



**A REVIEW ARTICLE ON CHIKUNGUNYA VIRUS AND ITS MANAGEMENT IN
UNANI SYSTEM OF MEDICINE**

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ABSTRACT

Arthralgia is one of the regular presentations in general practice and viral infection is one of the causes of arthralgia, which is typically self limiting and do not require any specific treatment, unless it prolong. Some of the viruses have predilection for the joints and arthritis is one of the common presenting sign of infection. Poly arthralgia is the most frequent chronic manifestation of post viral Chikungunya, required multi drug therapy to manage. The aim of this paper is to make general understanding of the disease as well as the structural identity of the virus with the symptoms and probable treatment with Unani System of Medicine.

KEYWORDS: Arthralgia, Chikungunya, Unani System of Medicine, Virus, Treatment, Therapy.

INTRODUCTION

Arthritis or arthralgia as is common presentations to wide-ranging practice and viral illness is one of the cause of arthralgia which is typically self-limiting and do not require any specific treatment, unless it proglong.^[1] Chickungunya is a disease which is caused by viral infection and is characterized by a sudden onset of high grade fever, rash and arthralgia.^[2] Chickungunya was first reported from Tanzania in 1952-53 and spread subsequently to sub-Saharan Africa, South East Asia and Pacific causing large epidemics.^[3] Chikungunya fever (CHIKF) is a re-emerging mosquito-borne disease caused by a virus endemic to Africa and Asia.^[4]

In India the CHIKV outbreak was first reported in 1963 in Kolkata which accounted nearly 200 deaths.⁵ Existence of CHIKV antibody in human sera collected in 1954–1956 suggested that CHIKV existed in India prior to 1963.⁶ CHIKV outbreaks were recorded in Chennai, Pondicherry and Vellore in 1964; Visakhapatnam, Rajahmundry, Kakinada and Nagpur in 1965; and Barsi in 1973.^[7]

Human CHIKV infection is characterized by an intense joint pain of abrupt onset, high fever, and rash. Though, the infection is self-limited and acute symptoms usually resolve within one–two weeks.⁸ Polyarthralgia is recurrent in 30–40% of infected individuals and may persist for years.^[9]

Epidemiology

CHIKV is considered a neglected tropical disease, because it circulates within these subtropical and tropical

regions, has the potential to affect more than 1 billion people, and many at-risk people live in poverty stricken regions.^[10] The vast majority of infected individuals develop chikungunya fever, an acute illness notable for rapid onset of fever, incapacitating polyarthralgia and arthritis, rash, myalgia, and headache.^[10]

Acute CHIKV disease symptomatically resembles dengue fever, and retrospective case reports suggest that CHIKV outbreaks occurred as early as 1779 but were inaccurately attributed to dengue virus.^[11] However, unlike dengue, a characteristic feature of CHIKV disease is recurring musculoskeletal disease primarily affecting the peripheral joints that can persist for months to years after acute infection.^[12]

Transmission of CHIKV occurs mainly through the bite of an infected *Aedes* (subgenus *Stegomyia*) species of mosquito. However, maternal-fetal transmission can occur intra partum, which results in high rates of infant morbidity.^[13] since the first reports of CHIKV infection in Africa in the 1950s, subsequent epidemics of CHIKV occurred throughout the latter half of the 20th century in countries within Asia and sub-Saharan Africa.^[14]

PREVALENCE

Chikungunya virus (CHIKV) is a mosquito-borne alphavirus that circulates predominantly in tropical and subtropical regions, potentially affecting over 1 billion people. Recently, an outbreak began in the western hemisphere and has resulted in over 1.8 million reported suspected cases.^[10]

In 2005- 2006 an explosive outbreak of Chikungunya occurred in India affecting more than 1.4 million people in 13 states especially in southern India.^[15]

