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Review Article

Thalassemia : An Ayurvedic Review

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ABSTRACT:

Thalassemia is a malignant type of genetic disorder affecting millions of people worldwide. It may be correlated to *Beejadushtijanya Panduroga* according to *Ayurvedic* classics.

रोगमेकैकमेवं प्रकोपणमेवं योनिमेवमुत्थानमेवमात्मानमेवमधिष्ठानमेवंवेदनमेवंसंस्थानमेवं शब्दस्पर्शरुपरसगन्धमेवमुपद्रवमेवंवृद्धिस्थानक्ष

यसमन्वितमेवमुदर्कमेवंनामानमेवंयोगं विद्यात् ष तस्मिन्नियं प्रतीकारार्था प्रवृत्तिरथवा निवृत्तिरित्युपदेशाज्ज्ञायते ॥ च ॥ वि ॥ ४६ [i]

The methodology of understanding this disease has been described in *Charaka Samhita* based on *Aaptopadesha Pramaana.* The key points like *Prakopanam, Yonim, Utthaanam, Aatmaanam, Adhishthaanam, Vedanam*, *Samsthaanam, Shabda, Sparsha, Roopa, Rasa, Gandha, Upadravam, Vriddhi, Sthaana, Kshaya, Udarkam, Naamam, Yogam and Prateekaaraartha Pravritti and Nivritti* should be considered to form a concrete base to formulate suitable regimen for this disease. The composite picture about this disease can be drawn considering above mentioned points, in the light of knowledge available in the modern medical discipline.

KEY WORDS: *Thalassemia, Beejadushti, Ayurved*

INTRODUCTION:

1. *Evam Prakopanam*

प्रकोपणं आहारादि । अ ॥सं ॥सू ॥२२ इन्दु

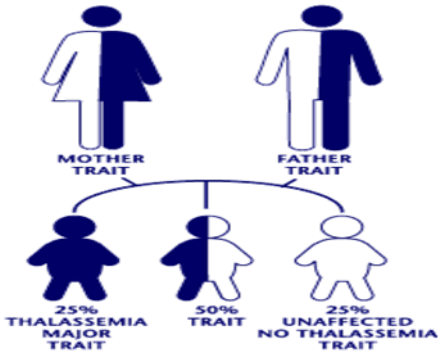
In *Ayurvedic* classics, these genetically determined diseases come under ***Aadibala-pravritta Kulaja Vyaadhi***[ii] *and* ***Sahaja Vyaadhi***[iii] and Prognosis of these *Vyaadhi* is said to be *Asaadhya* in nature[iv].

Genetical basis of various diseases were known to our ancient Aachaaryas, including their cause (*Hetu*) that is *Upatapti* of *Beeja*, *Beejabhaaga*, *Beejabhaagaavayava*. They described genetical basis for various diseases like *Arsha*, *Prameha* and *Kushtha* so on.

The word *Prakopanam* implies the *Hetu* for the vitiation of *Doshas*. Thus, here in the case of thalassemia the *Upatapti* of *Beejabhaagaavayava* **(Mutation in Globin gene locus)** is the main cause and consequent unbalanced state of basic trinity of *Dosha*, *Dhatu* and *Mala.* The thalassemia syndromes are caused by mutation at the globin gene loci on chromosome 11 and 16[v]. The thalassemia syndromes were the first genetic disease to be understood at the molecular level.

A brief digramatic view of Mode of transmission of disease Thalassemia is as follows

Mode of transmission of disease Thalassemia



2. *Evam Yonim*

योनिः कारणं। अ सं सू २२ इन्दु

Yoni denotes *Moolabhoota Kaarana* of a disease. The *Hetu* of Thalassemia is *Beeja Dushti*.

