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Original Research Article

Analysis of chikungunya outbreak of 2016 in Rajasthan: a clinico-epidemiological study

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ABSTRACT

Background: To describe the diversity of clinical manifestations, laboratory findings and outcome of chikungunya fever in patients attending SMS Hospital, Jaipur during the epidemic of 2016 (September to November).
Methods: All cases of febrile illness with polyarthralgia/polyarthritis diagnosed as chikungunya were analyzed. Diagnosis was made by ELISA based IgM serology and RT PCR assay.
Results: A total of 200 cases were studied. All of them presented with fever, severe crippling joint pain & tenderness, headache, anorexia and body rash. On examination, there was periarticular edema, erythema, and tenderness in joints with post auricular and cervical lymphadenopathy. Unusual manifestations were hyper pigmentation of face and forehead and scrotal ulcers. On investigations patient had leucopenia with elevated level of SGOT, SGPT with normal bilirubin levels. Other complications observed were encephalopathy, encephalitis, myocarditis and hepatitis. There was no mortality in this group.
Conclusions: Chikungunya though prevalent is under-reported. The diagnostic certainty is mandated by presence of febrile transiently crippling polyarthragias / arthritis. On analyzing a large series, unusual clinical features may emerge.

Keywords: Chikungunya, Fever, Polyarthralgia

INTRODUCTION

Chikungunya virus is a mosquito-born alphavirus; its name comes from a makonde word of African language means “that which bends up” or “stooped walk” because of the incapacitating arthralgia caused by the disease.[1] Outbreaks of chikungunya disease have occurred in Africa, Asia, Europe, and islands in the Indian and Pacific oceans and more recently in the Americas. Most outbreaks occur during the tropical rainy season and abate during the dry season. Chikungunya is transmitted by the mosquito vectors; Aedes aegypti and Aedes albopictus (a mosquito that now serves as a second chikungunya virus vector in addition to A. aegypti). In most of the tropics, with denser human and urban mosquito populations; the invasion since 1985 of A. albopictus from east native Asia into islands of the Indian Ocean basin, Africa and southern Europe (which was facilitated by increased global commerce) influenced the unprecedented magnitude of its outbreaks.[2,3]

In 2004, an outbreak involving ECSA (eastern, central, and southern African) lineage progenitor began in coastal Kenya before spreading to several Indian Ocean islands and to India, where it caused explosive epidemics involving millions of people.[4,5] During the chikungunya epidemic in Ahmedabad, India, in 2006, about 60,000 cases were described; the number of deaths during the

four months of peak epidemic activity exceeded the average death rate during those months in the previous four years by almost three thousand.[6]

Dengue and Zika viruses are transmitted by the same mosquito vectors as chikungunya. The viruses can co-circulate in a geographic region, and coinfections have been documented.[7,8]

METHODS

All patients admitted with acute febrile illness and polyarthralgia/polyarthritis to SMS Hospital, Jaipur were evaluated.

Only lab confirmed cases were included in this study in which either Chikungunya IgM antibody or Chikungunya RT PCR or both were positive in presence of clinical symptoms consistent with Chikungunya fever. Detailed history and clinical examination followed with basic laboratory evaluation including complete blood count, peripheral blood smear, blood sugar, liver and renal function tests and chest X-ray. Relevant investigations like rapid antigen test for malaria parasite, dengue serology (NS1Ag and IgM) and blood culture were done to exclude alternative diagnosis or presence of concurrent infections.

RESULTS

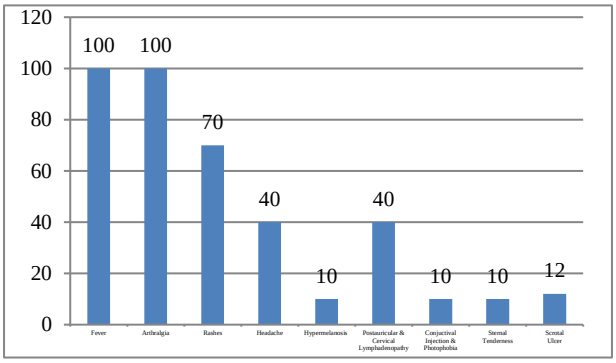

Figure 1: Salient features (in percentage) of chikungunya fever.