Kerala and Karnataka were the worst affected states during 2006 CHIKV outbreak, 27 districts of the Karnataka state reported over 54.74% of the total suspected cases. Several districts of the state such as Bijapur, Gulbarga, Tumkur, Bidar, Raichur, Dharwad, Bellary, Chitradurga, Davangere and Kolar have recorded large number of Chikungunya fever cases (Bijapur district over 80,00 cases).^[16,17]

Prevalence of Chikungunya was 6.6% in and around regions of Bijapur. More number of cases affected were in 2013 (8.5%) in decreasing order 2012 (7.5%), 2011 (4.6%) and 2014 (4.0%). Females (6.9%) were more affected compared to males (6.2%) and the majority of cases affected were in age group of 15 to 40 (8.3%).^[18]

Pathophysiology

CHIKV is transmitted in two different cycles: urban and sylvatic.^[19] The urban cycle refers to transmission from human to mosquito to human, while sylvatic transmission is animal to mosquito to human.^[20] The sylvatic cycle is the primary form of maintenance in Africa.²¹ CHIKV elsewhere in more densely populated areas is primarily maintained in an urban cycle, in which humans act as the major hosts and mosquitoes of the genus *Aedes* act as vectors.^[22]

The incubation period of 2–10 days is usually followed by CHIKVD that can be divided into acute and chronic phases.^[10]

The acute phase occurs during the first 2 weeks after the onset of the disease and can be further subdivided into viral (before day 5 post-illness onset, *pio*) and convalescent (days 5–14 *pio*) stages.^[23]

Polyarthralgia, the most characteristic symptom of the acute phase is reported in 87–98% of cases.^[24] Generally, acute clinical symptoms include high fever (>38.5°C) and shivers, severe joint and muscle pain, skin rash, weakness and headache. High viral load, lymphopenia and moderate thrombocytopenia are also observed in the acute phase.^[25]

Clinical Feature

Chikungunya virus infection causes arthralgia and arthritis in the acute phase of the disease but, in more than half of the cases, musculoskeletal manifestations can be prolonged over time and, in some cases, become chronic.^[26]

Although polyarthralgia is the most frequent chronic manifestation, forms with polyarthritis, tenosynovitis and enthesopathy are also common.^[27]

Other common signs and symptoms of chikungunya disease include muscle pain, headache, fatigue and rash. The joint pain is often very unbearable in this disease, but usually lasts for a few days or may be prolonged to weeks. Hence the virus can cause acute, sub-acute or chronic disease.^[28]

Most of the cases in chikungunya disease 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.^[28]

However, it should be prominent that other arboviruses such as Zika, Dengue and other alpha viruses can have similar clinical presentations, including fever and arthralgia.^[29]

DIAGNOSIS

Several methods are available to diagnose CHIKV infection, such as viral RNA, IgM and IgG antibodies against the virus detection of chikungunya and viral particles in the conditioned media of cell lines that were exposed to samples of patients' serum *in vitro*.^[23] RNA is the primary laboratory test used to diagnose infection in serum collected <6 days after onset of illness.^[30]

Serological assays for detection of anti-CHIKV IgM or IgG can be performed during the first few weeks or months, respectively, though false negative results can occur depending on the stage of disease.^[31]

Studies have shown high levels of CHIKV IgM antibodies in Indian patients with post-CHIKV rheumatoid arthritis (RA)-like illnesses.^[32]

Blood and Clinical Chemistry Laboratory Results

In the acute stages of the disease, results of a complete blood cell count can be variable, though leukopenia, often as a result of lymphopenia, is one of the most common presentations.^[33]

This will often persist for the first week of infection, and is occasionally accompanied by thrombocytopenia and an increased hematocrit.^[34]

Clinical Evaluation via Advanced Imaging

Most of the researcher focuses on the use of standard radiography for evaluation of joints in CHIKV-infected patients and results are often variable.^[35]

MRI identified bone erosions in the hands of 5 of 6 patients at the 24 month post-diagnosis time point, indicating MRI may be a more sensitive technique for early identification of joint disease.^[36]

Complications

There are various types of complication occurs after Post Chikungunya virus such as joint pain, joint swelling, fever, headache, myalgia, joint deformity,^[37]

neurological complications,^[38] cardiovascular complications,^[39] hemorrhagic manifestations.^[40]

