A REVIEW ARTICLE ON KRIMI WITH CONTEMPORARY ASSESSMENT

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ABSTRACT

Krīmi exist its importance in Medical science from ages. Starting from Rīg Veda to Samhita Krīmi is accepted as a causative factor of diseases. Though there is mention of non-pathological Krīmi in the texts, but elaboration not done. Whereas, there is wide narration of pathological Krīmi found in different Samhita. Description of etiologies, habitat, nomenclature, morphology, and clinical conditions produced due to Krīmi is done by different Acharyas. The clinical conditions produced due to Krīmi in host may be broadly categorized under GIT ailments, skin ailments and features of Anemia. Regarding management of Krīmi, there is sufficient explanation of treatment principles in Samhita. Various research works have been done concerning treatment aspects of Krīmi. These clinical studies emphasize the effect of herbal, mineral or herbomineral drug preparations on certain parasite or protozoan. Only few studies have been done in Ayurveda to find out the type of Krīmi infection/infestation based on the division of Krīmi. Some research workers had tried to correlate the Krīmi with few parasites only. The correlation of Krīmi with the contemporary infectious microbes may be done by examining the resemblance of their habitat, morphology and effect on host. But it is a difficult task to correlate Krīmi with modern due to lack of detail description of individual Krīmi. Under the word Krīmi all micro organisms like bacteria, virus, parasite, and fungus can be included. In this article effort has been made to describe the concept of Krīmi from different Ayurvedic treatises and also to correlate them with similar microbes and parasites based on their habitat and effect on human body.

KEYWORDS: Krīmi, Microorganisms, Worms, Raktaja, Kaphaja, Purisaja.

INTRODUCTION

In medical science, sickness and death have always generate challenge to the human intellect. Ancient humans endorsed them to heavenly rage and other supernatural forces. Later different concepts were proposed for disease formation like the effect of environment, defective diet etc. From very early times it is speculated that diseases may result from invasion of the body by external infectious organisms acknowledged as Krīmi. Ancient Acharyas were well aware regarding the presence of microorganisms. In Shabdakalpadruma Krīmi is derived as “Bhrame samprasarane cha” means which moves with Pada or legs (podia).[1] According to Veda Krīmi originate in different areas like Parvata, Vana, Oushadhi, Pashu, Apshu etc.[2] Krīmi derived from dhatu “kunja himsayam” which literary means either to produce fatal effects or to destroy. Charaka informed Kleda in the body is one of the factors for Krīmi production.[3] In Samhita Period there is ample description regarding Nidana, Bheda, Lakshana and Chikitsa of Krīmi. In present day science, microbiology and helminthology are the separate branches including all the worms and microbes.

CLASSIFICATION OF KRIMI

In Atharva Veda Krīmi is divided into Drishta and Adrishta type meaning visible and invisible.[4] Also there is mention of Durnama and Sunama Krīmi, which may be accepted as pathogenic and non pathogenic.

The following table shows the total number and divisions of Krīmi according to different Acharyas.
The following table shows the nomenclature of Bahya and Abhyantara Krimi according to different Acharyas.

<table>
<thead>
<tr>
<th>Type of Krimi</th>
<th>Charaka</th>
<th>Sushruta</th>
<th>Vagabhatta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahya Krimi</td>
<td>Yuka, Pippilika</td>
<td>Mahapuspa, Praluna, Cipita, Pipilika, Daruna, Darbhapuspa</td>
<td>Yuka, Liksha</td>
</tr>
<tr>
<td>Kaphaja</td>
<td>Antrada, Udarada, Hrudayacara, Curu, Darbhapuspa Saugandhika, Mahaguda</td>
<td>Antrada, Hrudayada, Udaravesta, Curu, Mahaguda, Sugandha, Darbhakusuma.</td>
<td></td>
</tr>
<tr>
<td>Purisaja</td>
<td>Kakeruka, Makeruka, Sausurada, Susalaka, Leliha</td>
<td>Ajava, Vijava, Kipy, Cipy, Gandupada, curu, Dvimukha</td>
<td>Kakeruka, Makeruka, Sausurada Susalaka, Leliha</td>
</tr>
<tr>
<td>Raktaja</td>
<td>Kesada, Lomada, Lomodvipa, Saurasa, Audumbara, Jantumataraah</td>
<td>Kesada, Romada, Nakhabda, Dantada, Kikkisa, Kusthaja, Parisarp</td>
<td>Kesada, Lomavidhwamsa, Lomadvip, Saurasa, Uduhbara, Matarah</td>
</tr>
</tbody>
</table>

Site of Localisation of krimi

All the Acharyas have mentioned all most same areas for different Krimi.

