

INTESTINAL KRIMI IN CHILDRENS AND ITS MANAGEMENT**Dr. Vaibhav Jaisawal***

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Corresponding Author*Dr. Vaibhav Jaisawal**Assistant Professor, Dept
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Ayurveda, IMS, BHU.**ABSTRACT**

According to WHO, the level of intestinal infection can be viewed as an index of a community's progress towards a desirable level of sanitation. Among the effects associated with these parasites are growth retardation, intestinal obstruction, hepatic and biliary diseases, impaired cognitive development, and nutritional effects such as iron deficiency anemia. Nearly about 107 Krimis are mentioned in Vedas. The Krimi Roga is one of the most common disease found in paediatric practice. Udara Krimis (Intestinal parasites) have been considered a major public health problem throughout the world [WHO, 1967, Wahdan, 1983, Mc Laren, 1984]. In our country also this

problem is more important because it adversely affects the nutritional status of a person but neglected due to poor socio-economic status. Acharya Charaka has beautifully described threefold chikitsa for Krimi Roga viz. APAKARSHANA, PRAKRITIVIGHATA and NIDAN PARIVARJANA. Remarkably, in Apakarshana of Krimis, most vigorous Samshodhana viz. Virechana, Vamana, Shirovirechana and Asthapana all of the four Karmas have been advocated. But Samshodhana in children is not desirable so keeping this in mind Samshamana treatment is planned with suitable Krimighna drugs, which are described in our classics.

KEYWORD: vigorous Samshodhana viz. Virechana, Vamana, Shirovirechana and Asthapana.

INTRODUCTION

Krimis are the unsuspected and undetected villains responsible for exposing the victims to a large number of diseases by robbing them of their hard earned nutrients, thus lowering their body defence. Hookworm, suck 0.4 ml of blood per worm per day, there by cause anaemia and make them physically weak, remain unhealthy throughout their life span. Poor hygienic

living conditions give rise to parasitic infections in children, with the prevalence of such infections being an excellent indicator of socio-economic status. Many helminthes parasites remain major contributors to morbidity in developing countries. Intestinal parasites are transmitted through the contamination of water, soil, and food by feces, a direct consequence of poor hygienic and living conditions. Among the intestinal parasitic infections, helminthes infections are the most common on the Indian sub-continent. The Vedas are actually the earliest literature and oldest record of history. The history of Ayurveda can be traced from Vedas. It is quite interesting to note that in contrast with some other branches of Ayurveda which were rudimentary in its growth at the Vedic times and which were later on grown to their full heights, KRIMI VIGYAN was at its peak of development during the Vedic times. This can be seen from the vivid description in Vedas of various KRIMIS [the word Krimi is used to denote all the worms and micro-organisms in Veda], their nature and mode of action, their pathogenecity, habitat and various kinds of treatment of disorders attributed to the Krimis.

Types of krimi

Nearly about 107 Krimis are mentioned in Vedas. According to the shape -Various names were given like Alagandu, Vishwarupa, Chaturaksha, Dvayashya, Panchapada, Trishirshi, Virupa etc. According to the colour – The Krimis like Krishna, Rohita, Shita, etc. are mentioned.

In Charaka Samhita, in the 19th chapter in Sutrasthana the author has mentioned only the total number of Krimis i.e. 20. Then in the 7th chapter in Vimana Sthana. “Vyadhitarupiyam”, it has been explained of Drishta and Adrishta types of Krimis. Further, classified as Sahaja, and Vikarotpadaka Krimis, it is divided as internal and external Krimi. External 2 are named as Yuka and Pipilika, internal invaders are of 3 types viz. Purishaja, Shleshmaja and Shonitaja. In short the Nidana, Sthana, Samsthana, Varna, Nama, Prabhava and Chikitsa of Krimis were discussed in detail.

In Sushruta Samhita, 54th chapter of Uttara sthana, drishta and adrishta type of Krimis are explained. This is further classified as Purisaja, Raktaja and Shlesmaja Krimis. The numbers of Krimis are twenty, but no description of Bahya Krimi is available. Nidana, Rupa and Chikitsa of Krimis are also mentioned. Samanya Nidana firstly mentioned by Sushruta Gandupada Krimis have been clearly mentioned in Purishaja type, which can be correlated with ‘Round Worm’ in modern science.

In Harita Samhita accumulation of Purisha is the main cause for internal type of Krimi, infesting which more like snake in the Kaphakoshtha is explained here. Krimis name according to their shape, size and habitat. For example Pruthumunda, Sukshma, Anavaha and Suchimukha etc.