Prognosis

Human CHIKV infection is characterized by an intense joint pain of abrupt onset, high fever, and rash. The infection is self-limited and acute symptoms usually resolve within one-two weeks. However, this polyarthralgia is recurrent in 30–40% of infected individuals and may persist for years. The joint pain caused by CHIKV infection may be debilitating, which can limit even the simplest daily activities.^[41]

Management

Chikungunya fever (CHIKF) is an emerging viral infection that has spread widely, along with its *Aedes* vectors, throughout the tropics and beyond, causing explosive epidemics of both acute illness and persistent disabling arthritis.^[42]

Pharmacological treatment of pain during the acute phase:

The following recommendations were based on a protocol developed by a multi professional group for the treatment of pain in chikungunya.^[43] The reference protocol is based on the visual analogue scale (VAS), in which pain intensity varies from 0–10, with 0 signifying the absence of pain and 10 indicating its maximum expression.^[41]

Ask the patient about any history of allergies or adverse reactions to the medication that will be used (e.g., allergic reactions, arterial hypotension, drowsiness, and digestive manifestations).^[44]

Investigate the existence of any co morbidity that may cause adverse reactions to the medication used during this treatment stage, such as diabetes, arterial hypertension, glaucoma, renal insufficiency, and cardiomyopathies.^[45] Avoid non-steroidal anti-inflammatory drugs (NSAIDs) during this phase.^[37]

Strict precautions must be followed regarding the use of antidepressants and anticonvulsants. For example, the use of amitriptyline should be avoided in older adults, for whom gabapentin is recommended and must be prescribed in progressive doses. Additionally, the use of amitriptyline is not recommended for patients with either a past or existent history of cardiac arrhythmia.^[41] Among the most frequently used opioid drugs are tramadol hydrochloride, which is typically prescribed at a dosage of 50–100 mg orally every 6 h and 30 mg of codeine combined with paracetamol (500 mg) every 6 h.^[46] Infectious fever is a deadly fever which occurs due to infectious outbreak of air and mostly it is endemic.^[47]

Few peoples state that *humma e youm* (one day fever) last for about six days and reduce completely if it gets transferred in to other type of fever it will not get

reduced because for humoral fever left out some vicious matter as the physical state is completely recovered.^[47]

Signs and symptoms reveal that it is an humoral fever (*humma Khiltiya*) or its being transferred as one day fever (*humma e youm*) if fever persist for long time it will transit in to tuberculous fever (*Hummae Diqqiya*) than the pulse will become mulammis and hot with persistent fever all over the body with the same intensity, with fullness in stomach after each meal with same pattern of pulse consistently (*salb o sagheer*).^[47]

Mostly before infectious fever *Maleela* occurs, *Maleela* is a condition in which there will be mild increase in temperature which will depict as no fever, along with generalized weakness, as patient feels twitching of all major joints, dyspnea, disturbance in asleep and wakefulness, heaviness in head etc. If then this condition persist for a long time it will leads to *humma e ufooni* (infectious fever).^[47]

Qash'areera is a condition in which pricking sensation of cold is felt through skin and muscles; whereas *Takaan* occurs before *Qash'areera* where there will be twitching of all joints is seen.^[47]

Galen states that Hippocrates said the symptom of crisis is that which one occurs before crisis but it will not cause crisis the symptoms like lethargy, dizziness, and anxiety.^[48]

In some conditions fever might have occur before onset of *Humme Ufooni* (Infectious fever) this condition will occur only when body accepts *ufooni madda* (vicious matter) and causes sign and symptoms of *humme ufooni* like *Humme yaum* wasn't resolved completely or at the end of *humme yaum* it will transit in to *humme- e-ufooni*^[49]

Warning before crisis includes fuzzy feeling, uncontrolled jerky moments, headache, weakness, fatigue, hallucinations, staring spell, scarce feeling, syncope, abdominal discomfort and pain, low back ache, difficulty in swallowing, feeling tightness in throat, dyspnea.^[50]

