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Original Article

Psychiatry Section

# Psychiatric Morbidity in Patients with Chikungunya Fever: First Report from India

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## ABSTRACT

**Background:** Chikungunya fever is an acute illness caused by an arbovirus and has various complications like neurological, psychological, dermatological and even multi organ failure. Psychiatric co-morbidity is not very well studied till now. This is the first report from India.

**Aim:** Aim of the study was to assess the psychiatric morbidity during or after the onset of Chikungunya fever.

**Materials and Methods:** Patients referred from Medicine department with confirmed diagnosis of Chikungunya fever were recruited, after taking informed consent. Patient's socio-demographic characteristics were noted and Psychiatric co-morbidity was assessed by complete history taking and mental status examination, using WHO International Classification of Diseases, 10th edition (ICD -10) of Mental and Behavioural Disorders, Diagnostic criteria for research.

**Results:** The age range of the study group was found to be 23-48 years. Fourteen (70%) were males and 6 (30%) were females. Five (25%) patients were diagnosed with depressive disorder, 3 (15%) patients had Generalized Anxiety Disorder (GAD), 2 (10%) patients GAD with Panic attacks, 1(5%) patients phobic disorder (claustrophobia), 3 (15%) patients Somatoform Disorder, 3 (15%), Neurasthenia (Fatigue Syndrome), etc. Two (10%) patients presented with vague somatic complaints which did not fit into any of the diagnostic category.

**Conclusion:** Chikungunya fever can result in significant psychiatric morbidity, mainly in the form of depressive episode, anxiety disorder and even long persisting illnesses like somato-form disorders. Further research is required to know about the phenomenology or the neurobiology of the psychiatric disorders occurring in the course of this illness.

**Keywords:** Alpha virus, Complications, Depression, Viral illness

## INTRODUCTION

Chikungunya fever is an acute illness caused by Chikungunya virus which is an arbovirus and it belongs to the Alphavirus genus of the *Togaviridae* family. It is transmitted to humans by *Aedes aegypti* mosquito [1]. Chikungunya virus was first isolated from Tanzania in1953 and since then there are various well documented outbreaks in Asia and Africa. In India it was isolated in 1963 outbreak in Kolkata. It is now remerging viral illness as the outbreaks are noticed in the islands of South West Indian Ocean like La Reunion, Mauritius and Seychelles, from February 2005 [1,2].

Chikungunya is characterized by fever with chills, headache, malaise, joint pain and swelling with or without rashes in the acute phase. It is generally a self limiting disorder but sometimes, subsequent to acute phase, joint complaints, like pain and swelling can persist for longer duration. The incubation period is 1-3 days with range of 1-12 days [1,3]. The exact pathogenesis of Chikungunya is not known and so far now known to have cytopathic effect and affect various adherent cells, including epithelial cells, endothelial cells, primary fibroblasts and macrophages [4]. Immuno-histological studies have shown that viral antigen was present exclusively inside skeleton muscle progenitor cells, all known as satellite cells sparing the muscle fibers and in vivo targeted the fibroblast and hence affecting the muscles and joints mainly. The satellite cells are the one responsible for postnatal muscle growth and repair and the persistence of virus here may be a reason for recurrent myalgia noticed in some individuals, sparing the muscle fibers [5,6].

There are various complications of Chikungunya which are documented namely, neurological, psychological, dermatological and even multi organ failure can be a consequence [3,7-9]. The neurological complications were seen in the form of syndromes like encephalitis, myelopathy, neuropathy and myeloneuropathy. Abnormal behaviour was also seen in around 59% of the patients [7]. Psychiatric co-morbidity is not very well studied till now. A study on clinical complication of Chikungunya fever in Mauritius found that 57% of the study patients had psychological complaints which include insomnia, aggressiveness, pessimism, lack of concentration, depression, and confusion [3]. There is also a chronic pain condition specifically associated with Chikungunya virus infection that is refractory to usual analgesic treatment and is very debilitating and has severe impact on quality of life as it tends to be severe, recurring and persist for very longer duration [10]. A study comparing the morbidity and quality of life of military policemen in Reunion island 30 months after the chikungunya outbreak using Medical Outcome Study 36- item short-form health survey (MOS-SF36) revealed that all dimensions of MOS-SF36, physical as well as mental component were impaired in the study group [11].

## AIM

Aim of the study was to assess the psychiatric morbidity during or after the onset of Chikungunya fever.

## MATERIALS AND METHODS

The study was carried out in the Department of Psychiatry, University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi. The study period ranged from May 2013 to December 2013. During the study period, all the 34 patients referred from Medicine department with confirmed diagnosis of Chikungunya fever were recruited. Patient of any age group and gender who were referred for one or more psychiatric complaint and gave informed consent for the study were recruited. Patient's complaints should have started during the fever or within 2 weeks period of diagnosing Chikungunya fever. Patients with any other

co-morbid illness and with past history of psychiatric illness or with existing psychiatric illness, if diagnosed before the onset of Chikugunya fever were excluded from the study. Based upon the inclusion and exclusion criteria, out of 34 referred, eight patients were excluded as they presented after 2 weeks of diagnosis of Chikungunya fever. Two patients were excluded as they had co-morbid illness in the form of hypothyroidism, three patients were excluded on the account of past history of anxiety disorder and one patient refused to give informed consent for the study. Twenty patients were finally recruited for assessment. Patient's socio-demographic characteristics were noted. A complete history, clinical examination and mental status examination were done. Diagnosis was made using ICD-10 classification of Mental and Behavioural Disorders, Diagnostic criteria for research [12].

