

SIGNIFICANCE OF AYURVEDIC TREATMENT PROTOCOL OF KRIMI IN PRESENT ERA

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ABSTRACT

Introduction: Worm infestations is one among the hurdles in child development. More than 1.5 billion people, or 24% of the world's population, are infected with soil-transmitted helminth infections worldwide. The majority of the Ayurvedic texts has described the Krimi Chikitsa in detail which has its own uniqueness and is applicable and significant in present era too. **Aim:** To illustrate significance of Ayurvedic concept of Krimi Chikitsa. **Material and methods:** Classical texts along with available commentaries, other literature related to the subject, research papers, and material available on websites have been referred as material and critically analyzed. **Observation & Discussion:** Contemporary Science has only one protocol i.e. anthelmintic medicines for the treatment of worm infestation, whereas Ayurveda has described Chikitsa in depth, including Prakritivighata (creation an unfavorable environment) as one of the important aspect which is missing part in contemporary medicine. The principle of management for Krimi has been found to be very effective to treat most of the types of worm infestations of present era. Due to its specialty like Prakritivighata and Nidan Parivarjana, the treatment protocol of Ayurveda for worm infestations has long lasting effect and more cost effective. **Conclusion:** Ayurveda have more logical, ecofriendly, cost effective and long lasting treatment for Krimi.

Key Words: Krimi, Apakarshana, Prakruti-Vighata

Introduction:

The Krimis have been considered a major public health problem throughout the world. Its eradication becomes difficult as people continue to harbor Krimis without seeking medical help. According to WHO, more than 1.5 billion people, or 24% of the world's population, are infected with soil-transmitted helminth infections worldwide. [2] Infections are widely distributed in tropical and subtropical areas, with the greatest numbers occurring Sub-Saharan Africa, the Americas, China and East Asia. Over 267 million preschool age children and over 568 million school age children live in areas where these parasites are intensively transmitted and are in need of treatment and preventive interventions [1]. Prevalence of STH infections in 19 states of India that covers nearly 84% India's population, clearly identifying regions of high prevalence which requires focused efforts of mass deworming to reduce parasite load. [3] Uttarakhand, Uttar-Pradesh,

Jharkhand, Manipur, Maharashtra and Pondicherry reported a prevalence higher than 20%, less than 20% prevalence was reported from another 7 states of Delhi, Himachal Pradesh, Chandigarh, Madhya Pradesh, Rajasthan, Gujarat and Karnataka ^[4].

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 defense. Even though infection can occur at any age, the highest rate is in preschool or early school-age children. These infections cause morbidity and mortality along with other manifestations like iron deficiency anaemia, growth retardation in children and other physical and health problem ^[3]. In addition to their health effects, an intestinal helminthic infection impairs cognition in children and hinders economic development ^[4-7].

Ayurveda classics have described Nidana (etiological factors), Prakaras (types), Lakshana (sign & symptoms) and Chikitsa (treatment) of Krimi in detail, which includes almost all types of worm's infestation of present day.

Treatment like Apakarshana (elimination therapy), Prakruti-Vighata (to create an unfavorable environment) and Nidana-Parivarjana (avoiding the etiology) is found to be very effective to treat Krimi in Ayurveda. In spite of this it is more economical, painless treatment with no or minimum side effects.

Aim and Objective: To illustrate significance of Ayurvedic concept of Krimi Chikitsa.

Material and methods: Classical texts along with available commentaries, other literature related to the subject, research papers, and material available on websites have been referred as material and critically analyzed.

Observation:

In Samhita period there is ample description regarding Nidana, Bheda, Lakshana and Chikitsa of Krimi. Acharya Charaka explained Krimiroga based on Hetvadi-saptakagana (seven specific aspects) ^[8]. It is said that Krimi is itself one of the cause for Kushtha (various skin diseases), Pandu (pallor/anemia), Grahani (disorder of lower GIT), Karshyata (malnutrition), etc. The intestinal worms affects children as well as adult, but more common in children. Because at present, today in the community, people are mostly favored non veg diet, fast food, milk & butter product, sweet product, faulty prepared food or fermented food and all these factors aggregate in outcome of Krimiroga.

Origin of Krimi: According to Acharya Charaka, Kleda (moistness) in the body is one of the factors for the production of Krimi ^[9].