Few conditions like *Humme Raba* (quadrant fever) or *humme muqatalifa* might have occurred before the onset of fever which have been caused splenomegaly and in few conditions associated symptoms will occur all of a sudden with Dizziness, lethargy, twitching of hands & legs, *Nabz e bati* and *mutafawat*, symptoms like increase in high temperature will occur when episodes of quadrant fever occurs.^[51]

Tamleel i.e. uneasiness and discomfort will occur body becomes loose and feels lethargic^[52]

Among the types of *Bohran* (crisis) transit ,one type is that where inflammatory conditions or any eruptions will

not see as a sign of crisis but it may transform in to a stationary condition like facial palsy, Hemiparesis, backache, varicose vein, the crisis occurs as transient (*Bohran-e-inteqali*) will through the vasciated matter towards extremities to produce any abscess / eruptions which one is a good sign of *Nuzuj-e-Taam* and the vicious matter is away from the specialized organs (*Azae Shareefa*)^[52]

Symptoms of moment of vicious matter towards crisis includes Vertigo, heaviness in forehead, tinnitus, with dyspnea, pain in nape of the neck, fullness of esophagus, with pain in fontanella associated with heaviness^[52]

Principle of Treatment in Unani Medicine

Unani Treatment

Unani medicine is emphasis upon multidirectional approach which is based upon diet therapy, regimes and pharmacotherapy.

Diet-therapy

Avoid consumption of food which are Ghaleez, Kaseef and Barid in Mizaj which can cause accumulation of morbid materials or toxins that is responsible for the cause of Sue Mizaj or tafaruqe Ittesal.^[53]

Regimens

Some regimens are highly beneficial in the management of *Amraz-e-Mafasil* because they acts as *Imalae Mavad* and *Tanqiyae Mavad* like Hijama, Fasd, Ta'areeq, Idrar, Dalk, Hammam.⁵³

Pharmacotherapy

Pharmacotherapy either with single or / and compound drugs, as described below:

Single Drugs

Single drugs which are used in the form of *Joshanda* (Decoction), *Safoof* (Powder), *Majoon* (Semisolid Preparation), *Jawarish* (Semisolid Preparation for GIT disorders), *Habb* (Pills), *Qurs* (Tablet), *Zimad* (Paste) etc., such as Chobchini, Ushba, Asgand, Suranjan, Muquail, Kundur, Karanjuwa, Shahtara, Maida Lakri, Baboona, Nakhoona, Gule Tesu, Jadwar, Beesh, Kuchla have been studied in preclinical trials and some of them are clinically evaluated also.^[54]

Compound Drugs

Some clinical trial demonstrated that Unani formulation used either orally or locally are effective in the management of musculoskeletal disorders such as; *Majoon Chobchini*, *Majoon Ushba*, *Habbe Muquail*, *Habbe Asgand*, *Habbe Suranjan*, *Habbe Gule Aak*, *Habbe Asabi*, *Habbe Beesh*, *Habbe Azraqi*, *Majoon Muquail*, *Majoon Azraqi*, *Safoof Chobchini*, *Roghane Dhatura*, *Roghane Haft Berg*, *Roghane Surkh*, *Roghane Azraqi*, *Roghane Baboona*, *Roghane Shifa*, *Roghane Sambhalu*, *Roghane Chahar Berg*, *Roghane Kunjad*, *Roghane Zaitoon* etc.^[55,56]

CONCLUSION

There is a proverb, 'prevention is better than cure'. This is highly significant in case of 'Prevention is better than cure,' In the case of the Chikungunya attack, this is extremely relevant. The Chikungunya epidemic is now a matter of concern. Therapy is available even though the vaccine or particular drug has not yet been established. The pattern of treatment is related to dengue, but the pain is extreme, unlike dengue. Since the carrier of this virus is a mosquito, the primary preventive measure to avoid chikungunya fever is to prevent mosquito bite.

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