We studied a total of 200 confirmed cases of chikungunya fever. The mean age of these patients was 38 years. 80% of cases were from rural areas while 20% cases were from semi-urban/ urban areas. 50% of these patients were farmer by occupation. We found high grade fever (above 103°F) and arthralgia especially small joints and large joints involved in 100% cases. Headache was found as a prominent symptom in 40% cases. Conjunctival injection and photophobia was found in 10 % cases. Blanching and maculopapular rash especially on chest, arms and legs were common and found in 70% cases. Mild (count upto 3000/dl and moderate (upto 2000/dl) leucopenia was found in 40% and 36% respectively, normal counts were found in 10% only. In most of the cases platelet count was within normal limit but in 18% cases, mild thrombocytopenia occurred which was of no consequence. Signicant Transaminitis with SGOT and SGPT elevation was detected in most of the cases, mild elevation (up to 3 times of the upper limit of normal) was seen in 30% cases however, high levels of liver enzyme up to 1000 IU/dl was found only in 10% cases. Hypermelanosis was found in 10% cases and scrotal ulcers in 12% cases. Post auricular and cervical lymphadenopathy was found in 40% cases. Sternal tenderness was present in 10% of cases (Figure 1).

DISCUSSION

This febrile illness presents in previously healthy active person and ranges from sub-clinical disease to transiently crippling arhthralgias. Chikungunya fever is typically a rapid onset febrile disease, many can pin point the time of onset of illness which is characterized by arthralgia, myalgia, headache and rash. The abrupt onset of fever follows an incubation period of 3 to 7 days (range 1 to 14 days); Fever may be high grade (>39ºC); the usual duration of fever is 3 to 5 days (range 1 to 10 days).[9] Polyarthralgias may begin two to five days after onset of fever and commonly involves multiple joints (often 10 or more joint groups).[10] Arthralgia usually involves small and large joints in nearly all cases. Arthralgia akin to rheumatoid distribution is usually bilateral, symmetric and involves distal joints more than proximal joints. The large joints are almost invariably symptomatic, as are to a lesser extent, the small joints and the vertebral column. Pain may be intense and disabling, leading to immobilization. For differential diagnosis in regions where chikungunya virus circulates, the debilitating polyarthalgia has a positive predictive value greater than 80% for chikungunya virus viremia.

Skin manifestations have been reported in 40 to 75 percent of patients.[9,10] The most common skin manifestation is macular or maculopapular rash (usually appearing three days or later after onset of illness and lasting three to seven days). The rash often starts on the limbs and trunk, can involve the face, and may be patchy or diffuse. Pruritus has been reported in 25 to 50 percent of patients in some series.

Severe chikungunya fever can manifest as encephalopathy, encephalitis, myocarditis, hepatitis and multi-organ failure.[11] These rare forms can be fatal and typically arises in patient with some underlying medical condition. Hemorrhagic complications are rare, may be co-infection with dengue virus or coexisting condition such as chronic hepatitis.

Chikungunya fever can also result in chronic joint pain. This can be persistent or relapsing arthralgia that is located mostly in distal joint, which may be associated with arthritis and may mimic rheumatoid arthritis in 25 to 35% of patients.[10]

The diagnosis of chikungunya fever is typically clinical, because the association of acute fever and arthralgia is highly predictive in area, where epidemics have occurred. The most common laboratory abnormalities are lymphopenia and thrombocytopenia. Hepatic transaminases and creatinine may be elevated. A definitive diagnosis relies on virus detection through reverse-transcriptase-polymerase-chain reaction (RT-PCR) testing during the viremic phase in the first week.[12] Serodiagnosis is facilitated by the limited antigen diversity of chikungunya virus and extensive cross-reactivity of the antibodies induced by different strains. Serum IgM is detectable from day 5 to several weeks to 3 months after the onset of illness and is also considered diagnostic.[1] Unusual features in our series were scrotal ulcers and hypermelanosis of face and forehead.

CONCLUSION

Chikungunya though prevalent is under-reported. It is an important differential diagnosis in a febrile patient with crippling joint pains and deranged LFT. The diagnosis of chikungunya can be made with certainty during an epidemic solely on clinical grounds by fever and polyarthralgias.

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