In Kashyapa Samhita only the treatment portion is found in the Chikitsa Sthana "Krimi Chikitsita" in this chapter administration of bitter and pungent drugs in Krimi Rogas are well explained. Medicated bath is indicated to destroy the external Krimis in Dwivraniya Adhyaya and mentioned only the total number of Krimis in Sutra Sthana.

Table no.1: TOTAL NUMBER OF KRIMIS AND THEIR VARIETIES

S. No.	Name of scholar	Bahya krimi	<i>Abhyantara krimi</i>				Grand total
			Total	Kaphaja	Purishaja	Raktaja	
1	Charaka	2	18	7	5	6	20
2	Harita	7	6	-	-	-	13
3	Bhela	-	-	-	-	-	20
4	Sushruta	-	20	6	7	7	20
5	Vagbhata	2	18	7	5	6	20
6	Madhavakara	2	18	7	5	6	20
7	Sharangadaha	2+1	18+1	7	5	6	22
8	Bhavamishra	2	18	7	5	6	20

That two types of relationship between host and parasites exist was clearly known to our Acharyas. This can be seen from the classification of Krimis in two broad groups in Charaka Samhita-

1. Sahaja Krimi.
2. Vaikarika Krimi.

1. Sahaja Krimis

It constitutes that group of Krimis which normally reside in the human body right from the birth until death. It appears that by Sahaja Krimis are referred to those organisms, which constitute normal bacterial flora in the buccal cavity and alimentary tract, as well as in the vaginal canal in females. In Charaka their presence is described not to be harmful to humans (and indeed they help us by producing vitamin B12 in the intestines and by competing with and thus in healthy subjects preventing the growth of pathogenic organisms.)

2. Vaikariaka Krimis

It consists of those Krimis which are harmful to human body. According to Charaka, this Vaikarika group includes two sub- groups of Krimis classified according to their site of invasion in human body, namely BAHYA AND ABHYANTARA, which literally means external and internal respectively. Those Krimis, which reside in external surfaces of our body are termed as Bahya Krimis while those Krimis which reside inside our body are termed as Abhyantara Krimis. Udara Krimi intestinal worms generally include– Purishaja Krimi and Kaphaja Krimi.

The parasites of animal kingdom are divided into three main Phyla as.

Animal Parasites of man PHYLUM:

1. Protozoa
2. Helminthes
- 3 Arthropoda

GENERAL SIGNS AND SYMPTOMS OF ABHYANTARA KRIMIS

1. Jwara (fever).
2. Vivarnata (discolouration).
3. Shula (acute pain).
4. Hridroga.
5. Bhrama (vertigo).
6. Bhaktadwesh.
7. Atisara (diarrhoea).
8. Sadana (malaise).
9. Chardhi (vomiting).
10. Shwasha (dyspnoea).
11. Vami.
12. MandAgni.
13. Pipasa.
14. Pitanetra.

Sign & SYMPTOMS OF SHLESHMAJA KRIMIS

- 1 Hrillasa (nausea).
- 2 Asyasanshrawan (salivation).
- 3 Avipaka (indigestion).
- 4 Jwara (fever).
- 5 Arochaka (anorexia).

- 6 Moorchha (fainting).
- 7 Jrimbha (yawning).
- 8 Kshavathu (sneeze).
- 9 Anaha (tempenitis).
- 10 Angamarda (body ache).
- 11 Chhardi (vomiting).
- 12 Karshya (emaciation).
- 13 Parushya (dryness of skin).
- 14 Kasa (cough).
- 15 Pinasa(chronic rhinitis).
- 16 Shula (acute pain).
- 17 Shwayathu (oedema).
- 18 Hridroga.
- 19 Pratishtyaya.
- 20 Shiroroga.
- 21 Majjadan (destruction of bone marrow).
- 22 Netraledharah talu shrotra bhujaha (licking of eyes, destruction of palate & ear).

SIGNS & SYMPTOMS OF PURISHAJA KRIMIS

- 1 Purishabheda (diarrhoea).
- 2 Karshya (emaciation).
- 3 Parushya (dryness of skin).
- 4 Lomaharsha (horripilation).
- 5 Gudamuha nishkramana (coming out from anus).
- 6 Gudakandu (pruritis ani).
- 7 Shula (acute pain).
- 8 Agnimandya (loss of appetite).
- 9 Pandu (anaemia).
- 10 Vishtambha (constipation & flatulence).
- 11 Balakshaya (weakness).
- 12 Praseka (salivation).
- 13 Aruchi (anorexia).
- 14 Hridroga.

