



## Insightful view on Infectious and Parasitic Diseases in Ayurveda

**Dr. Ramanand Tiwari<sup>1</sup>, Dr. Parameswarappa S. Byadgi<sup>2</sup>,  
Dr. Arunima P S<sup>3</sup> Dr Monika Agarwal<sup>4</sup>**

<sup>1</sup>Associate Professor, Department of Vikriti Vigyan, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

<sup>2</sup>Professor & Former Head, Department of Vikriti Vigyan, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

<sup>3</sup>Junior Resident, Department of Vikriti Vigyan, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

<sup>4</sup>Ayurvedic Medical Officer, Sandila, Pratapgarh, Government of Uttar Pradesh

**Corresponding author-** Dr. Arunima P S

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### ABSTRACT

Traditional medical holistic approach was well described systematically in Ayurveda for preservation of health and curative measures for disease along with rejuvenative and aphrodisiac therapeutics. The elaborative illustrated description on Krimi was methodically explained in respect to origin, causative factors, categorization, signs & symptoms and management principles. Independent chapters are written to distinguish the Krimis and Krimirogas. The krimi may be correlated to microorganisms mentioned in contemporary medicine. Krimis are categorized into two groups namely Bahya (ectopic/external microbes) and Abhyantara krimi (internal microbes and parasites). Yuka and liksha are the two types of Bahya krimi. Abhyantara krimi are classified into three groups i.e. Raktaja, Kaphaja/Shleshmaja and Purishaja. Three varieties of management strategies are described for the eradication of Krimiroga viz. Apakarshana, Prakritivighata and Nidanparivarjana.

**Keywords-** Krimirogas, Krimis, Raktaja Krimi, Kaphaja/Shleshmaja Krimi and Purishaja Krimi, Samsargika, Abhisanga

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### Introduction

All the Infectious and Parasitic Diseases (both pathogenic & non pathogenic) may be correlated to Krimi and krimiroga. Sankramaka, and Upsargaja words are also used in context to infectious diseases.

### ETYMOLOGY:

“Tiny living beings” creatures’ .i.e. krimi are mentioned in Vedic and Ayurveda. The word ‘KRIMI’ is derived from the root ‘KRAMU’ which means ‘to step’ or ‘move. Those who are able to inflame or injure the surroundings are termed Krimi or Keeta.

Acharya Yashka has explained the meanings of Krimi are as follows.

1. Those organisms which grow on raw flesh
2. Those organisms which moves with legs

## ORIGIN OF KRIMI

Krimi are abundantly available all over the biosphere. Their origins are told as parvata (mountain), vana (forest), oushadhi (plants), pashu (animals) and apsu (water).

Bacteria, viruses, fungi and parasites are microorganisms present everywhere especially in the soil, water, atmosphere and on the body surfaces. These are accountable for a large number of infectious diseases in human beings. A few microorganisms are dispersed throughout the world while others are restricted to definite geographic regions. Overall tropical and developing countries are particularly affected by infectious diseases than the developed countries. Microorganisms continue to be major health problems in the developing countries e.g. tuberculosis, leprosy, typhoid fever, cholera, measles, pertussis, malaria, amoebiasis, pneumonia etc.

### Transmission of Krimiroga (Infectious Diseases)

#### Transmission of infections occurs by following factors:

- Continuous close contact with the patient, touching the patient often, inhaling the exhaled air of the patient, eating together, sleeping and sitting together, wearing dress, garlands, unguents used by patient are the factors responsible for the transmission of infection from person to person. Kustha, Jwara, Shosha and Netrabhishyanda are the diseases mentioned under Aupasargika Roga<sup>5</sup>. Among the list of the diseases mentioned clinical features of Rajayakshma (Shosha)<sup>6</sup>
- Raktaja Krimi cause disease kushtha and other diseases
- Bhootopasarga (afflictions by invisible objects/ non-human afflicting agents like viruses, bacteria, fungus etc)/ Amanusopasarga Pratishedham/ Graha Chikitsa (treatment of complications created by non-humans) clearly explained in Ayurveda manuscript. It is the main agent which causes the disease Bhootabhisanghaja Vyadhis<sup>8 & 9</sup>.

