

CHIKUNGUNYA IN AYURVEDIC PERSPECTIVE AND ITS MANAGEMENT-A REVIEW ARTICLE

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ABSTRACT

Chikungunya is caused by an *arbovirus* and transmitted by *Aedes aegypti* mosquito. Chikungunya is a viral disease that is very similar in symptoms and etiology to the disease, dengue fever. The virus responsible for chikungunya is alpha virus, which is transmitted through the *aedes aegypti* mosquito, which is active only in the daytime. The *aedes aegypti* mosquito is the same mosquito that is responsible for the transmission of dengue fever among humans. High fever and arthritic pain, especially severe pain on extremities is characteristic of chikungunya fever. In allopathic, there is no treatment of this disease, treatment is based on the symptoms. In *Ayurveda* Chikungunya is known as *Sandhijvara* which literally means "Fever of the joints". The symptoms of *Sandhijvara* and Chikungunya are very similar and hence *Ayurveda* treatment provides relief for the disease.

Keywords: chikungunya, arbovirus, aedes aegypti, sandhijwara,

INTRODUCTION

Chikungunya is a mosquito-borne viral disease first described during an outbreak in Southern Tanzania in 1952. It is an RNA virus that belongs to the alphavirus genus of the family *Togaviridae*. The name "chikungunya" derives from a word in the Kimakonde language, meaning "to become contorted", and describes the stooped appearance of sufferers with joint pain (arthralgia).

HISTORY

The word 'chikungunya' is believed to have been derived from a description in the makonde language, mean-

ing "that which bends up", of the contorted posture of people affected with the severe joint pain and arthritic symptoms associated with this disease¹ The disease was first described by Marion Robinson² and W.H.R. Lumsden³ in 1955, following an outbreak in 1952 on the Makonde Plateau, along the border between Mozambique and Tanganyika (the mainland part of modern-day Tanzania).

According to the initial 1955 report about the epidemiology of the disease, the term 'chikungunya' is derived from the makonde

root verb *kungunyala*, meaning to dry up or become contorted. In concurrent research, Robinson glossed the Makonde term more specifically as "that which bends up". Subsequent authors apparently overlooked the references to the Makonde language and assumed the term to have been derived from Swahili, the *lingua franca* of the region. The erroneous attribution to Swahili has been repeated in numerous print sources. Many erroneous spellings of the name of the disease are also in common use. Since its discovery in Tanganyika, Africa, in 1952, chikungunya virus outbreaks have occurred occasionally in Africa, South Asia, and Southeast Asia, but recent outbreaks have spread the disease over a wider range.

Signs and symptoms:-⁴

Chikungunya is characterized by an abrupt onset of fever frequently accompanied by joint pain. Other common signs and symptoms include muscle pain, headache, nausea, fatigue and rash. The joint pain is often very debilitating, but usually lasts for a few days or may be prolonged to weeks. Hence the virus can cause acute, subacute or chronic disease. Most patients recover fully, but in some cases joint pain may persist for several months, or even years. Occasional cases of eye, neurological and heart complications have been reported, as well as gastrointestinal complaints. Serious complications are not common, but in older people, the disease can contribute to the cause of death. Often symptoms in infected individuals are mild and the infection may go unrecognized, or be misdiagnosed in areas where dengue occurs.

Transmission:-⁵

Chikungunya has been identified in over 60 countries in Asia, Africa, Europe and the Americas. This virus is transmitted from human to human by the bites of infected female mosquitoes. Most commonly, the mosquitoes involved are *Aedes aegypti* and *Aedes albopictus*, two species which can also transmit other mosquito-borne viruses, including dengue. These mosquitoes can be found biting throughout daylight hours, though there may be peaks of activity in the early morning and late afternoon. Both species are found biting outdoors, but *Ae. aegypti* will also readily feed indoors. After the bite of an infected mosquito, onset of illness occurs usually between 4 and 8 days but can range from 2 to 12 days.

Diagnosis:-⁶

Several methods can be used for diagnosis. Serological tests, such as enzyme-linked immunosorbent assays (ELISA), may confirm the presence of IgM and IgG anti-chikungunya antibodies. IgM antibody levels are highest 3 to 5 weeks after the onset of illness and persist for about 2 months. Samples collected during the first week after the onset of symptoms should be tested by both serological and virological methods (RT-PCR). The virus may be isolated from the blood during the first few days of infection. Various reverse transcriptase-polymerase chain reaction (RT-PCR) methods are available but are of variable sensitivity. Some are suited to clinical diagnosis. RT-PCR products from clinical samples may also be used for genotyping of the virus, allowing comparisons with virus samples from various geographical sources.