Laboratory diagnosis

Knowledge about the geographical distribution of helminthes will greatly help in forming an opinion as to the nature of the helminthic infections prevalent in the society. The material to be collected for helminthological diagnosis will entirely depend on its site of localization and the nature of the development within its human host.

The following materials should be collected for specific diagnosis:

1. Blood: In those parasitic infections, where the parasite itself, or in any stage of its development, circulates in the blood stream, examination of blood film forms one of the main procedures for specific diagnosis. Example – in malaria, the parasites are found inside the erythrocytes (RBC).
2. Stool: Examination of the stool forms an important part in the diagnosis of intestinal parasitic infections and also for those helminthic parasites, which localize in the biliary tract and discharge their eggs into the intestine.

In protozoal infections, either trophozoites or cystic forms may be detected; the former during the active phase and the later during the chronic phase e.g. amoebiasis, Giardiasis and balantidiasis.

- I. Eggs are found in intestinal helminthiasis (Ascaris, Hook worm infection, Trichuriasis, Taeniasis, Hymenolepiasis etc.).
- II. In Enterobiasis, eggs are rarely found in the stool because they are deposited on the perianal skin and hence anal swabs are to be taken for the diagnosis.
- III. In strongyloidiasis, larvae not eggs are commonly present in freshly passed stool.
- IV. Adult worms are found in Ascariasis and after a vermifuge in Hookworm infection and Enterobiasis. Segments of adult worms are found in Taeniasis, Diphyllbothriasis and other intestinal tapeworm infections.

Both unstained and iodine stained parasites are to be examined, concentration method used for Protozoal cysts may also be employed for the helminthic eggs.

3. Urine- when the parasite localizes in the urinary tract examination of the urine will be of help in establishing the parasitological diagnosis. Ex. I) In cases of chyluria - *W. bancrofti* microfilariae are found.

4. Sputum: Examination of the sputum is useful in the following:

I. In cases where the habitat of the parasite are in the respiratory tract, as in paragonimiasis (the eggs of *P. westermani* are found).

II. In amoebic abscess of lung or in the case of amoebic liver abscess bursting into the lungs, the trophozoites of *E. histolytica* are detected.

III. In case of rupture of hydatid cyst of the lung, scolices and hooklets of *E. granulosus* are obtained.

5. Biopsy material- It varies with different parasitic infections. As for ex:

I. Spleen puncture in cases of Kala Azar.

II. Bone Marrow puncture in cases of Kala Azar and African trypanosomiasis etc.

6. Indirect evidences –changes indicative of internal parasitic infections are:

i) Cytological changes in the Blood: Eosinophilia often gives an indication of tissue invasion by a Helminth, Leucopaenia is a feature of Kala Azar and Neutrophilic leucocytosis is observed in amoebic liver abscess. Anaemia is feature of Hook worm infection and malaria.

ii) Biochemical alteration of the blood ex. Hypergammaglobulinaemia in cases of Kala Azar, African trypanosomiasis, Schistosomiasis and Visceral larvae migrains.

iii) Serological tests

a) Specific Complement Fixation Test is used in many protozoal and Helminthic infections such as Amoebiasis, Toxoplasmosis, Hydatid cyst etc.

b) Specific precipitin test, as in Schistosomiasis, Hydatid disease and Amoebiasis.

c) Specific agglutination test, as in Leishmaniasis.

d) Specific dye test of Sabin and Feldman as in toxoplasmosis. e) Immobilisation test as in amoebiasis.

f) Reaction of the parasite with fluorescein – tagged homologous antibody, as in *E. histolytica* and *Toxoplasma*. The fluorocent antibody technique has also been employed for the serological diagnosis of certain helminthic infections (Schistosomiasis, Trichinelliasis and Anchocerciasis) and also in malaria and Visceral leishmaniasis.

iv) Intradermal reaction (Skin test)- This is positive in many helminthic infections such as Hydatid disease, Filariasis, Ascariasis etc.

General principles in treatment of Krimi

SAMANYA SIDDHANTA

Charaka while explaining the treatment of Krimi has given the keen attention to explain minute things also, in 7th chapter of Vimana Sthana he described the three main theories regarding the treatment.

1. Apakarshana.
2. Prakritivighata.
3. Nidanaparivarjana

1. APAKARSHANA

The word Apakarshana derived as “Krush Vilekhane Dhatu”, it means to scratch the Doshas, Mala and Krimisanghata forcefully. It also denotes the removal of parasite by any means from the body it is easy to remove it from near Srotas or according to gravitation laws etc.

This line of treatment is carried out with the device or Yantra or with hands. The Krimis which are located in Swasthana, they should be driven off with the help of Aushadhi or Beshhaja. This Beshhaja Apakarshana is carried out briefly in the following four ways.