Classification of Krimi: 20 varieties of Krimis that have been illustrated are broadly classified into Bahya (external) and Abhyantara (internal) Krimi. The total number and divisions of Krimi according to different Acharyas shown in the table No. 1.

Name of Achryas	Bahya Krimi	Abhyantara Krimi			Total
		Kaphaja	Purishaja	Raktaja	
Charaka ^[10]	2	7	5	6	20
Sushruta ^[11]		6	7	7	20
Vagabhata ^[12]	2	7	5	6	20
Madhavakara ^[13]	2	7	5	6	20
Sarangadhara ^[14]	2	7	5	6	20
Bhavaprakash ^[15]	2	7	5	6	20

[Table No. 1: The total number and divisions of Krimi]

Sign & Symptoms: Sign & Symptoms of Bahya Krimi are Kandu (itching), Kotha (putrefaction), Pidika (eruption) and Ganda (nodular swelling) while for the Abhyantara Krimi various sign and symptoms according to the types of Krimi as per different Acharyas has been shown in the table No. 2.

Samanya Lakshana (general features) ^[16]	Vishesa Lakshana (specific features) ^[17-23]		
	Sleshmaja Krimi	Purishaja Krimi	Raktaja Krimi
Jwara (fever)	Hrillasa (nausea)	Purisha bheda	Raktaja vyadhi
Vivarnata (skin discoloration)	Asyasamshrawana	Karshya (emaciation)	Kesha smashru, nakha, loma, pakshma dwamsa (loss of body hairs)
Shoola (pain)	Avipaka (indigestion)	Lomaharsha (horripilation)	Harsha
Hidroga (cardiac troubles)	Jwara (fever)	Parushya	Kandu (itching)
Bhrama (vertigo)	Arochaka (anorexia)	Guda-vinirgamana	Toda (pricking pain)
Bhaktadwesa (aversion to food)	Murchha (vertigo)	Guda kandu (itching in anus)	Samsarpana
Atisara (diarrhea)	Jrimbha (yawning)	Shoola (pain)	Twak, Sira, Snayu, Mamsa, Tarunasthi bhaksanam
Sadana (lassitude)	Kshavathu (sneezing)	Agni sada (diminished digestive fire)	
Vami (vomiting)	Anaha (flatulence)	Pandu (anemia)	
Jatharagarjanam	Angamarda (bodyache)	Vishtambha	
Mandagni (diminution of Agni)	Chhardi (vomiting)	Bala kshaya (weakness)	

Pipasa (thirst)	Karshya (emaciation)	Praseka (nausea)	
Pitanetra (yellowish eyes)	Parushya (dryness)	Aruchi (anorexia)	
	Kasa (coughing)	Hridroga (cardiac troubles)	
	Pinasa (rhinitis)		
	Shoola (pain)		
	Shwayathu (swelling)		
	Hridroga		
	Majjadan		
	Pratishyaya (rhinitis)		
	Shiroroga		
	NetraTalu shrotra Bhunjaha		

[Table No. 2: Sign & Symptoms of Abhyantara Krimi]

Ancient description of Krimi has been correlated with various microorganisms and parasites by some scholars based on the description and symptomatology. Table no.3 shows such type of correlation of Krimis^[24] according to different research articles.

Krimi	Infectious Organism	Name
Raktaja Krimi	Bacteria	Staphylococcus, Streptococcus Pyogens, Beta Streptococcus Haemolyticus
	Fungi	Epidermophytes, Candida albicans, Tinea corporis, Tinea imbricata, Tinea cruris, Tinea barbae, Tinea capitis, Favus
	Parasites	Plasmodium, Trypanosomes, Wuchereria
Kaphaja Krimi	Parasites	Ancylostoma duodenale, Taenia solium and Taenia saginata, Trichinella spiralis, Ascaris lumbricoides
Purishaja Krimi	Bacteria	Vibrio cholera, E.coli, Salmonella, Shigella
	Virus	Rota virus, Astro virus, Adeno virus, Norwalk virus
	Fungi	Candida albicans
	Parasites	Trichuris trichiura, Enterobius vermicularis, Giardia lamblia, Balantidium coli

[Table No. 3: Correlation of Krimi with modern microorganism]

Treatment Principle: Acharya Charaka has put forth the basic principles in the treatment of Krimi in the Vyadhitarupeeya Adhyaya of Vimanasthana. Sequential adoption of the three modes of

treatment has been stated which are: 1) Apakarshana, 2) Prakruti-Vighata and 3) Nidana-Parivarjana ^[25].