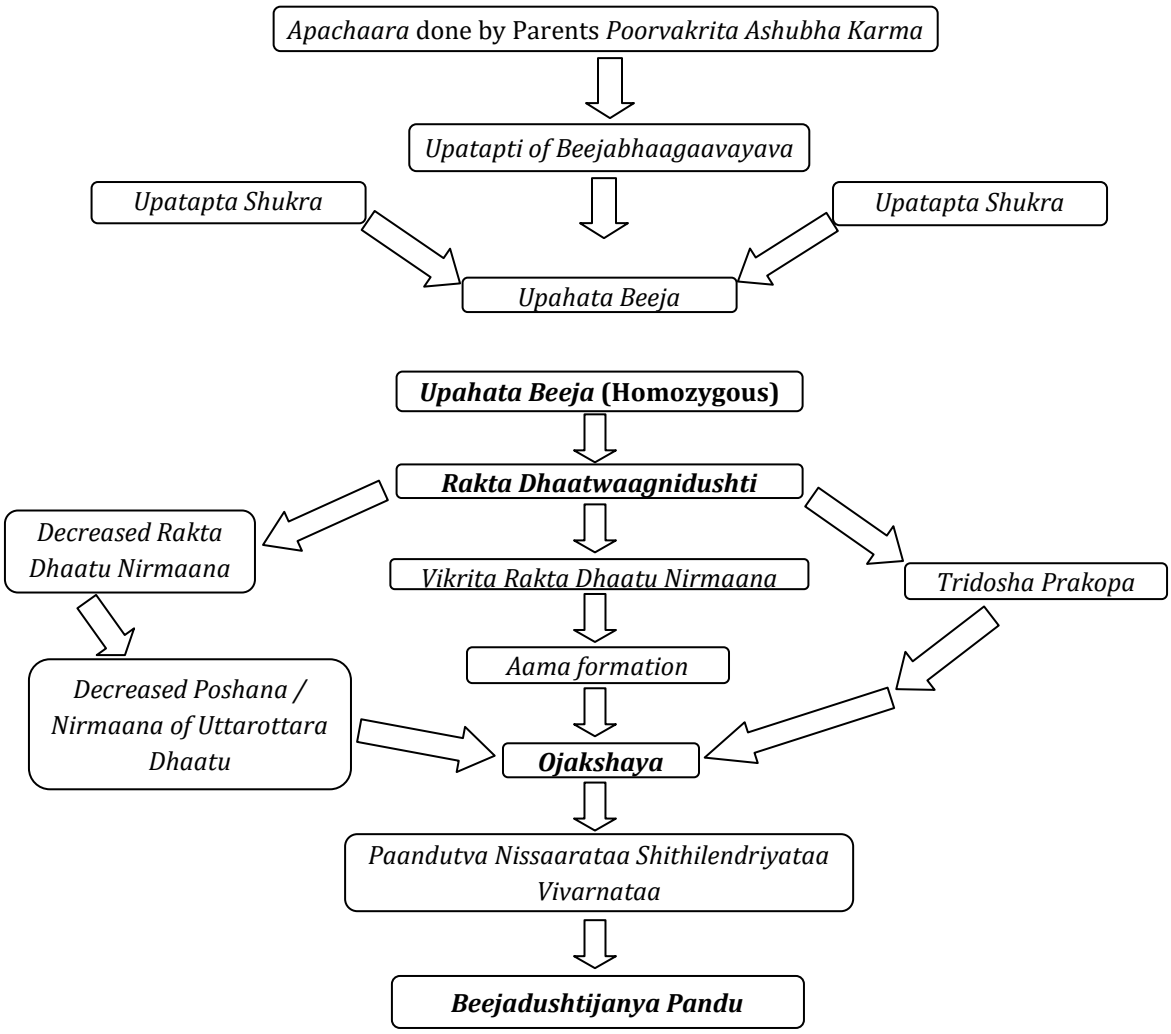
3. *Evam Utthaanam*

उत्थानं उद्भवे। वाचस्पत्यम्

As mentioned previously in the context what caused the mutation in the globin gene locus, the possible causes of mutation (*Beejopatapti*) were discussed earlier like *Poorvakrita Karma, Apachaara* by both parents etc. But how these causes lead to mutation? This question needs further scientific inquiry.