<table>
<thead>
<tr>
<th>Type of Krimi</th>
<th>Charaka</th>
<th>Sushruta</th>
<th>Vagabhatta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahya Krimi</td>
<td>Hair, Eyelashes, Skin, Clothing</td>
<td>Amasaya, from Amasaya spread up and down</td>
<td>Hair, Clothing</td>
</tr>
<tr>
<td>Kaphaja</td>
<td>Amasaya, from Amasaya spread up and down</td>
<td>Amasaya</td>
<td>Amasaya, spread every where</td>
</tr>
<tr>
<td>Purisaja</td>
<td>Pakwasaya, spread towards anus and also towards Amasaya</td>
<td>Pakwasaya</td>
<td>Pakwasaya, spread towards anus and also towards Amasaya</td>
</tr>
<tr>
<td>Raktaja</td>
<td>Raktavahni, dhamani</td>
<td>Dhamani</td>
<td>Raktavahi Sira</td>
</tr>
</tbody>
</table>

Etiology of Krimi Production

Mention of etiological factors for both Bahya and Abhyantara Krimi is there in Samhitas. The Bahya or external Krimi are produced due to “Mrija barjana” means unhygienic and dirty habits.[14] Regarding Abhyantara Krimi some general and some specific etiological factors mentioned. The common causative factors include Ajeernabhojana, regular intake of Madhura and Amla rasa, consumption of Drava substances, Guda, Virudhha bhojana etc. Some physical factors are also mentioned in common Nidan like Divaswapna and Ayayama.[15]

Vishista nidanas are separate for Kaphaja, Purisaja and Raktaja Krimi.

Kaphaja Krimi- Dugdha, Guda, Tila, Matsya, Anupa mamsa, undercooked, incompatible and unwholesome articles.[16]

Purisaja Krimi- Charaka has mentioned the same etiological factors those described in Kaphaja Krimi. Apart from these Susruta added Vidala, Parnasaka, Masa, Pistanna etc are responsible for production of Krimi.[17]

Raktaja Krimi- The Acharyas have mentioned that the etiology of Kustha and Raktaja krimi are same. Incompatible food and vegetables, change from cold to hot and vice versa, sudden change of diet, improper Santarpana and Apatarpana, excessive use of honey and molasses, fish, Lakucha, Chilichima fish with curd, sour berry, Kulattha, Masa, suppressing the urge of vomiting etc helps the production of Raktaja Krimi.[18]

All the above said factors either individually or all together predispose for worm or parasitic infestation i.e., they provide an appropriate
environment for the worms to manifest and infest causing serious health hazards.

**Sign and Symptoms**

Both general and specific sign and symptoms of Krimi Roga is described in Samhitas. The general sign and symptoms include Jvara (fever), Vivarnata (skin discoloration), Sula (acute pain in abdomen), Hridroga, Bhrama (vertigo), Bhaktadwesa (anorexia), Atisara (diarrhea) Sadana (malaise) and Chhardi (vomiting).[19]

**Specific sign and symptoms**

**Bahya Krimi** - Itching and urticaria rashes in the body. [20]


**Purisaja Krimi** - Purisabhedha, Karshya, Parusya, Lomaharsa, Gudanikramana, Gudakandu, Sula, Agnimandya, Pandu, Visthambha, Balakshaya, Praseka Aruchi, Hridroga.[22]

**Raktaja Krimi** - Raktaja vyadh, Kesa Samshru Nakha Loma Pakshma Dhwamsa, Harsa, Kandu, Toda, excessively grown Krimi eat away skin, vessels, ligaments, muscles, cartilages and tissues.[23]

A person who is affected can experience any range of these symptoms, however complications happen more often and more severely in older people, children and in people who already suffering from other debilitating diseases.

**Treatment Principle**

Ayurvedic Samhitas have taken up treatment aspects elaborately along with preventive aspect. Almost all of them described three treatment methods- Apakarshana, Prakriti vighatana and Nidana parivarjana.[24]

Apakarsana is the first line of treatment. In this mode of treatment expulsion of Krimi and the allied Malas from the host carried out through mechanical means or by therapeutic measures.

In Prakriti Vighatana treatment destruction of the favorable environment for the growth of Krimi is done. External medicaments like Abhyanga, Sveda, Pradeha etc., and some internal medicines of antimicrobial nature are given to destroy the Krimi.

Nidana parivarjana includes avoidance of dietetic regimens as well as those habits which are conducive for the formation of Krimi. It inhibits the growth of microbes and parasites and also prevents the secondary infection or reinfestation.

**DISCUSSION**

Medical microbiology is the study of microbes, which are invisible to the unaided eye, includes bacteria, protozoa, algae, fungi and acellular agents like viruses. Whereas Medical parasitology deals with parasites includes unicellular protozoans and multicellular helminthes. But in Ayurveda single terminology Krimi includes both macro and micro organisms. The correlation of the Krimi with microbes and parasites depend upon their habitat, available morphological character along with sign and symptoms they produce in host. Individual probable correlation of all the Krimi with microorganisms is quite difficult but some of the Krimi produce similar features like microbes and parasites. Few attempts had been made by Ayurvedic scholars to correlate the types of Abhyantara Krimi with parasites and other microorganisms described in modern literature. Bahya Krimi Yuka and Liksha can be compared with louse (head, body, pubic) and eggs of louse which stick to the root of hair.

