

A REVIEW ON THE MANAGEMENT OF PUREESHAJA KRIMI (ASCARIS LUMBRICOIDES)

Babu Amal P¹, Shailaja U²

¹Assistant Professor, Dept. of Kaumara Bhurutya, Pankaja Kasturi Ayurveda College & Hospital, Kerala, India

²Professor, Dept. of Kaumara Bhurutya, SDM College of Ayurveda & Hospital, Hassan, Karnataka, India

ABSTRACT

Helminthiasis is one of the most common paediatric problem faced world-wide especially in tropical and sub-tropical geographical area. Recent global estimates indicate that more than a quarter of the world's population are infected with one or more of the parasitic infections, the most common being round worm – *Ascaris Lumbricoides*. Poverty, ignorance, lack of hygiene, poor sanitation and use of uncooked food or improper washing of food materials etc are the common aetiologies for the spread of helminthiasis in developing countries like India. The *Ayurvedic* perspective of worms is discussed under the topic of *Krimi* and helminthiasis specifically can be correlated to the *Pureeshaja* type of *Krimi*.

While the treatment protocols for worm infestations in modern medicine widely uses medicines like Mebendazole, Albendazole and Levamisole; the treatment approach in *Ayurveda* is quite unique from the latter's principle. The management approach in *Ayurveda* involves three stages namely *Apakarshana* (elimination therapy), *Prakruti Vighata* (to create an unfavourable environment) and *Nidana Parivarjana* (avoiding the aetiology). Many research studies have been taken up in view of the above treatment principle. Hence this article lays out the understanding of *Pureeshaja Krimi*, its correlation with *Ascaris lumbricoides*. The article also discusses regarding its management through the principles of *Ayurveda* and cites a few research studies that have been carried out by such protocols. This article hereby concludes that a comprehensive management through *Ayurveda* by the use of purificatory measures, pharmacological compounds and preventive measures can effectively treat *Krimi Roga*.

Keywords: *Krimi*, Helminthiasis, *Pureeshaja Krimi*, *Ascaris lumbricoides*

INTRODUCTION

Health education and awareness is a boon to the society. But there still exists a class of population who are victims of parasitic infestations that is ruining their health. The actual prevalence rate however cannot be figured out as they either remain undiagnosed or may not be reported at all. There are always two sides of a coin; despite medical advancement, ignorance, poverty and lack of basic hygiene still con-

tinues to take away many lives. With the rising morbidity especially in the pediatric age group, it is required to be acquainted with the knowledge on the present etiopathological status of intestinal helminths.

Although the subject of microbiology viz. *Agada Tantra* has been given a status amongst the *Ashtanga Ayurveda*¹ nevertheless this branch has not much

been explored and established in comparison with the modern science. Kaviraj Gananath Sen in the preface of his book “*Siddhanta Nidana*” has mentioned the necessity of knowledge of micro-organisms to fulfill objects like: *Satya Anaveshanartha* (to know the truth), *Sankraman Avaarnartha* (to check the spread of the diseases), *Chikitsa Vishesha Abhyupgamanartha* (to plan and find out special and new treatments), and lastly regarding its interpretations in *Pradurbhoota Kechan Navin Rogah* (to study certain newly occurring diseases). It is the need of the hour to add up to the areas of lacunae mandatory for the propagation of the science. Hence this paper reviews on the concept of *Krimi* especially with regard to *Pureeshaja Krimi*, its correlation with *Ascaris lumbricoides* and also its management protocol in *Ayurveda*. For this reason an effort has been taken to re-understand the concept of *Krimi*, its correlation and effective management through citing references from reliable sources such as - classical texts on ayurveda which includes the *Charaka Samhita*, *Susruta Samhita*, *Kashyapa Samhita*; various *vedic* texts citing *Krimi* and also a few research studies that have used *Ayurvedic* compounds for treatment of the same.