Treatment:-There is no specific antiviral drug treatment for chikungunya. Treat-

ment is directed primarily at relieving the symptoms, including the joint pain using anti-pyretics, optimal analgesics and fluids. There is no commercial chikungunya vaccine.

Prevention and control^{7,8}

The proximity of mosquito vector breeding sites to human habitation is a significant risk factor for chikungunya as well as for other diseases that these species transmit. Prevention and control relies heavily on reducing the number of natural and artificial water-filled container habitats that support breeding of the mosquitoes. This requires mobilization of affected communities. During outbreaks, insecticides may be sprayed to kill flying mosquitoes, applied to surfaces in and around containers where the mosquitoes land, and used to treat water in containers to kill the immature larvae.

For protection during outbreaks of chikungunya, clothing which minimizes skin exposure to the day-biting vectors is advised. Repellents can be applied to exposed skin or to clothing in strict accordance with product label instructions. Repellents should contain DEET (N, N-diethyl-3-methylbenzamide), IR3535 (3-[N-acetyl-N-butyl]-aminopropionic acid ethyl ester) or icaridin (1-piperidinecarboxylic acid, 2-(2-hydroxyethyl)-1-methylpropylester). For those who sleep during the daytime, particularly young children, or sick or older people, insecticide-treated mosquito nets afford good protection. Mosquito coils or other insecticide vaporizers may also reduce indoor biting.

Basic precautions should be taken by people travelling to risk areas and these include use of repellents, wearing long

sleeves and pants and ensuring rooms are fitted with screens to prevent mosquitoes from entering.

AYURVEDIC APPROACH TO CHIKUNGUNYA:

In Ayurveda Chikungunya is known as Sandhijwara which literally means "fever of the joints". The symptoms of Sandhijwara and Chikungunya are very similar and hence Ayurveda treatment provides relief for the disease. Since there is no medicine for Chikungunya in allopathy, people increasingly turning to traditional indian medicines (ayurveda). Some of the kashayams (decoctions) prescribed are Amritharista, MahasudarshanaChurna, panchathikthakashayam, SudarshanChurnam, DhanvantaramGutika and AmruthotharamKashayam. Ancient ayurveda describes a similar condition called Sandhijwara which is similar to Chikungunya in its symptoms (joint pain). Hence some of the medicines can soothe joint pain.

Though there is no direct reference of Chikungunya, but it can be equated with the condition when Jwara is associated with arthritis. In Ayurvedic literature, we can find such references where fever is associated with arthralgia/ arthritis. The symptoms of Vata Pitta Jwara and VataKaphaJwara are similar to the symptoms of Chikungunya fever to some extent. (Table-1) The description of SandhigataSannipataJwara mentioned by Bhava Prakkasha (1550AD) can be equated with Chikungunya fever. SandhigataSannipataJwara is characterised by fever, joint pains and swelling, sleeplessness, cough etc., Bhela Samhita (Sutra Sthana, 13) has mentioned Sharadajwara – a seasonal fever that occurs preceding the rainy season, usually attributable to viral fevers.

Sandhigasanipatajvara:

According to bhavprakashsambhita following symptoms are found in sandhigajvara⁹-

1. severe pain in joint.
2. Swelling in the joint.

3. Too much kapha accumulation in the mouth.

4. Loss of sleep.

5. Cough associated with pain.

Table-1 Symptoms of Chikungunya which can be correlated with Jvaralakshanas mentioned in different Ayurvedic texts.

Name of the Text	Type of Jvara/Roga	Fever	Chills	Arthritis/Arthralgias	Headache	Nausea	Vomiting	Fatigue	Sleeplessness
Ch.S.Ch ¹⁰	VP	+	-	+	+	-	+	+	+
	VK	+	+	+	+	-	-	-	-
Su. S.U. ¹¹	VP	+	-	+	+	-	+	+	+
	VK	+	+	+	+	-	-	-	-
As. H. Ni	VP	+	-	+	+	-	+	+	+
	VK	-	-	+	+	-	-	-	-
As.S.Ni. ¹²	VP	+	-	+	+	-	-	-	-
	VK	-	-	+	+	-	-	-	-
Ma.Ni ¹³	VP	+	-	+	+	-	+	-	+
	VK	+	+	+	+	-	-	-	-
Bh.Pr. Ma. ¹⁴	Sandhigata SannipataJvara	+	-	+	-	-	-	-	+