Sampraapti Ghataka

Dosha	*Tridosha (Mainly Vaata and Pitta)*
Dushya	*Sarva Dhaatu, Upadhaatu & Malas*
Agni	*Jatharaagnimaandya & Dhaatwaagnimaandya*
Srotas	*Sarvasrotas (Rasavaha, Raktavaha mainly)*
Srotodushti	*Sanga*
Udbhavasthaana	*Beeja, Aamaashaya*
Adhishthaana	*Shareera,Mana*
Vyaktasthaana	*Twak*
Rogamaarga	*Baahya*



4. *Evam Aatmaanam*

आत्मा स्वरूपः । अ ॥सं ॥सू ॥२२ इन्दु

Pratyaatmalinga of disease is known as its *Swaroopa.* It is the cardinal feature of the disease like *Santaapa* in *Jwara, Sarooja Shopha* in *Aamavaata* etc. are the relevant feature of the diseases, which give them separate identity. The main symptom of Thalassemia is ***Paandutaa***.

5. *Evam Adhishthaanam*

अधिष्ठानो आश्रयः । अ ॥सं ॥सू ॥२२ इन्दु

The diseases may have their abode either in the *Shareera* or *Mana*. In Thalassemia the prime center of affliction is *Beeja*bhaagaavayava (gene), which is responsible for the formation of *Rakta Dhaatu. Raktavaha Srotas* mainly involved.

6. *Evam Vedanam* (*Eva Shabda, Sparsha, Roopa, Rasa, Gandha)***

विद् विज्ञाने । वाचस्पत्यम्

The word *"Vedanam"* denotes knowledge. Here the word can be understood in the sense of, clinical features and various diagnostic tests done for Thalassemia. The diagnostic methods in *Ayurveda* are by means of *Shabda, Sparsha, Roopa, Rasa, Gandha i.e. Pratyaksha Pareekshaa* and *Anumaana Pareekshaa.*

There are four aspects of the diagnosis of Thalassemia viz. carrier screening, antenatal diagnosis, fetal screening and adult screening.

7. *Evam Samsthaanam*

संस्थानो आकृतिः । वाचस्पत्यम्

संस्थानं व्यञ्जनं लिङ्गं लक्षणं चिह्ननाकृतिः । अ ॥ह्र ॥नि ॥१

Samsthaana refers to the clinical manifestations of the disease. The uniqueness of the disease thalassemia is that it is progressive and adversely hampers nearly all the organ systems. The endocrinopathies once occurred could not be reversed despite extensive Chelation. Iron overloaded in the liver and heart is quite effectively removed by modern Chelators. Again, in this particular disease, the symptoms changed before and after blood transfusion.

On the basis of clinical manifestations, thalassemia classified as thalassemia major, intermedia and minor.

8. *Evam Upadravam*

जातः पश्चात् उपद्रवः । अ ॥ह्र ॥सू ॥१२६०

Upadrava is a disease produced after the formation of main disease and is dependent on the main disease whether *Upadrava* is major or minor.

Complication of Blood Transfusion[vi]

1. Acute transfusion reaction
2. Febrile reaction
3. Allergic reactions
4. Alloimmunization
5. Infections
6. Thrombosis and hypercoaguable state

Complication due to Iron Overload

1. Chronic Transfusion
2. Increased gastrointestinal absorption[vii]
3. Organ toxicity related to iron overload

Organ	Clinical Complications
Liver	Hepatic failure
Thyroid Gland	Hypothyroidism
Parathyroid Gland	Hypoparathyroidism
Pituitary	Hypopituitarism
Pancreas	Diabetes Mellitus
Gonads	Hypogonadotrophic