Introduction to *Krimi*: “*Krinathi himsathi ithi Krimi*”²: Although the colloquial meaning of *Krimi* refers to worms, by etymology it is defined as the one which causes sufferings. Even from the Vedas references have been cited regarding *Krimi*^{3,4} as those of them that causes ill-health, disease and even death. However the concept of interpreting the *Graha Rogas* as to infectious diseases caused by pathogenic micro-organisms is still a matter of debate. On interpreting the term *Krimi Roga*, besides incorporating the affliction by micro or macro organ-

isms, it can also include under it the afflictions by other *Agantuja Karana*⁵ like *Rakshasas*, *Pishacha*, *Gandarvas* through its etymological meaning.⁶ *Acharyas* like *Charaka*⁷, *Susruta*⁸, *Vagbhata*⁹ and even the contemporary authors have given a systematic description of *Krimi rogas* including their classification, causative factors, general description, signs and symptoms, treatment and preventive measures. When analyzed, these descriptions are more or less at par with the modern Helminthology.

20 varieties of *Krimis* that have been illustrated are broadly classified into *Bahya* (external) and *Abhyantara Krimi* (internal)¹⁰. Among them, *Pureeshaja Krimi* falls under the latter division.¹¹

Samanya Krimi Nidana¹²: (Common aetiology): *Nidana* refers to the causative factors which can be broadly divided into *Ahara Sambandi Nidana* (food-related) and *Vihara Sambandi Nidana* (activity-related). *Ahara Sambandi*: Milk, jaggery, sesamum, fish, meat or and other products that cause *Kapha Utklesham*, besides, also includes the food which are unctuous, sweet, heavy, cold items etc.

*Vihara Sambandi*¹³: *Divaswapna* (day sleep), *Asana & Avyayama* (prolonged sitting which indirectly indicates lack of exercise)

Krimi Lakshana (Symptomatology): On the prodromal features only *Ajeerna* (indigestion) and *Angnimandhya* (loss of digestive power) have been mentioned. In clinical signs and symptoms of *Abhyantara Krimi*, *Acharya Susruta* and *Mada-vakara* have mentioned – *Jwara* (fever), *Vivarnata* (discolouration), *Shoola* (pain), *Hridroga* (diseases of the heart), *Bhrama* (giddiness), *Bhaktadwesa* (disinterest towards food), *Atisara* (diarrhoea), *Sadana* (tiredness), *Chardi* (vomitting) and *Swasa* (breathlessness).¹⁴ Apart from all those

Acharya Charaka has quoted about some *Visheshha Roopas* (specific signs) such as *Purishabheda* (unformed stools), *Karshya* (emaciation), *Lomaharsha* (cutis anserina) etc.¹⁵

Krimi Samanya Chikitsa (General line of treatment): *Acharya Charaka* has put forth the basic principle in the treatment of *Krimi* in the *Vyadhita rupiya adhyaya* of *Vimana Sthana*.¹¹ Sequential adoption of the three modes of treatment has been stated which are¹⁶⁾

1. *Apakarshana*
2. *Prakruti Vighata*
3. *Nidana Parivarjana*

Apakarshana

As the name indicates it refers to the extraction of the *Krimi*, by two different ways.

I. *Hasta / Yantra* (manual extraction) – visible *Krimi* are to be manually extracted by bare hand or by *Yantra* (instruments like *sandamsha* etc).

II. *Bhesaja Apakarshana* (therapeutic extraction) -

Under the above is included the various *Shodhana* (purificatory therapies) that are to be carried out sequentially on the same day for the forceful expulsion of the *Krimi*-

- a. *Vamana* (emesis)
- b. *Virechana* (purgation)
- c. *Asthapana basti* (cleansing enema)
- d. *Shiro Virechana* (errhines)