Raktaja Krimi are those which reside and travel in Rakta vaha sira and Dhamani, they are very minute, without legs, coppery colour, can’t visualized by naked eye and produce Kushta like diseases, Nakha, Loma Dhwamsa, Brana, Twak, Sira, Snayu, Tarunasthi Bhakshana etc. Here some examples of microbes in blood stream which produce similar feature in body.

<table>
<thead>
<tr>
<th>Infectious organisms</th>
<th>Name</th>
<th>Clinical features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>Staphylococcus[25]</td>
<td>Folliculitis, boils, abscess</td>
</tr>
<tr>
<td></td>
<td>Streptococcus Pyogens[26]</td>
<td>Erysipelas, impetigo, pyoderma, subcutaneous infections like cellulitis, necrotizing fasciitis</td>
</tr>
<tr>
<td></td>
<td>Beta Streptococcus[27] Haemolyticus</td>
<td>Nail and body hair damage</td>
</tr>
<tr>
<td>Fungi</td>
<td>Epidermophytes, Candida albicans, Tinea corporis, Tinea imbricata, Tinea cruris, Tinea barbae, Tinea capitis, Favus[28]</td>
<td>Produce a variety of localized skin infection in scalp, body and nail</td>
</tr>
</tbody>
</table>
The Kaphaja krimi resides in upper part of gut, but when increases in numbers travel through both direction of gut. They have different shapes like thick, flat, elongated, rounded, ring like etc and produce nausea, salivation, anorexia, indigestion, fever, syncope, vomiting, emaciation etc. The following parasites can be compared with Kaphaja krimi.

<table>
<thead>
<tr>
<th>Name of Parasite</th>
<th>Clinical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancylostoma duodenale</td>
<td>Abdominal pain, nausea, vomiting, diarrhea with blood, anemia, listlessness</td>
</tr>
<tr>
<td>Taenia solium and</td>
<td>Nausea, abdominal discomfort, hunger pain, chronic indigestion, diarrhea</td>
</tr>
<tr>
<td>Taenia saginata</td>
<td>alternating with constipation</td>
</tr>
<tr>
<td>Trichinella spiralis</td>
<td>Nausea, vomiting, diarrhea, abdominal pain</td>
</tr>
<tr>
<td>Ascaris lumbricoides</td>
<td>Nausea, vomiting, malnutrition, intestinal obstruction</td>
</tr>
</tbody>
</table>

Purisaja Krimi lives in lower gut but when increase in numbers travels through upper and lower part of gut. Their size varies from microscopic to macroscopic and produces clinical features like diarrhea, emaciation, pallor, horripilation, perianal itching etc. The following organisms may be the probable correlation of Purisaja Krimi.

<table>
<thead>
<tr>
<th>Type of Organism</th>
<th>Name of Organism</th>
<th>Clinical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>Vibrio cholera, E.coli, Salmonella, Shigella</td>
<td>Diarrhea, dysentery, enteric fever, gastro enteritis.</td>
</tr>
<tr>
<td>Virus</td>
<td>Rota virus, Astro virus, Adeno virus, Norwalk virus</td>
<td>Severe diarrhea and lethargy</td>
</tr>
<tr>
<td>Fungi</td>
<td>Candida albicans</td>
<td>Diarrhea</td>
</tr>
<tr>
<td>Parasites</td>
<td>Trichuris trichiura, Enterobius vermicularis, Giardia lambia, Balantidium coli</td>
<td>Dysentery, watery diarrhea, colitis, abdominal pain, distension, nausea, anorexia, mucus/bloody diarrhea, loss of weight, intense pruritus of perianal and perineal area</td>
</tr>
</tbody>
</table>

CONCLUSION

Krimi is broadly described for worms and microorganisms. Its existence was felt from Vedic period, but details found later in Samhita period. In modern era due to invention of microscope the study of microbes become easy. Among the two types of Krimi Drishta and Adrishta, the Adrishta Krimi is Anumanagamya. In Samhita classification, nomenclature, etiology, sign symptoms, and treatment is well described on Krimi. The infected microbes enter into the body through contaminated soil, water, food and also transmitted either by sexual intercourse, physical contact with human or animals, through the expired contaminated air. The general symptoms can be divided into three categories like, GIT manifestation, skin manifestation, and anemia as per modern literature. From their clinical features and habitat inside host these Krimi can be compared with various bacteria, viruses, fungi, and parasites described in modern science. Apakarshana, Prakriti Vighatana, and Nidana Parivarjana are the principles of treatment applied for Krimi.

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21. Ibid; P. 713.
22. Ibid; P. 713.
24. Ibid; P. 714.


Source of support: Nil, Conflict of interest: None Declared

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