[VP- Vata Pitta Jvara; VK- VataKaphaJvara; + Present ; - Absent] [Ch.S.Ch. - Charaka Samhita Chikitsasthana 3/85-87; S.S.U. - Susruta Samhita Uttara Tantra 39/47-49 As.H.Ni. -AstangaHridaya, Nidanasthana 2/24-25 ; As. S. Ni. - AstangaSamgrahaNidanaSthana 2/21-22 ; Ma.Ni.-MadhavaNidana 2/14-16 ; Bh.Pr.Ma- Bhava PrakashaMadhyamaKhandanda, Prathama Bhaga, 500.]

Management of Chikungunya in Ayurveda:-

Chikitsa according to bhavprakashsambhita as mentioned in sandhigajvara¹⁵

1.decoction of sathi, surtaru ,uttma(triphala), sthaviradaru(vrdhhadaru), rasna, nagara ,sudha(guduci), shatavari and pura(guggulu), prepared over mild fire and consumed cure sandhigajvara (fever associated pain in the joint) taking care not to indulge in cold comforts(water and other drink, food, bath etc).

2.decoction of vacha, kavaca (parpata), kachura (dhanyasava), sahchara, amrita, bhangu (ativisha), surahva (devadaru), Ghana (musta), nagara, atarundaru (vraddhadaru),

rasna, pura, vrsa (brahtadanti), taruna (aranda), and bhiru (shatavari) consumed cure sandhikagraha (pain in the joint), inactivity of the thighs, inability of walking, giddiness and even hemiplegia.

3. Suradaru, sati, sudha ,lata(guduci), suvaha(rasna), sunthi and amrita made into decoction, added with pura (guggulu) and consumed continuously for some days cure sandigatavata.

4. musta, aranda, pranada (haritaki), bana (nilasahachara), daru (devadaru), echinna (guduci), rasna, bhiru (shatavari), karura , tikta (katuka), vacha, visva, panchamula(brahta), and ashwagandha –all made into decoction and consumed cures stiffness of the neck, pain in the joints etc.

Chikungunya is not a life threatening infection. The treatment modalities of Chikungunya can be categorised into symptom modifiers and general health promoters; more specifically to say the drugs which improve the Quality of Life (QOL) and Vector control measures/ agents are beneficial in the management of Chikungunya.¹⁶

(a.) **Symptom modifiers:** The agents that alleviate symptoms are categorised under symptom modifiers such as-

1. *Jvara hara (anti pyretics)*
2. *Sotha hara (anti inflammatory)*
3. *Vedanaa hara (analgesics)*
4. *Kushtghna (Skin diseases)*
5. *Kandughna (anti pruritic)*
6. *Kasa hara (anti tussive)*
7. *Swasa hara (anti dyspnoeic)*
8. *Atisara hara (anti diarrhoeal) etc.,*

(b). General Health Promoting agents The agents that improve Quality Of Life (QOL), provides strength or resistance against the disease and also facilitate early recovery are classified under General Health Promoters such as

1. Balya (Tonic)
 2. Rasayana (Immunomodulator)
- (c) Vector control measures/agents Vector control measures are mostly physical measures for environmental cleanliness.

1. Dhoopana (for Fumigation)
2. Bhuthaghna & Rakshoghna (Anti microbial agents)

List of some single drugs can be used in Chikungunya fever –

(a). **Symptom Modifiers:**

S. No	Sanskrit Name	Botanical Name
1.	<i>Guduchi</i>	<i>Tinosporacordifolia</i>
2.	<i>Sunthi</i>	<i>Zingiberofficinale</i>
3.	<i>Patha</i>	<i>Andrographispaniculata</i>
4.	<i>Tulsi</i>	<i>Oscimum sanctum</i>
5.	<i>Nimbi</i>	<i>Azadiractaindica</i>
6.	<i>Haritaki</i>	<i>Terminalia chebula</i>
7.	<i>Vibhitaki</i>	<i>Terminalia belerica</i>
8.	<i>Amalaki</i>	<i>Emblica officinalis</i>
9.	<i>Manjishta</i>	<i>Rubiaccordifolia</i>
10.	<i>Musta</i>	<i>Cyperusrotundus</i>
11.	<i>Katuki</i>	<i>PicrorrhizaKurro</i>
12.	<i>Rasna</i>	<i>Pluchealanceolata</i>