Prakruti Vighata: It refers to creating an unfavourable environment or a medium which is exactly opposite to the habitat of the infested region (intestinal lumen). This is accomplished by the use of drugs possessing qualities such as *Katu* (pungent), *Tikta* (bitter), *Kashaya* (astringent), *Kshara* (caustic alkalies) and *Usna* (hot). These are advised in all aspects of the patient daily activities i.e. in food, drinks, for washing etc. With regard

to the pharmacological action, drugs possessing *krimigna* (anti-microbial) property have been enumerated like *Maricha* (*Piper nigrum*), *Gandira* (*Amorphophallus campanulatus*), *Vidanga* (*Embelia ribes*) etc.¹⁷ Additionally various classical formulations with *Danti* (*Baliospermum montanum*) and *Dravanti* (*Chlorophytum tuberosum*), *tilvaka* (*Viburnum nervosum*) and *udallaka* (*Bauhinia variegata*) in *tilvaka* (*Viburnum nervosum*) *kashaya* etc have also been mentioned.¹⁸

Nidana Parivarjana : Along with the termination of worms and therapeutic administration, avoidance of causative factors has also been emphasized in *Ayurveda*. This includes avoidance of non-compatible food, polluted food, non-accustomed food, undigested food and all other factors like milk etc that have been stated earlier. Although the above have been stated on the curative lines, the observance of *Nidana Parivarjana* can also be understood in the lines of prevention. It is in the principle of *Nidana Parivarjana* where *Ayurveda* is distinct in its approach to *Krimi*; thus giving scope for both cure and prevention.

Helminthiasis: Helminthiasis is the most common paediatric complaint worldwide. Recent studies shows incidence of worm infestation is about 200 million in India¹⁹.

The word HELMINTH is derived from the Greek word Helmin meaning worms and which specifically refer to intestinal worms. The parasites helminthis are multi cellular, bilaterally symmetrical organisms having 3 germ layers. The higher animals including human beings serve as hosts for these parasites and their nutritional requirements. Hence helminthology refers to study of worms which are pathogenic and which inhabit the human body. The history of contemporary medi-

cine has also documented the knowledge regarding micro organisms even before the invention of microscope by Antor Levan Hook (1632-1723). This is well evident from the oldest Egyptian manuscripts (1500 BC) - Ebus papyrus which has documented regarding the awareness of worm infestations. Hippocrates, the father of modern medicine has also described about beef tape worm and in addition has also recognized Hydatid worm/cyst causing Hydatid disease.²⁰

DISCUSSION

As stated earlier, helminthic infections especially Ascariasis caused by Round worm (*Ascaris Lumbricoides* -) is a common manifestation. With the knowledge of worms from both the systems of medicine, *Pureeshaja Krimi* and its affliction can be co-related to Ascariasis and *Ascaris lumbricoides* as they share a lot of similarities. Some of them are explained below:

I. *Sthana* (Site): *Pakvashaya* which is stated as the *Sthana* for *Pureeshaja Krimi*, is considered as a part of intestine between Ileocecal junction and sigmoid colon. According to the modern parasitology, organisms like *Ascaris lumbricoides* (round worms), hook worm etc also dwell in the same vicinity.

II. *Akruty* (Shape): *Pureeshaja Krimi* has been described as *Sookshma* (minute), *Vritha* (round), *Deergha* (long), *Sthoola* (big), *Prithavapucksa* (flat tail) and *Tanu* (thin)²¹. On the other hand *Ascaris lumbricoides* has also been identified to be a round, elongated worm measuring from 15-30cm in males and 20-40cm in females with curved proximities and the tail end being elongated and flat.

III. *Varna* (color): *Pureeshaja Krimi* is mentioned to possess colours like *Shweta* (white), *Shyava* (pale), *Neela* (blue),

Harita (green), *Peeta* (yellow).²¹ Nonetheless, ascaris worms are also pinkish white in colour and occasionally yellowish too. Hence with the above substantiation it can be assumed that *Ascaris lumbricoides* can be considered as a type of *Pureeshaja Krimi*. *Pureeshaja Krimi* are further sub-classified as per *Charaka* as *Kakeruka* – highly motile, *Makeruka* – shape of *Mudrika*, *Sausrada*- shelters on fermented materials, *Leliha*- continuously licks/feeds and consume *Dhatus* (seven tissue elements of the body), *Sashoolika* - causing pain in the host.²¹ Regarding Ayurvedic management, various researches have been conducted with *Ayurvedic* compounds for treatment of the same. Below are listed a few research studies:

1. Studies on efficacy of aqueous and methanol extracts of some medicinal plants for potential antibacterial activity. Jigna Parekh et al, Department of Biosciences, Saurashtra University, Rajkot.²²
2. Clinical management of *Pureeshaja Krimi* in children with *Palasha Beeja Choorna* by Dr. Manjunath MP 2004-05
3. A study of *Sanjeevani guti* in treatment of *Kaphaja* and *Pureeshaja Krimi* as *Prakruthy Vighatha Chikitsa* by Humbaardikar DB pune 1995
4. Effect of *Matra Basti* of *Karanja Taila* in *Pureeshaja Krimi* by Kartikar CV 1993 Lucknow.
5. Dash Durgaprasad (2001) treatment of *Krimi Roga* with the extract of *Hyosyamus niger* Linn- Puri.²³

These studies have thus revealed the efficacy of *Ayurvedic* compounds in the treatment of *Pureeshaja Krimi* vis-à-vis *Ascaris lumbricoides*. Owing to the successful management of *Krimi* on the basis of *Ayurvedic* approach various research studies are thus being carried out to validate the same.

Chemotherapy is currently the major tool²⁴ used for the strategic control of Ascariasis however it is only a short-term goal. Nonetheless, preventive measures such as improvements in hygiene and sanitation are thought to considerably aid as a long-term control.²⁵ This aspect has been well stressed in *Ayurveda* under the name of *Nidana Parivarjana* which is one among the treatment protocol. It has been evident that poor socio-economic conditions are among the key factors linked with higher prevalence of Ascariasis, as are defecation practices, geophagia, cultural differences relating to personal and food hygiene, occupational necessity, agricultural factors, housing style, social class and gender. Although the text mentions only of diet modifications, in the present context the concept of *Nidana Parivarjana* can also be extended to external hygiene etc which has been the key factor in causing this disease. Under the above measures the careful adoption of diet and food habits as mentioned in *Ayurveda* certainly has a big role in the prevention of the same.

CONCLUSION

Ascariasis has known to be a problem of concern especially in the developing countries like India. It owes its existence to unhygienic and poor sanitary care. The knowledge of *Krimi* has been well known and comprehended even at the earliest times of the *Vedic* period. Explicit explanation regarding the same is also evident in the context of *Ayurveda*. This paper has thus attempted to interpret the aspect of *Pureeshaja Krimi* with *Ascaris lumbricoides*. Various studies regarding the management of *Pureeshaja Krimi* with *Ayurvedic* compounds have also been cited. Both *Ayurveda* and contemporary medicine have stressed on preventive measures as a major aspect of its treatment

protocol. In the grounds of curative measures, *Ayurveda* also identifies the implementation of several eliminatory or purificatory measures in completely evacuating the micro organism from the body. Hence a comprehensive management with purificatory measures, pharmacological compounds and preventive measures effectively treats *Pureeshaja Krimi* vis-a-vis *Ascaris lumbricoides*.

REFERENCES

1. Vaidya YT, editor. Charaka Samhita by Agnivesha, Sutra Sthana; Arthedashamahamuliyam Adhyayam: Chapter 30/28. Varanasi: Chaukhambha Prakashan, Reprint 2009; p.189.
2. Radha kantadev. Shabdhakalpadruma. Varanasi: Chaukhambha Sanskrit Series Office, 3rd ed, Vol I, 1967; 178
3. R. K. Jakhmola. Micro-organisms in Vedas. [Serial in the internet]. [cited 22 oct 2013]
4. Devanathan. R1, Gopinath. V2 and Brindha. P. Ayurvedic concepts in Vedas. [Serial in the internet]. [cited 22 oct 2013]
5. Vaidya YT, editor. Charaka Samhita by Agnivesha, Sutra Sthana; Trishothiyam Adhyayam: Chapter 18, Verse 4. Varanasi: Chaukhambha Prakashan, Reprint 2009; p.106.
6. Ayurveda in the rig veda. [Homepage in the internet]. [cited 22 oct 2013]
7. Vaidya YT, editor. Charaka Samhita by Agnivesha, Sutra Sthana; Aushtaudariyam Adhyayam: Chapter 19, Verse 4. Varanasi: Chaukhambha Prakashan, Reprint 2009; p.111.
8. Vaidya YT, editor. Sushruta Samhita of Sushruta; Uttara Tantram; Krimirogapratishtedham Adhyayam: Chapter 54, Verse 7. Varanasi: Chaukhambha