## RESULTS

The patients in were in age range of 23-48 years. Out of 20 patients 14 (70%) were males and 6 (30%) were females as shown in [Table/Fig-1].

| | |
|---|---|
| Age Range | 23-48 years |
| Males | 14 (70%) |
| Females | 6 (30%) |

**[Table/Fig-1]:** Socio demographic characteristic of the study population

[Table/Fig-2] shows the percentage of psychiatric diagnosis according to ICD-10 in the study population. Five (25%) patients were diagnosed with depressive disorder of varying severity, 3 (15%) patients were diagnosed with Generalized Anxiety Disorder (GAD), 2 (10%) patients were diagnosed with GAD with Panic attacks, 1(5%) patient was diagnosed to be having phobic disorder (claustrophobia), 3 (15%) patients were diagnosed with Somatoform Disorder, 3 (15%) were diagnosed with Neurasthenia (Fatigue Syndrome), 1 (5 %) were diagnosed with Sleep disorder (hypersomnia). Two (10%) patients presented with vague somatic complaints which did not fit into any of the diagnostic category as per ICD-10.

| Psychiatric Disorder | N=20(%) |
|---|---|
| Depressive episode | 5 (25) |
| Generalized Anxiety Disorder (GAD) | 3 (15) |
| GAD with Panic disorder | 2 (10) |
| Phobic anxiety disorder (Claustrophobia) | 1 (5) |
| Somatoform Disorder | 3 (15) |
| Neurasthenia (Fatigue syndrome) | 3 (15) |
| Sleep disorder (Hypersomnia) | 1 (5) |
| Nil | 2 (10) |

**[Table/Fig-2]:** Percentage of psychiatric ICD-10 diagnosis in the study population

## DISCUSSION

Psychiatric complications arising during the course of a general medical condition provide us with an interface and opportunity to study organic basis of psychiatric disorders. The study assessed the psychiatric complications arising during the course of Chikungunya fever. Chikungunya infection is generally self limiting and resolution generally occurs in weeks [1], so as to ensure that these complications are related to the Chikungunya infection, patients those who started having symptoms during the illness that is till two weeks of diagnosis were selected.

In this study, most of the patients (70%) were males. In other studies, assessing the complications of Chikungunya fever, it was seen that females outnumber the males in case of psychological complaints and it was statistically significant [3,7,13].

Almost 60% had either anxiety disorder or depressive episode of varying severity, which is similar to the earlier study done in Mauritius, in which among the psychological complaints, majority of the patients had complaints of depression, pessimism, lack of concentration [3]. In other study, which does not establish definitive psychiatric diagnosis, but provide an insight into the magnitude of the psychiatric morbidity reveals that depression was reported by 13% of the patients and sleep disorders by 28% of the patients and these complaints had significant impact on quality of life [13].

These psychiatric complications have also been reported due to another, very similar vector borne, viral illness called dengue fever. There are few case reports and studies available showing psychiatric morbidity in dengue fever [14-16]. The study of psychiatric complications in dengue fever also found anxiety and depressive symptoms in majority of the patients [16]. So, depression and anxiety can be because of the viral illness acting as a psychological stressor or these viruses causing certain neurochemical changes in the brain producing these psychiatric symptoms.

Fifteen percent patients were found to be suffering from somatoform disorder and another 15% were found to have Neurasthenia. In other studies, majority of the patients were suffering from various myalgia, arthralgia and significant fatigue [3,10,13]. This can be because Chikungunya virus affect a wide range of tissues and cells, and predominantly affect skeletal and connective tissues, various adherent cells, including epithelial cells, endothelial cells, primary fibroblasts and macrophages [4-6]. These must be the patients in which joint problems, muscle aches persist for longer duration and may also be related to a chronic pain condition that is specifically associated with Chikungunya infection [10] but more studies are required to elicit their mechanism and association.

## CONCLUSION

Chikungunya infection is an acute viral illness, which can result in significant complications and psychiatric morbidity. Psychiatric conditions were mainly in the form of depressive episode and anxiety disorders. Though a significant proportion of patients also had long persisting illnesses like somatoform disorders and fatigue syndrome, these illnesses need attention as we tend to neglect these complaints in the background of a viral illness. Timely recognition and treatment can help these individuals to recover quickly and effectively. This study has limitation of small sample size but as the research in this area is still lacking to draw any definitive conclusions about the phenomenology or the neurobiology of the psychiatric disorders occurring in the course of this illness, this study provokes further more research to know the exact pathogenesis.

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