13.	Guggulu	Commiphorawightii
14.	Haridra	Curcuma longa
15.	Shallaki	Bosweliaserrata
16.	Nirgundi	Vitexnegundo

(b). General health Promoters:

1.	Aswagandha	Withaniasomnifera
2.	Amalaki	Emblica officinalis
3	Guduchi	Tinosporacordifolia
4	Yastimadhu	Glycyrrhizaglabra

(c). Vector controlmeasures

1.	Tulsi	Ocimum sanctum
2.	Nimba	Azadirachtaindica
3.	Aparajita	Clitorea terneta
4.	Vacha	Acorus calamus
5.	Jatamansi	Nardostachys jatamansi
6.	Guggulu	Commiphorawightii
7.	Salaparni	Desmodium gangeticum
8.	Sala	Shorea robusta

The commonly used Ayurvedic poly herbal/ herbo-mineral/ metallic formulations in the management of Chikungunya symptoms viz., fever, arthritis/ arthralgia, etc.,

S. No.	Indication	Name of the Formulation
1.	Parsvasula, Jvara ¹⁷	DasamulaKvatha
2.	KaphaJvara ¹⁸	NimbadiKvathaCurna
3.	Jvara ¹⁹	PatoladiKvathaCurna
4.	Jvara ²⁰	PanchatiktaKvathaCurna
5.	Sandhi vedana ²¹	MaharasnadiKvathaCurna
6.	Jvara ²²	SadangkavathaCurna
7.	Sandhi sotha, Vataroga ²³	MahaYogarajGuggulu
8.	Sandhi sotha, Vataroga ²⁴	YogarajGuggulu
9.	Jvara ²⁵	SudarshanCurna
10.	Jvara ²⁶	Ananda bhirava Rasa
11.	JirnaJvara ²⁷	ArogyavardhaniGutika

Jvara hara Dhoomachurnas described in BhaishajyaRatnavali

1. AstangaDhooma²⁸ Guggulu, Nimba Patra, Vacha, Kushta, Haritaki, Yava, Sar-sapa and Ghrita all mixed together and burnt.
2. AparajithaDhoomaCurna²⁹

Guggulu, Gandhatrina, Vacha, Sarja, Nimba, Arka, Agar, Devadaru mixed together and burnt.

Diet and Life style adoption:-**Ahara (Diet):**

1. Always have home made fresh food, plenty of lukewarm liquids, light and warm diet, liberally use ginger and turmeric in foods

2. Always avoid food prepared under unhygienic conditions, contaminated and stale food, Cold drinks, beverage etc.,

Vihara (Life style):

1. Avoid visiting the disease prevalent areas
2. Proper sanitation measures to be followed.

CONCLUSION

Chikungunya is not a fatal disease and proper Chikungunya treatment can help you to combat it. However, it is important to keep the surroundings clean to prevent the spread of the disease. Ayurvedic management is extremely good and helps patients recover faster. Because there is no allopathic treatment so we have no other choice. In ancient period chikungunya was not found but we can correlate this disease with sandhigatjvara which mentioned in the bhavprakashsamhita.