In Kashyapa Samhita, Acharya said that Dravyas having properties of Tikta, Ushna, Katu and Ruksha and Snehana – Swedana are Pathya for children in Krimi ^[26].

Discussion:

- 1) Apakarshana: The word Apakarshana means to scratch the Krimisanghata (accumulation) forcefully. These can be done by 2 different ways: (1) Visible Krimi are to be manually extracted by bare hands or by appropriate instrument (like Sandamsha Yantra i.e. forcep etc.) (2) The Krimis which are located in the body, should be driven off with the help of Bheshaja i.e. treatment. This Bheshaja Apakarshana (therapeutic elimination) is carried out briefly in the following four ways.
 1. Shirovirechana (by nasal application of drugs)
 2. Vamana (by emesis therapy)
 3. Virechana (by purgation therapy)
 4. Asthapana (by enema therapy)
- 2) Prakruti-Vighata: After doing Samshodhana (with the help of Apakarshana), the Doshas, Malasanghata and Krimis are no doubt, eliminated out of the body but their Prakriti (internal environment) should be removed any way that there will no rebirth of worms. As mentioned earlier, Krimi's origin is Kleda, so the environment which is favorable for the Krimi (Kleda, Kapha, Purisha yukta) should be removed. Likewise Puddles (water filled pit) can be repaired by filling soil in it, so that insects and other worms does not sustain in it. In the same way as per Loka-Purusha Samya Siddhanta ^[27], Dravyas which possess the opposite properties i.e. Katu – Tikta – Kashaya – Ushna – Kshara Dravyas should be used to stop or reduce the growth of the Krimi.
- 3) Nidana-Parivarjana: Avoidance and or elimination of cause or causes, which help in germinating and developing the Krimi. It is most useful from three points.
 - I. It may cut off the necessity of medicine.
 - II. Extra-contaminated intake is prohibited.
 - III. Helps to treat the patient and relieve him early.

According to the Swabhavoparama-Vada of Charaka Samhita ^[28], if we cut off the supply which give nourishment to the Krimi, Prakritivighata and Nidana-parivarjana balance the Dosha and Dhātu of the body, eliminates the excess Kleda and thus removes the environment for the breeding of the Krimis and stop rebirth of Krimi.

For the purpose of Prakriti Vighata and Apakarshana a long list of medications are available in all the texts of Ayurveda. 129 Dravyas were described for the treatment of the Krimi in Bhavaprakasha Nighantu which includes herbal, mineral and animal origin Dravyas ^[29]. Among all the Krimighna Dravyas like Akshiva (*Moringa pterygosperma*), Maricha (*Piper nigrum*), Gandira (*Acacia catechu*), etc. described in Krimighna Mahakashaya ^[30] of Charaka Samhita, maximum drugs have Katu, Tikta and Kashaya Rasa, Laghu, Ruksha and Tikshna Guna, Katu

Vipaka and Ushna Veerya. All these properties are opposite with the Guna of Kapha. Acharya Charaka also described Katu rasa as क्रिमिन हिनस्ति^[31], Tikta rasa is Krimighna^[32], and Katu, Tikta and Kashaya rasa are Kleda Shoshaka and Kaphahara^[33]. Ushna virya is VataKaphahara and Gunas like Laghu, Ruksha, Tikshna also subside the Dushta Kapha. The presence of Katu Rasa and Vipaka helps in Deepana and Pachana (Ama Pachana) property and also in Shrotoshodhana.