#### Disease develops in the individual who follows the following acts.

- Unclean person and acts breaking all rules either injured or not, for sporting in violence or to demand worship.
- Invasion of Grahas in the person is not perceived as access of image into mirror etc., cold and heat into the living beings, of sunrays into the sun stone and of soul into the body. It indicates the minute nature of the causative agent.

### Janapadodhvamsa - Epidemics/Pandemics

Situations which distress the human populations are described under Janapadodhvamsa (epidemics/pandemics). These diseases spread to a large scale of individuals due to polluted air, water, season and land. Improper abandonment of waste, polluted water, polluted air, associated with consumption of unwholesome food and improper activities, failure to adjudicate the catastrophe, and misinterpretation of situation and other such issues spoil the health of the people leading to manifestation of Janapadodhvamsaja diseases<sup>10</sup>

### Aupasargika Roga (contagious diseases)

It deals with infectious diseases and explains how diseases spread from person to person.

#### The following etiological factors are mentioned for the manifestation of microbial infestations:

- Consumption of food which are improperly cooked, raw, excess quantity, unaccustomed, incompatible and infected; lack of physical exercises, day sleep, food which is heavy, unctous and cold; those prepared from Masha, corn flour, pulses, Bisha, shaluka and Kasheruka & leafy vegetables; drinking Sura, shukta, Dadhi & Kseera; eating foods prepared from jaggery & sugarcane juice, consuming paste of Tila, meat of animals of marshy lands, Pinyaka (paste of sesame added with jaggery), Prithuka (paddy dried & flattened), drinking beverages which are sweet & sour leading to provocation of Kapha & Pitta and manifest Krimi of different shapes having different location<sup>11</sup>
- **Samprapti Ghataka of Krimi Roga (components of pathogenesis in krimiroga)<sup>3</sup>**
  - Dosa : Tridosaja (Kaphapradhana)
  - Dushya :Dhatu- Rasa, Rakta, Mamsa, Meda, Asthi, Majja
  - Upadhatu- Sira, Tvaca, Snayu
  - Sharirika Mala - Purisa, Mutra
  - Dhatu Mala-Kapha, Keshha, Loma, Nakha
  - Agni : Jatharagni, Dhatvagni, Bhutagni
  - Agnidusti :Mandagni
  - Ama : Agnijanya
  - Srotas : Purisavaha, Annavaha, Raktavaha, Mamsavaha, Svedavaha
  - Srotodusti : Sanga, Vimargagamana
  - Udbhavasthāna: Amashayottha & Pakvashayottha
  - Adhistana :amapakvashaya, Dhamani, Tvaca
  - (Abhyantara Krimi); Tvaca (Bahya krimi)
  - Sancarasthana :Annava Srotoavayava, Dhamani, Tvaca
  - Vyaktasthana :Guda, Tvaca, Mukha
  - Rogamarga : Abhyantara, bahya
  - Svabhava : Cirakari & ashukari
  - Prabhava : Raktajakrimi (Keshada, Lomada)–incurable
  - Newly manifested–curable
  - Roga bheda : Bahya & Abhyantara

#### **General signs & symptoms of *Krimiroga* are as follows:**

- Fever, discolouration of the body, pain in the abdomen, heart disease, general malaise, giddiness, aversion to food and diarrhoea.

#### **Two types of Krimis (microbial infestations)**

Krimis (worms) are of two types, namely Bahya (external) and bhyantara (internal)<sup>12</sup>.

#### **Characterstic properties of Bahya (external) *Krimis***

External krimis appears like sesame seed in size, shape and colour and these dwell on hair and garments. External krimis have numerous legs and very smaller in size<sup>12</sup>.

#### **Bahya (external) *Krimis bheda***

*Yuka and liksha* are the two varieties and these may be correlated to ectoparasites namely scabies and lice. Bahya (external) *Krimis* cause gangrene of the skin, pustules on the skin, pruritus and boil on the skin.