REFERENCES

1. Centers for Disease Control Prevention (CDC) (29 September 2006). "Chikungunya fever diagnosed among international travelers—United States, 2005–2006". *MMWR Morb. Mortal. Wkly. Rep.* **55** (38): 1040–1042. PMID 17008866
2. Robinson MC (1955). "An epidemic of virus disease in Southern Province, Tanganyika Territory, in 1952–53. I. Clinical features". *Trans. R. Soc. Trop. Med. Hyg.* **49** (1): 28–32. doi:10.1016/0035-9203(55)90080-8. PMID 14373834.
3. Robinson MC (1955). "An epidemic of virus disease in Southern Province, Tanganyika Territory, in 1952–53. I. Clinical features". *Trans. R. Soc. Trop. Med. Hyg.* **49** (1): 28–32. doi:10.1016/0035-9203(55)90080-8. PMID 14373834.
4. Lumsden WH (1955). "An epidemic of virus disease in Southern Province, Tanganyika Territory, in 1952–53. II. General description and epidemiology". *Trans. R. Soc. Trop. Med. Hyg.* **49** (1): 33–57. doi:10.1016/0035-9203(55)90081-X. PMID 14373835.
5. <http://www.who.int/mediacentre/factsheets/fs327/en/>
6. "Chikungunya Virus Infections". *New England Journal of Medicine.* **373**: 93–95. doi:10.1056/NEJMc1505501
7. Caglioti C, Lalle E, Castilletti C, Carletti F, Capobianchi MR, Bordi L (Jul 2013). "Chikungunya virus infection: an overview.". *The new microbiologica.* **36** (3): 211–27. PMID 23912863.
8. Weaver, Scott C.; Lecuit, Marc (2015). "Chikungunya Virus and the Global Spread of a Mosquito-Borne Disease". *New England Journal of Medicine.* **372** (13): 1231–1239. doi:10.1056/NEJMra1406035. ISSN 0028-4793.
9. Bhavprakash of Bhavmishra, drsitarambulusu (vol.2),chauhambhaorientalia, Varanasi, First edition 2010, Page no. 57.
10. charaksamhitachiktsasthaan, pt. kashinathshastri and gorakhnathchaturvedi(vol.2), chauhambhabhartiakadmi, Varanasi, republished 2007, page no.117
11. sushruta samhita uttarantra, kaviraj-drambikadatt shastri (vol.2), chauhambhasanskrita sansthan, Varanasi, edition reprint 2011, page no. 225
12. asrangahradyamnidansthan, drbrahmanandatripathi, chauhambhasanskritapratishan, edition reprinted 2007, Varanasi, page no.438

13. astanga sangraha nidhansthan, kaviraja-tridevagupta (vol.1), chaukhambhakrishnadas academy, varanasi edition reprinted vikramasamvata 2062, page no.350
14. Bhavprakash of Bhavmishra, drsitarambulusu (vol.2), chaukhambhaorientalia, Varanasi, First edition 2010, Page no. 57.
15. Bhavprakash of Bhavmishra, drsitarambulusu (vol.2), chaukhambhaorientalia, Varanasi, First edition 2010, Page no. 92,93
16. http://www.ccras.nic.in/Traning_module/6.%20MANAGEMENT%20OF%20CHIKUN-GUNYA%20THROUGH%20AYURVEDA%20AND%20SIDDHANTA%20TECHNICAL%20REPORT.pdf
17. Bhaisajya Ratnavali, proff. Sidhinandanmishra, chaukhmbha prakashan, Varanasi, edition 2011, Kasarogadhikara;,page no.460
18. Cakradatta, JvaraChikitsa; drindradev-tripathi, chaukhmbhasan skritasansthan, Varanasi, edition vikramasamvat 2052 , page no.12
19. Astangahridaya, atridevagupta (vol.1), chaukhambhakrishnadas academy, varanasiedition reprinted vikramasamvata 2062, Sutrasthana,15:15 30
20. Cakradatta, JvaraChikitsa; drindradev-tripathi, chaukhmbhasanskritasansthan, Varanasi, edition vikrama samvat 2052 page no.114
21. Sarangadhara Samhita,pt. parsuramshastri,vidhyasagar, chaukhambhaorientalia, Madhyama Khanda Adhyaya- 2, page no.156
22. Astangahridaya, atridevagupta (vol.1), chaukhambhakrishnadas academy, varanasiedition reprinted vikramasamvata 2062,ChikitsaSthana 1:15 ½
23. Sarangadhara Samhita, pt. parsuramshastri, vidhyasagar, chaukhambhaorientalia Madhyama Khanda Adhyaya- 7, page no,204
24. Bhaishajya Ratnavali,, proff. Sidhinandanmishra, chaukhmbhaprakashan, Varanasi, edition 2011, Amavatadhikara page no. 607-608
25. Bhaishajya Ratnavali,. Sidhinandanmishra, chaukhmbhaprakashan, Varanasi, edition 2011,Jvaradhikara, Jvaradhikara page no.128
26. Rasendra Sara SamgrahaJvaradhikara, Adhyaya 2;103
27. Rasaratna SamuccahayaVisarpadiChikitsa Adhyaya page no. 252
28. Bhaishajya Ratnavali,proff. Sidhinandanmishra, chaukhmbhaprakashan, Varanasi, edition 2011, Jvaradhikara, page no.125.
29. Bhaishajya Ratnavali, proff. Sidhinandanmishra, chaukhmbhaprakashan, Varanasi, edition 2011, Jvaradhikara, page no.126.

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