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## Worm infestation (Krumi) and its Ayurveda Etiopathogenesis.

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**Abstract:** Description of Krumi available in Atharvaveda and in Samhitas since vedic period in details. Krimi Roga is very common in children as well as adults now a days which mainly occur as intestinal infection. Worm infestation can be correlated to Krumi in Ayurveda and Worm infestation (intestinal worms) is the common health complaint of the public in the routine practice. In present life, people are lacking in awareness about their diet habit this results in increasing prevalence of Krimiroga and they remain as it is or without diagnosed. Nidana like Diwaswapa, Ajeernasana, Asatmya, Virudha, Bhojana etc. Create agnimandya and a favorable atmosphere in the koshttha for the growth of Krumi and diet like green vegetable (parashaka), pistanna Godhuma etc. create major bulk of faeces. This accumulation of faeces gives favorable, environment for the growth of various krumis.

**Keywords:** Diwaswapa, Ajeernasana, Krimiroga, Worm infestation, Atharvaveda.

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**Introduction:**

Worm infestation (intestinal worms) is the common health complaint of the public in the routine practice. Krimi Roga is mostly found among children which mainly occur as intestinal infection. These Intestinal worms (Krimi) possess ability to breed in human intestine with the help of food and blood. In Ayurveda, the diagnosis and treatment of Krumiroga described in details in all Samhitas with various types of krimi.[1] In human body there are two types of Krimi. viz. Sahaj and Vaikarik Krimi. Among them Vaikarik krimi are hurtful to human being. It is thought to consider that Krimi is one of the causes for Kushtha, Pandu, Grahani, Karshyata etc.[2] In present , due fast life, people are lacking in awareness about daily nutrition and habit of diet, due to this many patients become sufferer of Krimiroga and even sometimes they might remain undiagnosed.[3] Today's scenario, it was seen that, there is increase in the intake for non-veg diet, sweet and bakery product, milk product, faulty prepared food fermented along with readymade fast food etc. Children and adults also usually like sweet food items, biscuits, cake , pastry like bakery items which vitiated doshas and lead into Purishaj krimi.

**Objectives:**

1. To review the concept of krimi in Ayurveda, its type and features.
2. To review on various etiological factors responsible for the krimi (worm infestation).

**Methodology:****Source of Data:**

Literary review on Krumi was done from the *Brihatrayees*, *Laghutrayees*, and other classical textbooks including journals, and published articles in national and international journals.

**Concept of Krumi in Ayurveda:****In vedic period:[4]**

Among four Vedas viz. Rigveda, Samaveda, Yajurveda and Atharvaveda, the Krumiroga was at its peak of development. Description of Krumi available in Atharvaveda in details. Description of Krumiroga is available Rigveda in kanda-I, Sutra 191 of Rugveda. The word "Ameva" used for indicating Krumi, as it is described that 'Ameva' a Krumi found is water. Rugveda described that super natural power like sun, fire, Indra were preferred for the distraction of Krumi. In Atharvaveda different words e.g. Rakshaha, Pishatch, yatu, Krumidi, gandharva to denote Krumis Origin of Krumis

given as they born in faeces contaminates in water, milk etc. Atharvaveda described the effectiveness of the sun rays in Krumi.

### **Samhita Period:-**

#### **Charaka Samhita:**

In the Sutrasthana “Ashtodariya Adhyaya” Acharya Charaka has mentioned total twenty number of Krumis, then in the 7<sup>th</sup> chapter of vimana sthana “Vyadhirupiya Viman, it has been explained of Drishta and Adrishta types of Krumi, further classified or Sahaja and Vaikarika Krumi.[5]

#### **Sushruta Samhita**

In Uttarshthana, “Krumiroga Pratisedha” is a special chapter described by Acharya Sushruta. In this chapter no. of Krumi, types nidana, rupa and treatment were described in details.

#### **Harita Samhita:**

Acharya Harita had described nomenclature no of Krumi, classification, etiology, pathogenesis and treatment part in the 5<sup>th</sup> chapter.

#### **Kashyapa Samhita:**

Medicated bath is indicated to destroy the external Krumi in Dwivraniya Adhyaya and mentioned only total no. of Krumi in sutra than ch. 27/56.

#### **Etymology of krumi :**

The word Krumi is derived from the word ‘Kru’ which means to induce bad effect, to finish. The term “Krumi” is given in Amarkasha as:- This indicates the synchronized movements of Krumies. According to Dalhan, Krumi is considered as the living being which are born from the vapor of fecal material in the intestinal tract or such environment elsewhere.[6]

#### **Classification of krumi:**

The Krumi is parasites exist was clearly known to our Acharyas, this can be seen from the classification of Krumis in the broad groups in Charaka Samhita as -

#### **1. Sahaja Krumi 2. Vaikarika Krumi**

##### **1. Sahaj Krumi:**

Sahaj Krumi means which live in human body right from birth until death, also known as Avaikarik Krumi, the name itself indicates that they are not harmful to body but helpful. They are numerous in number and live in the buccal cavity, alimentary tract etc. as a normal bacterial flora such as lactobacilli etc. From the modern physiological views, there is a bacterial flora in the intestine which in the formation of vit B<sub>12</sub>.