#### **Four types of Krimis (microbial infestations)**

Based on their source, abhyntara krimis are classified into four groups namely Purishaja, Shleshmaja, Shonitaja and Malaja<sup>12</sup>.

**Malaja krimi(External Krimi/Ectoparasite)**

**External varieties of Krimi are described as follows<sup>3</sup>:**

Etiology	Avoidance of cleanliness.
Habitat	Hairs, beards, mustaches, small hairs, eye-lashes & clothing.
Form	Minute, sesamum shaped & multipede.
Colour	Black & white
Types	Yuka, Pipilika and liksha <sup>9</sup>
Probable modern correlation	Yuka (Sucking lice) and Liksha (Egg of sucking louse).
Clinical features	Itching, urticarial patches and pimples.
Treatment	Comprises of extraction, removal of excreta and avoidance of factors which produce the excreta.

**Internal krimi/Endoparasite (intracellular)-Raktaja Krimi is described as follows<sup>3</sup>:**

Etiology	Similar to that of Kustha. Ingestion of incompatible foods, uncooked vegetables. For more details refer <sup>2</sup>
Habitat	Raktavahi Dhamani (Blood vessels -Arteries and veins)
Form	Minute, round, having no pedicle, some of them are invisible, unctous and thick in size.
Colour	Coppery, red or black
Types	Caraka (6)--Keshada, Lomada, Lomadvipa, Saurasa, Audumbara and Jantumatara. Sushruta(7)-Kesada, Romada, Nakhada, Dantada, Kikkisa, Kusthaja & Parisarpa
Probable modern correlation	Keshada – <i>Tinea capitis</i> ; Lomada / romada – White <i>pie</i> dra (or <i>tinea</i> blanca); Lomadwipa – <i>Tinea capitis</i> ; Audumbhara / Udumbhara – <i>Tinea corporis</i> ; Jantumatru / Matarah – Leishmaniasis (kala-azar), malaria; Dantada – <i>Dental caries</i> and Nakhada – <i>paronychia and tinea unguium</i>
Clinical features	Falling of hairs, beard, mustaches, nails, small hairs, eyelashes; Hyperaesthesia, itching, pain & creeping sensation in the ulcerated area when excessive grown, they eat away skin, vessels, ligaments, muscle tissue and cartilages and manifest diseases affecting the seats of blood.
Treatment	Like Kustha

**Internal krimi/Endoparasite (intercellular)-Shlesmaja Krimi is described as follows<sup>3</sup>:**

Etiology	Consumption of food consisting of milk, jaggery, sesamum, fish, meat of marshy animals, flour preparations, rice cooked in milk, oil of Kusumbha; food which is un-cooked, putrified, stale, infected, antagonistic and unsuitable items, ingestion of meat, Masa, curd & oil.
Habitat	Amashaya, when excessively grown, they move upwards, or to both the sides.
Form and colour	Some are broad tape like and white in colour. Some are round like earthworms, white & coppery colour. Some are minute, long and thread like and white in colour. These have hairs on the head and body, blue patches on their body, have tail, resemble sprouted grain in shape, white & thin.
Types	Caraka(7)-Antrada, Udarada, Hridayacara, Curu, Darbhapuspa, Saugandhika, Mahaguda  Sushruta(6)-Darbhapuspa, Mahapuspa, Praluna, Cipita, Pipilika and Daruna
Probable modern correlation	Antrada( <i>Ancylostoma duodenale</i> and <i>Giardia lamblia</i> ); Udarada /Udaravesta – <i>Taenia solium</i> (pork tapeworm) and <i>Taenia saginata</i> ( <i>Taeniarhynchus saginata</i> or the beef tapeworm); Hridayada / Hridayachara – <i>Trichinella spiralis</i> ; Churu – <i>Enterobacteriaceae</i> ; Darbhapuspa – <a href="#">Fasciolopsis buski</a> , <i>Heterophyes heterophyes</i> , <i>Enterobius vermicularis</i> ; Saugandhika – <i>Trichuris trichiura</i> , <i>Vibrio cholera</i> and Mahaguda – <i>Ascaris lumbricoides</i>
Clinical features	Nausea, salivation, anorexia, indigestion, fever, fainting, yawning, sneezing, constipation, malaise, vomiting, emaciation & dryness of the body. These consume bonemarrow, affect the eyes, palate, ears & shoulders. Diseases of head, heart, pratishyaya etc.
Treatment	1. Extraction 2. Counteraction of etiological factors 3. avoidance of etiological factors

