66%) symptoms and non significant changes were observed in 6 (40.0%) manifested symptoms. All 11 patients in this group are improved as symptoms are concerned.

In group B patient got significant reduction in 9 (60.0%) symptoms and non significant changes were observed in 6 (40.0%) manifested symptoms. All 11 patients under this category are improved as symptoms are concerned.

In both the treated groups symptomatic improvement was observed but pathological structure remained unchanged.

Combination treatment of Amalki Rasayan and Gomed Bhasma is more effective than only Amalki Rasayan.

As per Ayurvedic texts Amalki is Guru, Ruksha and Sheeta by virtue. It contains all five Rasa as Madhur, Amla, Katu, Tikta, Kashya Rasa except Lavan Rasa. The Vipaka of Amalki is Madhur and Veerya is Sheeta. It pacifies all three Doshas. It pacifies Pitta Dosha due to Madhur Rasa and Sheet Virya. It pacifies Vayu by virtue of Amla Rasa with the inherited Ruksha and Kashya Guna. It destroys the Kapha. It cures diseases caused by morbid tri-dosha. The tannoid principles of the fruits of Amalki comprising of Emblicanin A, Emblicanin B, punigluconin and pedunculagin have been reported to exhibit antioxidant activity. These tannoid principles are found to be effective in iron induced hepato-toxicity which is common in patients of Kulaj Pandu (Thalassemia).

Amalki is appetiser, digestive and good hepatic stimulant *(Chopra).* The drug also cures thirst, burning sensation, vomiting, anorexia and jaundice *(Aiyer 1960).*These activities of Amalki are beneficial as per pathogenesis and symptomatic manifestation of thalassemia is considered. Amalki is a cardiac tonic, phyllembin increases the amplitude of cardiac contraction *(Khurana S.C. et al 1970).* This property is useful as per Daurbalya (fatigability) is concerned. Amalki is capable to reduce the temperature and burning sensation caused due to Pitta by Pittashamak refigerant property *(K.M.Nadkarni).*

Jwara (fever) is manifested in patients of Kulaj Pandu due to hemolytic phenomena (consequently Pitta Vriddhi) is concerned. Amalki is a known immunomodilator and also having antibacterial & antiviral activity *(Dhar W.L et al 1968).* It is a safe Ayurvedic preparation which is indigenously used in India for several years. The crude fruit extract of Amalki is capable to counteract the toxic effect induced by metal salts in hepatic and renal tissues. *(Roy A.K., et al 1991).*

Amalki Rasayan one of the safest recommended drugs in treatment of "Pandu" by all the Acharyas is found to be effective in the patients of Kulaj Pandu (Thalassemia) but upto certain extent.

Another drug under this trial is Gomed Bhasma. Gomed is believed to have supernatural attributes and spiritual qualities. Gomed in bhasma form alleviates Kapha and Pitta. It promotes digestion, appetite and strength. Rasatarangini has described Gomed Bhasma in treatment of Anemia (Pandu) & Kshaya. Gomed has specific affinity towards "Rakta Dhatu" and chemically it does not contain iron in any form. So it is an ideal non-iron drug described in Ayurvedic text which has reference of its effect in anemia (Pandu). Being Ratna it works by its miraculous intrinsic property which is known as "Prabhava".

Prof. Bhagwan Dash an authority in the field of Ayurveda had also recommended the use of Gomeda in serious type of anemia and tuberculosis in his book "Alchemy and Metallic Medicine in Ayurveda". Gomed Bhasma is found to effective in the patients of Kulaj Pandu (Thalassemia) but upto certain extent.

CONCLUSION

The analytic picture of the present study is highlighted as - Patients of Group B treated with Amalki Rasayan and Gomed Bhasma were observed in better improving condition in comparison to patients of Group A, treated with only Amalki Rasayan. In both treated groups symptomatic improvement was observed but basic

pathological structure remained unchanged. This reveals that significant symptomatic relief may be observed as a "Prabhavas" of virtuous properties of the drugs. Blood picture of the relevant study did not show any significant change; simultaneously duration of blood transfusion was also remained as such.

This study is an initiative in Ayurvedic field for designing a regimen (may be integrated) suitable for pediatric thalassemic patients. Present study is a newer subject for clinical study in Ayurvedic field so there is every possibility of parameters to be insufficient this insufficiency may be fulfilled by launching a scientific, multidimensional integrated project for the study of this fatal pediatric problem.

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