- Gokshura (*Tribulus terrestris*): It has Madhura Rasa, Guru Snigdha Guna, Sheeta Veerya and Madhura Vipaka, but it having the property of Mutrala. According to Acharya Vagbhata, Mutra's Karma is Kleda-vahana^[34]. Thus by the form of Mutra, Gokshura removes excessive Kleda from the body and thus it does the Prakritivighata.
- Likewise other drugs of Krimighna Dashemani, Ajamoda (*Trachyspermum ammi*), Maricha (*Piper nigrum*) and Vasa (*Adhatoda justica*) having all the properties and additionally they are having the Mootrajanana property also. Vasa is also Kapha-Nisaraka. So they does Prakritivighata.
- Kampillaka (*Mallotus philippinensis* Muel), Shigru (*Moringa pterygosperma*) and Palasha (*Butea monosperma*) Beeja Churna having properties like Katu Tikta rasa, Ushana virya, Katu vipaka, laghu, ruksha, tikshana guna, which are opposite with the guna of kapha and thus works as kapha-vata shamaka. Shigru is viscous & sweet and so it is purgative. Kampillaka has rechaka properties thus corrects srotodusti. Acharya Bhavamishra and Dhanvantri Nighantu mentioned Kampillaka as Krimi Nasaka. Palasha-Beeja is also drastic purgative and Krimihara. Thus they works as Apakarshana as well as Prakritivighata also.
- Tambula (*Piper betle*): Acharya Kashyapa described it as Krimighna^[35]. It acts as Sleshmahara, Krimighna and Kandu-mala-kleda nashana.

Conclusion: In children Apakarshana is not useful in all the conditions. Thus the Drug which does Prakritivighata along with Apakarshana are more beneficial. Thus Ayurveda have more logical, ecofriendly, cost effective and long lasting treatment for Krimi.

References:

1. WHO, Soil-transmitted helminthic infections, Available from: <http://www.who.int/news-room/fact-sheets/detail/soil-trnsmitted-helminth-infections>
2. Ibid WHO, Soil-transmitted helminthic infections, Available from: <http://www.who.int/news-room/fact-sheets/detail/soil-trnsmitted-helminth-infections>
3. Nasir Salam and Sau Azam et al, Prevalence and distribution of soil-transmitted helminth infections in India. BMC Public health (2017) 17:201
4. Ibid Nasir Salam and Sau Azam et al, Prevalence and distribution of soil-transmitted helminth infections in India. BMC Public health (2017) 17:201
5. World Health Organization, Control of Tropical Diseases. Geneva, Switzerland: WHO; 1998.
6. Hotez PJ, Fenwick A, Savioli L, Molyneux DH, Rescuing the bottom billion through control of neglected tropical diseases, Lancet 373, (2009), 1570-1575.
7. Grantham-Mc, Gregor SM. Assessments of the effects of nutrition on mental development and behavior in Jamaican studies, Am J ClinNutr 57, (1993), 303-309.
8. Hotez P, Hookworm and poverty, Ann NY AcadSci 1136, (2008), 38-44.