- Surbharati Prakashan, Reprint 2003; p.773.
9. Sharma Shivprasad (edi), Astangasangraha of Vriddha Vagbhata with Shashilekha Sanskrit commentary by Indu, 3rd ed. Nidana Sthana; Kriminidanam Adhyayam: Chapter 14, Verse 59. Varanasi: Chowkhamba Sanskrit series office; 2012. p.413.
10. Vaidya YT, editor. Charaka Samhita by Agnivesha, Vimana Sthana; Vyadharupiyam Adhyayam: Chapter 7, Verse 10. Varanasi: Chaukhamba Prakashan, Reprint 2009; p.258.
11. Ibid p.257
12. Vaidya YT, editor. Sushruta Samhita of Sushruta; Uttara Tantra; Krimirogapratishtadham Adhyayam: Chapter 54, Verse 3-6. Varanasi: Chaukhamba Surbharati Prakashan, Reprint 2003; p.772.
13. Tewari PV, editor. Kashyapa Samhita by Vriddha Jivaka, Chikita sthana; Krimichikitsita Adhyayam: Chapter 15, Verse 1-6. Varanasi: Chaukhamba Visvabharati, 2008; p.134.
14. Vaidya YT, editor. Sushruta Samhita of Sushruta, Uttara Tantra; Krimirogapratishtadham Adhyayam: Chapter 54, Verse 18. Varanasi: Chaukhamba Surbharati Prakashan, Reprint 2003; p.773.
15. Vaidya YT, editor. Charaka Samhita by Agnivesha, Vimana Sthana; Vyadharupiyam Adhyayam: Chapter 7, Verse 13. Varanasi: Chaukhamba Prakashan, Reprint 2009; p.258.
16. Ibid Verse 28. p.261
17. Vaidya YT, editor. Charaka Samhita by Agnivesha, Sutra Sthana; Shadvirechanashatashritani Adhyayam: Chapter 4/11. Varanasi: Chaukhamba Prakashan, Reprint 2009; p.33.
18. Ibid Verse 26. p.261
19. Vinod Kumar CS, Anand Kumar H., Sunita V., Indu Kapu, Prevalence of worm infestations in school going girls, Indian Pediatrics 2003;40:p.70-72
20. Kliegman RM (edi), Nelson textbook of paediatrics, 18th Ed. New Delhi: Elsevier, a division of Reed Elsevier India private Limited; Reprint 2008. P.1155- 1160, 896-907, 1064-1081.
21. Vaidya YT, editor. Charaka Samhita by Agnivesha, Vimana Sthana; Vyadharupiyam Adhyayam: Chapter 7, Verse 13. Varanasi: Chaukhamba Prakashan, Reprint 2009; p.258.
22. Jigna Parekh et al, Studies on efficacy of aqueous and methanol extracts of some medicinal plants for potential antibacterial activity. Saurashtra University, Rajkot. [Serial in the internet]. [cited 22 oct 2013]
23. Dash Durgaprasad (2001) treatment of Krimi Roga with the extract of Hyosyamus niger Linn- Puri. [Serial in the internet]. [cited 22 oct 2013]
24. Massara C.L. Chemotherapy treatment options in the management of Ascaris lumbricoides. [serial in the internet]. [cited 22 oct 2013]
25. Sarinas P.S. Ascariasis and hookworm. Prevention → [serial in the internet]. [cited 22 oct 2013]

CORRESPONDING AUTHOR

Dr. Shailaja U

Head of the Department

Department of Kaumara Bhurutya,

SDM College of Ayurveda & Hospital,

Hassan, Karnataka, India

Email: rao.shaila@gmail.com

Source of support: Nil

Conflict of interest: None Declared