##### **2. Vaikarika Krumi:**

According to Charaka the Vaikarika group includes two subgroups of Krumi classified according to their site of invasion in human body namely Bahya and Abhyantara, it contains of those Krumi which are harmful to human body. There Krumi which live on the surface of our body i.e. skin, hair are known as Bahya Krumi and those live inside the body are Abhyantara Krumi. Charaka, Vagbhata

both have mentioned two types of Bahya Krumi while Sushruta has not mentioned Acharya Sushruta classified Abhyantara Krumi i.e., 20 in two groups. [7]

### 1. Drasya 2. Adrasya

According to Acharya Sushruta, shlesmaja and Purishaja Krumi are drashya and Raktaja are Adrashya.

**Table no. 1 Number of Krumis and their Types.**

Sr. no.	Name	Bahya Krumi	Abhyantra Krumi			
			Total	Kaphaja	Purishaja	Raktaja
1	Charaka	2	18	7	5	6
2	Sushruta	-	20	6	7	7
3	Vagbhata	2	18	7	5	6
4	Madhavkara	2	18	7	5	6
5	Bhavaprakash	2	18	7	5	6
6	Sharangadhara	2+1	18+1	7	5	6
7	Harita	7	6	-	-	-

As per table all Acharyas agreed on the total no of Krumi to be 20, except Acharya Harita and Sharangdhara. Acharya Harita describe 7

types of Bahya Krumi 6 types of Abhyantara Krumi specifically.

**Table-2 : Nomenclature of Krumis:**

No.	Charaka	Vagbhata	Sushruta	Harita
<b>Bahya</b>				<b>Bahya</b>
1	Yuka	Yuka	-	Krishna
2	Pipllika	Leeksha	-	Sweta
<b>Abhyantar</b>				Charma Yutika
1	Antrada	Antrada	Mahapushpa	Binduki
2	Hridayada	Hridayada	Praloona	Matkuna



3	Udarada	Udarvestha	Chipita	Yastika
4	Churu	Churu	Pipilika	Plavangika
5	Mahaguda	Mahakuha	Daruna	
6	Saugandhika	Sugandha		<b>Abhyantar</b>
7	Darbhakusuma	Darbhakusuma	Darbhapushpa	Prithumunda
<b>Purishaja Krumi</b>				Dhanyankurnibha
1	Kakeruka	Kakeruka	Ajawa	Suchimukha
2	Makeruka	Makeruka	Vijawa	Kinchuka sanibha
3	Sausurada	Sausurada	Kipyra	Anavaha
4	Saushulka	Saluna	Chipya	Sukshmaha
5	Leliha	Leliha	Gandupad	
6			Churu	
7			Dwimukhaha	
<b>Raktaja Krumi</b>				
1	Keshada	Keshada	Keshada	
2	Lomada	Lomavidhavamsa	Romada	
3	Lomadwipa	Lomadwipa	Nakhada	
4	Saurasa	Saurasa	Dantada	
5	Udumbara	Udumbara	Kikkisha	
6	Jantumatra	Matraha	Kushtaja	
			Parisarpaja	

**Bahya Krumi :**

- 1) Yuka - which mix with the Colour of hair and cloth and creates disease condition.
- 2) Loksshyate- Luksha which are the eggs of 'Yuka' and people can also to seen it on the hair and cloths.

**Abhyantara Krumi : (Shleshmaj Krumi)[8]**

1. Antrada –Krumi which eats Intestine and destroys of Intestine.
2. Hridayada –Krumi which responsible for heart disease.

3. Udarada – Krumi which lives in abdomen.
4. Churu - Krumi which steals digested food and also takes Rasadi Dhatu.
5. Mahaguda -It indicates the shape of Krumi which is wide in front and narrow of the tail.
6. Saugandhilka
7. Darbhapushpa
8. Mahapushpa: It indicates number of Krumis, this type of Krumi found in

large number like the flower of Aparajitra.

9. Plun :Krumi which have segmented body .
10. Chipit : Krumis which are very small in size and flat.
11. Darun : Krumi which create excessive.
12. Udarsweshtha; which produce in stomach and covered by abdomen.

### **Aetiopathogenesis: (Nidan Panchak of Krumi ):[9]**

#### **Krumi Nidana:-**

Ayurveda defines a perfect and elaborative method of diagnosis known as Nidan Panchak. There are five steps to know and diagnose the disease.