1. Shirovirechana.
2. Vamana
3. Virechana
4. Asthapana

I. SHIROVIRECHANA

A type of Samshodhana or purification Karma in which the Doshas or Krimis are located in Shira (Brain and nasal passage), they are excreted out with this theory (through the nose). The drug is administered in the form of Churna Pradhamana (fine powder to be blown in nostrils), medicated oil (to be used as nasal drops) or Swarasa Nishpidana (to put expressed juice of the various parts of the plants in nostrils). Administering the medicine through the nasal cavity, effecting over the mucosa to stimulate the nerve endings in secreting the viscous matter is called the act as Shirovirechana. With the Katu – Tikta Rasa and Ushna Guna the Krimis as well as Doshas are driven off by this Shirovirechana.

II. VAMANA

Doshas eliminated through the upper part of Srotas is called Vamana. Amashaya is the seat for products of Kapha and when it is vitiated it produces Kaphaja Vikara as well as Kaphaja Krimi. For this, to eliminate out Vamana therapy is applied. This will effect into two ways.

- a. Doshas in Amashaya are directly stimulated through the drug to vomit it out.
- b. By stimulating the center of vomiting in cortex by direct action. But now a days, theory of emetics is not advised to removal of Krimi viz. our Acharyas followed the principle of Vamana one of the cause in removing the Krimi.

III. VIRECHANA: This term is having the broad meaning of eliminating the Doshas vitiated, but here it denotes the vitiated Doshas will be let out through gastro-intestinal tract by the effect of the drug ingested. This can be done by killing the parasite in the intestine or to anaesthetize the Krimi to move out by parasite movements. Most relevant and nearest mode of technique is Virechana Karma in intestinal worm infestation. The worm will die or get lost its conscious and thrown out form gut.

This Virechana Karma keeps relation with worm infestation. Krimi seated at Pachyamanashaya or Pakvashaya the method of Apakarshana is Virechana. The drug directly affecting the worm to die and it also stimulates the intestinal wall to promote movements, which result into purgation. Pachyamanashaya is the main seat for acting Virechana drug.

IV. ASTHAPANA BASTI: This is also a technique of eliminating the Krimi from large intestine. The Bastiputa as the bag which contain the decoction of drug or oily preparation (Sneha) etc. is introduced through anus with Netra. In this the particular process the active principles in the medicine will directly reach the Krimi whereas in oral administration the drug it has to under go the digestive phases, and hence weak in directly attacking the organisms.

Acharyas have given importance to Asthapana Basti in Krimi than Anuvasana Basti. Because the oleative preparation is in favour of Krimi where as the curative type viz. Kashaya Dravyas are contents of Asthapana which are giving the Karshan guna and they inhibit the growth of Krimi and its activities.

2. PRAKRITI VIGHATA

Prakriti = Prakaroti iti Prakriti, which can produce is the Prakriti

i.e. causative factor and Vighata = Vinasha, means which is to be destroyed, get effected etc., means the Prakriti or the producing factor to be destroyed is the Prakriti Vighata. With the help of Katu, Tikta, Kashaya, Kshara, Ushana Dravyas and the Dravyas which are opposite to property of Kapha and Purisha, performs the function of Prakritivighata.

After doing Samshodhana (with the help of Apakarshana) Chikitsa, the Doshas, Malasanghata and Krimis are no doubt, eliminated out of the body but if their Prakriti (causative factors) remains as it is, residing that particular seat (Amashaya, Pakwashaya) then there are every channels for their (Krimi) rebirth. So it is essential to destroy or vanish or to correct these causative factors (Kapha & Purisha) in which they grow luxuriously. Kapha and Purisha is the main Prakriti of Krimis. Properties of Kapha (Snigdha, Sheeta, Guru, Manda, Shlakshana, Sandra, Madhura, Picchila) after producing Agnimandya, starts the formation of Ama which may favour for the formation of Kaphaja Krimi. And in the same way when Sara-kitta- vibhajana take place, Sarabhaga performs the function of Shariraposhana (nutrition) and Kitta bhaga is excreted out, being it is Vijatiya. But if this Vijatiya portion (Kittabhaga) due to any reason accumulates in Pakwashaya, there it starts Kotha (putrefaction) leading to the formation of Purishaja Krimi. So here Purisha will act as its Prakriti i.e. causative factor. That's why Charak acharya advises to make use of dravyas which possess the opposite properties to the Kapha and Purisha e.g. Katu – Tikta – Kashaya – Ushna – Kshara Dravyas, because they are exactly opposite to their Prakriti and by this action they performs the duty of Prakritivighata.