Cardiac Hemosiderosis

Psychosocial Problems

9. *Evam Vriddhi, Sthaana And Kshaya*

This implies for the aggravating, static and reliving factors of disease. In short it implies for *Upashaya* and *Anupashaya*. The factors which results in depletion of *Dhaatu*s and deterioration of *Bala* (Immunity) will enhance the disease progression. The use of therapeutic agents like antioxidant, hepatoprotective and immuno-modulator reduce the progression of the disease. This malady although terminal can be managed by appropriate health care i.e. . intake of low iron

containing diet, avoiding inadvertent therapeutic iron, by chelating the extra iron from the body. Last but not least immense psychological and psychosocial support should be given to the child.

10. *Evam Udarkam*

उदर्को व्याधेः फलं । अ ॥सं ॥सू ॥२२

Udarkam means the outcome of disease process. Considering all these factors the disease can be considered as *Yaapya* that is (palliable) or *Asaadhya.*

11. *Evam Naamam*

Aachaaryas named the diseases according to its *Pratyaatmalinga (Roopa),* involved *Dosha, Dushyas (Sampraapti Ghatakas)* and *Adhishthaana* of the disease. *Pratyaatmalinga* is the specific symptom of particular disease. *Pratiniyata Lakshana* and *Avyabhichaari Lakshana* are its synonyms and this particular *Lakshana* indicates the *Swaroopa* of *Vyaadhi*. The disease thalassemia can be given following names considering all these factors.

- ***Beejadushtijanya Pandu***
- ***Kulaja / Aanuvanshika Pandu***
- ***Aanuvanshika Tridoshaja Pandu***

12. *Evam Yogam*

योगस्तु योजना । वाचस्पत्यम्

Yogam implies the different protocols for the management of the disease.

Agnideepana	*Pittasaaraka*
Aamapaachana	*Krimighna*
Srotovishodhana	*Lohashodhana*
Tridoshahara	*Lohamaarana*
Anulomana	*Raktashodhana*
Lekhana	*Raktaprasaadana*
Bhedana	*Shonitasthaapana*
Hridya	*Rasaayana*
Rochana	*Vayahasthaapana*
Balya	

Some of the *Dravyas* that can be useful as iron chelators which are mentioned in our classics as *Apathya* during *Lohasevana, Lohashodhana Gana*, *Lohamaarana Gana, Lohasevanajanya Vikaara.*

MODERN MEDICAL MANAGEMENT

1. Transfusion therapy
2. Splenectomy
3. Iron Chelation
4. Bone marrow transplant
5. New approaches
6. Other specific managements

13. *Evam Pratikaara*

The disease thalassemia is *Asaadhya* in nature, so in this case preventive aspect has much more importance in the management of this scourge. As this disease is Autosomal recessive in nature and tends to occur in particular communities residing in the particular geographical region its prevention through genetic counseling is possible. It is proven facts that, the chance of same recessive gene being present in the relatives are greater than in general population. This explains why our ancient *Aachaaryas* advocated that ***Tulyagotriya*** (consanguineous) marriages should be avoided and devoted separate topics related to this matter. Now a day the different carrier screening methods are available and discussed previously should be utilized for the pre-vention of this disease.

Nivritti

The symptomatic thalassemia syndromes are complicated by tissue iron toxicity. The sole therapeutic precaution is avoidance of therapeutic iron supplementation. As these syndromes are also associated with increased dietary iron absorption, diet rich in iron content should be avoided. Here a chart of food articles with their iron content is, this should be avoided as possible;

Pravritti

Folate supplementation should be given in patients with thalassemia to prevent megaloblatic arrest of erythropoesis. Infectious diseases require prompt attention especially in the children whose spleens have been surgically removed; the HBV vaccination should be given to for all the patients before starting transfusion therapy. A polyvalent pneumococcal vaccine should be given if splenectomy is planned.

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