#### **Nidana:**

Acharya Charaka has enumerated the list of Nidans for Purishaja Krumi same as the Shleshmaja Krumi. The etiological factors of Krumiroga described can be divided into two- namely Samanya Nidan and Vishesh Nidan. Samanya nidans includes those vague factors which are responsible for the appearance and growth of Krumis in human host on the other hand, Vishesa nidan constitutes all the specific factors that certainly cause the infection of any of the Krumis as bahya, purishaj, shleshmaja or raktaja. Acharya

Charaka has mentioned that, Nidan of Purishaja Krumi is similar as Nidan of Shleshmaja Krumi, he also mentioned only vishesa nidan while Acharya Shushruta, Harita and Madhavakar has explained Samanya and Vishesa Nidan of Krumi. Nidans like meat, Patrashaka etc. help in the ingestion of ova and cyst into human body. Nidana like Diwaswapa, Ajeernasana, Asatmya, Virudha, Bhojana etc. Create agnimandya and a favorable atmosphere in the koshtha for the growth of Krumi and diet like green vegetable (parashaka), pistanna Godhuma etc. create major bulk of faeces. This accumulation of faeces gives favorable, environment for the growth of various krumis.

#### **Samprapti of Krumiroga:**

Samprapti is the phenomenon which deals with its meaning with causing agents, responsible factors, equilibrium of the body etc. It deals with origin of any diseases through dosha- dushya Sammurchhana means if Dosha Vitiates (Sammurchita) to Dushya (Rasa-Raktadi Dhatu) causing sthanasanshraya of Doshaj at the point of Khavaiguna is called as Samprapti. Neither Acharya Charaka nor any other Acharyas have given any clear cut Samprapti of Krumiroga.

Hence the discussion on Samprapti of krumi is purely hypothetical. Acharya Sushruta, stated that vitiated shleshma and pitta by any of the etiological factors described under Krumiroga, may help to the production of Krumis at different contour of the body. Most of the factors described in the aetiology of Krumiroga are capable to producing agnimandya and amotpatti. It works as principal factor in the process of Samprapti.[10]

**Mode of infection of nematode parasites as per modern science is cocreed by following various means-[11]**

**1. By Ingestion or per oral exposure :**

Embryonated eggs containing food, fruits, vegetables, meats as in like type worm, round worm viz. *Ascaris lumbricoides*, *Enterobius vermicularis*.

**2. By drinking impure water, Milk causes infestation like due to cyst of *E. Histolytica* and eggs of *Ascaris lumbricoides* etc.**

**3. By penetration of the skin :** The filariform larvae boring through the skin as in *Ancylostoma duodenales*, *strongyloides stercoralis* etc. Sometimes the intermediate host

harboring the intertied form may be taken up.

**4. By blood sucking insects :** An infected blood sucking arthropod many introduce the organism directly into the blood or into the skin or into the skin layer at the time of obtaining a blood meal.

**Discussion:**

Starting from Rig Veda to Samhita Krimi is accepted as a causative factor of diseases. Krimi Roga is very common in children as well as adults now a days which mainly occur as intestinal infection. Irrespective of age, sex, religion and geographical area anyone may suffer from the worm infestations. These Krimi (worms) possess ability to breed in human intestine with the help of food and blood. Worm infestation (intestinal worms) is the common health complaint of the public in the routine practice. So, it becomes mandatory to take certain kind of herbal wormicides periodically. Most of time the Embryonated eggs containing food, fruits, vegetables, meats as in like type worm, round worm viz. *Ascaris lumbricoides*, *Enterobius vermicularis*. By drinking water, Milk, infection caused as like cyst of *E. Histolytica*



and eggs of *Ascaris lumbricoides* etc. Most of these are transmitted through soil, their route of transmission being faecal contaminated fingers or sometimes migrate through skin to intestine. Acharya Charaka, classifies Krumis in two broad groups Sahaja and Vikaraja. Vikaraja Krumis are divided into Bahya and Abhyantara Krumi. Bahya Krumis are of two types Yuka and Pippalika while Abhyantara Krumis are of three types as Purishaja, Shlesmaja and Shonitaja (Raktaja). The group of Krumis which grows on faecal material residing in lower part of gastrointestinal tract is termed as Purishaja Krumi. As far as number of Krumis are concerned most of Acharyas mentioned total Twenty types of Krumi.[12]

### Conclusion:

The Krimi and Krimi Roga has existed since the Vedic period and description of krumi also found in texts and complete descriptions along with treatment of krimiroga observed in Samhita period. There is need to study various aspect and theoretical concept of krumi as the krumi itself denotes all the aspect and features of microorganism helminthes, protozoa, bacteria and virus in the Ayurvedic literature. There are 20 types of krumi are described in Ayurveda and specific causative factor as well

as aetiology also given. Now a days due to imbalance diet and fault diet habit also results in the raise concern about krumi and need to think about diagnosis as well as prevention aspect to avoid the conditions.

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