Very recently the immunological aspects of Krimis are being studied. The cellular antibodies against various intestinal parasites are being searched out some success have been achieved against the Ascaris and Entamoeba. Any measure which will be successful against the reinfestation of Krimi s will be included under Prakriti Vighata.

4. NIDANA PARIVARJANA: (AVOIDING THE CAUSATIVE FACTORS)

This is the third principle in the treatment of the Krimi as “Prevention is better than cure”.

Avoidance and or elimination of cause or causes, which help in germinating and developing the Krimi. Hence, all the factors listed as etiological factors of the Krimi Roga and Aphyia should be avoided. It is most useful from three points.

- I. It may cut off the necessity of Aushadhi.
- II. Extra-contaminated intake is prohibited.
- III. Helps to treat the patient and relieve him early.

In Ayurvedic science by giving importance to Ahara and Vihara they stressed over this point in hygienic point of view.

For the purpose of Prakriti Vigha and Apakarshana a long list of medications are available in all the texts of Ayurveda.

MORDERN TREATMENT

Many of the intestinal worms infections can be cured by specific chemotherapy. In intestinal worms, the drugs are given by the mouth and are required to exert a direct action on the helminthes. It is desirable that the drugs administered should not be absorbed so that they may be in the maximum concentration for exerting their anti-helminthic actions. It should have a minimum toxic effect on the host. An ideal anti-parasitic should have a broad spectrum of action and it should achieve a high percentage of cure, preferably with a single therapeutic dose. Purgation before and following the anti-helminthic should not get absorbed, be palatable, cheap and free from toxic manifestations.

The following table in brief illustrates drugs commonly employed in worm infestations

Prophylaxis

Prophylactic measures that may be adopted in parasitic infections include the following

1. Therapeutic Prophylaxis: To attack the helminthes within the host thereby preventing the dissemination of the infecting agents.
2. Drug Prophylaxis: To prevent it's entry into it's natural host by destroying the infecting agent, while it exists free outside the human host. Further personal prophylaxis may be ensured by preventing the susceptible individual coming in contact with the infecting agents and adopting measures, so that even if there is any chance of infection, it may be quickly destroyed by it's specific drug therapy.
3. Eradication of the infection: to destroy the intermediary hosts, which are responsible for transmitting the infection, and to eradicate the infection from reservoir hosts, which are keeping up the infection. Measures may also be adopted where by the parasite will be unable to complete it's life cycle.
4. Preventing the susceptible individuals coming in contact with infecting agents may further ensure personal prophylaxis.

PROGNOSIS

Like all diseases in the human body, it is necessary in helminthic infections to form an opinion as to the probable course of the disease process, whether it will end in spontaneous

recovery, with prolonged recovery, with prolonged convalescence, endanger life or lead to chronic invalidism.

Further, it is to be noted that supervening of complications and secondary infections often alters the prognosis of the case.

Table: 3 Drugs commonly employed in Helminthiasis

Sl. No.	Infestation	Drug of choice	Other drugs used
1.	Taeniasis	Meparine ,Niclosamide	Chloroquine, Paromomycin, Dichlorophen
2.	Amoebiasis	Dilodohydroxyquin, Glycobiarsol, Droxyquin, Paramycin	Metronidazole, Tetracycline
3.	Giardiasis	Metranidazole, Furazolidine, Tinidazole, Quinacrine	Albendazole
4.	Ascariasis	Piperazine, Tetramisole	Pyrantel, Bephenium
5.	Ancylostomiasis	Tetrachlorethylene, Bephenium	Mebendazole, Tetramisole, Bitoscanate
6.	Oxyuriasis	Pyrantel pamoate, Mebandazole, Viprinium	Albendazole Piperazine
7.	H. Nana	Niclosamide	Paromomycin, Mepaerine, Dichlorophen

CONCLUSION

Knowledge of Krimis was present since vedic periods and our acharyas have described them in details. An inference can be drawn from the description of Shleshmaja and Purishaja Krimi i.e. perhaps the Shleshmaja Krimis are the migrating larvae of nematodes and also parasites present in upper gastro intestinal tract, and Purishaja Krimis are the intestinal parasites in general. On the basis of habitat and signs and symptoms produced, intestinal parasites can be correlated with Kaphaja and Purishaja Krimi as mentioned Kaphaja krimi - *G. lamblia*; *A. Duodenale* & *A. lumbricoides* while Purishaja Krimi - *E. histolytica*, *E coli* & *E. vermicularis*. Management told by our acharyas are still been used in modern era and are highly applicable.

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