**Internal krimi- Endoparasite (intercellular)-Purishaja Krimi is described as follows<sup>3</sup>:**

Etiology	All the etiological factors mentioned under shlesmaja Krimi. Intake of foods prepared from Masa, Pistanna, pulses & leafy vegetables.
Habitat	Pakvashaya, when developed they move downwards; when they move towards Amashaya, then the eructation and breath of the patient produce fecal odour.
Form &	Some are minute, cylindrical, white, long, like wool

Colour	fibers; some are gross, cylindrical, blackish, blue, green and yellow. These are white in colour, small, irritate the anal region, come out of the anus, among these some are big in their tails portion.
Types	Caraka(5)-Kakeruka, Makeruka, Leliha, Sashoolaka and Sausurada Sushruta(7)-Ajava, Vijava, Kipyra, Cipyra, Gandupada, Curava and Dvimukha
Probable modern correlation	Kakeruka – <i>Trichuris trichiura</i> ; Makeruka – <i>Entamoeba coli</i> ; Leliha – <i>Enterobius vermicularis</i> ; Sausurada – <i>Balantidium coli</i> and Sashulaka – <i>Entamoeba histolytica</i>
Clinical features :	Diarrhoea, emaciation, dryness, horripilation, when they reach anus, they produce piercing pain & itching in anal region; when they excited they frequently come out of the anus, pain in the abdomen, dyspepsia, anaemia, constipation, loss of strength, nausea, loss of taste, heart disease. Gandupada Krimi are red in colour and long, produces itching of the anus, abdominal pain, gurgling sound in the abdomen, diarrhoea & loss of digestive power.
Treatment	1. Extraction 2. Counteraction of etiological factors 3. avoidance of etiological factors

### Krimi Roga management

- Vaccines have, however, been successful in controlling or eliminating some diseases all over the world e.g. smallpox, poliomyelitis, measles, pertussis etc.
- Similarly, insecticides have helped in controlling malaria to an extent. However, infections still rank very high as a cause of death in the world.

Acharya Charaka explained three fundamental ways for the management of Koshtagata Krimi (microbes present in the inside the gut and other vital organs of the abdomen) such as - Apakarshana (elimination through bio-purificatory procedures), Prakritivighata (Breaking the pathogenesis by providing non favourable conditions), and Nidana Parivarjana (avoid the causative factors)<sup>13</sup>.

#### Apakarshana(elimination methods of microbes):

- The Apakarshana means to scrape the microbes forcefully.
- Apakarsana of Krimi includes the manual and instrumental elimination of Krimi.
- Apakarsana or removal of the Bahya Krimi (external) should be done by manual method. Eradication of Abhyantara Krimi (internal microbes) done by purgation, enema, emesis etc.

#### Prakriti Vighatana(restrain the favourable environment for microbes growth):

- Prakriti Vighatana done by restraining the factors which are accountable for the inhibition of growth and production of Krimi by substances having pungent, bitter, astringent and hot properties.

#### Nidana Parivarjana (Avoid causative factors):

- It helps to eradicate the fundamental causative factors which support the environment for the growth of microbes.
- Key to management of infection lies in breaking or blocking the chain for transmission and spread of infection.

## Conclusion

The word Krimi indicates the microorganisms, namely bacteria, viruses, fungi and parasites, are present everywhere especially in the soil, water, atmosphere and on the body surfaces, and are responsible for a large number of infectious diseases in human beings. Bahya krimi and Abhyantara krimi are described along with its morphology, etiological factors, signs and symptoms and therapeutic modalities.

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