9. Ault SK, Intersectoral approaches to neglected diseases, Ann NY AcadSci 1136, (2008), 64-69.
10. Acharya YT, editor. Charakasamhita of Agnivesha, Vimana Sthana. Reprint edition. 7/31, Varanasi: Chaukhamba Orientalia; 2014, pg-261
11. Acharya YT, editor. Charakasamhita of Agnivesha, Sutra Sthana. Reprint edition. 17/38, Varanasi: Chaukhamba Orientalia; 2014, pg-100
12. Acharya YT, editor. Charakasamhita of Agnivesha, Vimana Sthana. Reprint edition. 7/9, Varanasi: Chaukhamba Orientalia; 2014, pg-258
13. Acharya YT, Acharya NR. Sushruta Samhita of Sushruta. Reprint edition , Uttara Tantra 54/7, Varanasi: Chaukhamba Orientalia, 2016, pg-773
14. Pt. Hari S. S. Paradakara, editor. Ashtanga Hriday of Vagbhatta with Sarvanga Sundara commentary of Arundutta and Ayurveda Rasayana of Hemadri. Nidana sthana, 14/43 Chaukhambha Orientalia, Varanasi, 2014, pg-528
15. Tripathy BN. Madhava Nidanam (Roga Viniscaya, Madhukosa). Vol-I. Varanasi: Chaukhamba Surbharati Prakashan; 2014. P. 300, 304-306.
16. Pandey DS. Sharangadhara Samhita (Purvakhanda). Varanasi: Chukhamba Sanskrit Series Office. 1966. P.71.
17. Mishra BS. Bhavaprakash (Chikitsa Prakaranam). Vol- II. Varanasi: Chaukhamba Sanskrit Sansthan; 2003. P. 94, 95, 96.
18. Acharya YT, Acharya NR. Sushruta Samhita of Sushruta. Reprint edition , Uttara Tantra 54/18, Varanasi: Chaukhamba Orientalia, 2016, pg-773
19. Acharya YT, editor. Charakasamhita of Agnivesha, Vimana Sthana. Reprint edition. 7/11-13, Varanasi: Chaukhamba Orientalia; 2014, pg-258
20. Acharya YT, Acharya NR. Sushruta Samhita of Sushruta. Reprint edition , Uttara Tantra 54/10,1416, Varanasi: Chaukhamba Orientalia, 2016, pg-773
21. Kaviraj AG, editor. Ashtanga Samgraha of Vriddha Vagbhata, Nidana Sthana Reprint edition. 15/52, 54, 58 Varanasi: Chaukhambha Sanskrit Series Office; 2016, pg-398-399
22. Pt. Hariprasda Tripathi, Harita Samhita with 'Hari' hindi tika, Second part, 5/235, Chaukhambha Krishnasas Academy, Varanasi, 2nd edition, 2009, pg- 235
23. Acharya YT editor, Madhava Nidana with Madhukosha and Atankadarpana Tika, 7/10,12,16, Reprint eddition Varanasi: Chaukhamba Orientalia; 2009, pg-200
24. Pt. Brahmasankara Mishra editor, Bhavaprakasha of Aacharya Bhavamishra with Vidyotiny Hindi commentary, Uttarardha, 7/11-14-19, Chaukhambha Sanskrit Bhavana, Reprint edition, 2018, pg-96-97
25. Dr. Nirma Saxena, Chikitsa Sara Sangraha of Vangasena, Vol-1,11/11-13-17, Varanasi: Chukhamba Sanskrit Series Office 2008, pg-239
26. Banashree Jena1, et al, a review article on krimi with contemporary assessment. IJAPR 2018;6(9):71-75.
27. Acharya YT, editor. Charakasamhita of Agnivesha, Vimana Sthana. Reprint edition. 7/15, Varanasi: Chaukhamba Orientalia; 2014, pg-258
28. Pandita Hemaraja Sharma, Kashyapa Samhita of Vriddha Jivaka, Chikitsa Sthana, Reprint edition. Varanasi: Chaukhamba Sanskrit Sansthan; 2015, pg-201
29. Acharya YT, editor. Charakasamhita of Agnivesha, Sharira Sthana. Reprint edition. 5/3, Varanasi: Chaukhamba Orientalia; 2014, pg-325
30. Acharya YT, editor. Charakasamhita of Agnivesha, Sutra Sthana. Reprint edition. 16/27, Varanasi: Chaukhamba Orientalia; 2014, pg-97
31. Pooja Modha, et al, Anthelmic (Krimighna) drugs of Bhavaprakasha Nighantu: A literary review.ejbps, 2018, Volume 5, Issue 2, 1219-1226.
32. Acharya YT, editor. Charakasamhita of Agnivesha, Sutra Sthana. Reprint edition. 4/11, Varanasi: Chaukhamba Orientalia; 2014, pg-33
33. Acharya YT, editor. Charakasamhita of Agnivesha, Sutra Sthana. Reprint edition. 26/42, Varanasi: Chaukhamba Orientalia; 2014, pg-144
34. Acharya YT, editor. Charakasamhita of Agnivesha, Sutra Sthana. Reprint edition. 26/42, Varanasi: Chaukhamba Orientalia; 2014, pg-144

35. Acharya YT, editor. Charakasamhita of Agnivesha, Sutra Sthana. Reprint edition. 26/42, Varanasi: Chaukhamba Orientalia; 2014, pg-144
36. Pt. Hari S. S. Paradakara, editor. Ashtanga Hriday of Vagbhatta with Sarvanga Sundara commentary of Arundutta and Ayurveda Rasayana of Hemadri. Sutra sthana, 11/5 Chaukhambha Orientalia, Varanasi, 2014, pg-183
37. Pandita Hemaraja Sharma, Kashyapa Samhita of Vriddha Jivaka, Chikitsa Sthana, Reprint edition. Varanasi: Chaukhamba Sanskrit Sansthan; 2015, pg-201