ORIGINAL ARTICLE

Outbreak of Chikungunya in Johor Bahru, Malaysia: Clinical and Laboratory Features of Hospitalized Patients

L P Chew, MRCP, H H Chua, MRCP

Medical Department, Hospital Sultanah Aminah, 80100 Johor Bahru, Malaysia

SUMMARY

In 2008, an outbreak of chikungunya infection occurred in Johor. We performed a retrospective review of all laboratory confirmed adult chikungunya cases admitted to Hospital Sultanah Aminah, Johor Bahru from April to August 2008, looking into clinical and laboratory features. A total of 18 laboratory confirmed cases of chikungunya were identified with patients presenting with fever, joint pain, rash and vomiting. Haemorrhagic signs were not seen. Lymphopenia, neutropenia, thrombocytopenia, raised liver enzymes and deranged coagulation profile were the prominent laboratory findings. We hope this study can help guide physician making a diagnosis of chikungunya against other arborviruses infection.

KEY WORDS:
Chikungunya, Malaysia, Clinical features, Laboratory findings

INTRODUCTION

Chikungunya is a mosquito-borne disease due to alphavirus and transmitted by mosquito vector *Aedes* genus (mainly *Aedes albopticus* and *Aedes aegypti*). It is characterized by abrupt onset of fever and severely debilitating polyarthralgia/arthritis associated occasionally with maculopapular rash and vomiting.

Since its first identification in human serum at Tanzania in 1953, numerous outbreaks have been documented across Africa and Asia, including Southeast Asia. The first clinical disease outbreak in Malaysia was reported in the suburb of Klang in 1998[1], and the second outbreak was found in the Bagan Panchor, at northern state of Perak in early 2006[2]. In both outbreaks, the chikungunya virus (CHIKV) of Asian genotype was isolated. However, an isolated case with CHIKV of central / east African genotype contracted from the continent of India has been identified in Batu Gajah, Perak in late 2006[3]. An outbreak of chikungunya was recorded in state of Johor since April till September 2008 with more than a thousand suspected cases reported. The initial case was reported at Kampong Ulu Choh, Gelang Patah situated at the outskirts of Johor Bahru, which then spread throughout Johor state with Mersing being the last affected area. In this article, we report the clinical features and laboratory findings of 18 acutely ill adults with laboratory-confirmed chikungunya admitted to Hospital Sultanah Aminah Johor Bahru.

MATERIALS AND METHODS

Hospital Sultanah Aminah Johor Bahru (HSAJB) has an adult ward (age >12), admitting patients with suspicion of dengue viral infection as dengue is endemic in Johor Bahru and needs strict monitoring to reduce mortality. As chikungunya infection was initially difficult to differentiate from dengue fever, many patients with suspicion of chikungunya were admitted there for monitoring.

From April to August 2008, a total of 117 patients with clinical features suspicious of chikungunya were identified and sent for chikungunya viral testing. We performed a retrospective review of laboratory confirmed chikungunya cases admitted to HSAJB. Medical records of these patients were reviewed for demographic characteristics, comorbidity data, clinical history and laboratory test. (full blood counts nadir, liver function, coagulation studies)

Peripheral blood were collected from patients, spinned down to obtain serum, which were transported in ice packed container using hospital transport twice a week (Monday and Wednesday) to National Public Health Laboratory (NPHL) at Sungai Buloh for testing. Any acute case of fever, polyarthritis and maculopapular rash were identified as suspicion of chikungunya virus infection[4]. Confirmation of laboratory testing of CHIKV infection were either by detection of anti-CHIK-IgM antibody in the serum, detection of CHIKV nucleic acids in serum by RT-PCR test or isolation of chikungunya virus.

RESULTS

A total of 117 patients who were admitted for suspicion of chikungunya during the period of study had blood sent for chikungunya testing. However, only blood test results for 35 patients were available for review.

Of the 35 patients, a total of 18 (51%) patients were confirmed to have chikungunya infection base on positive chikungunya virus testing either by Ig-M identification, RT-PCR or virus isolation. The median age of patients were 51.5 years and the male to female ratio was 3.5: 1. Six patients (33%) had underlying medical problems including two patients with haematological malignancies (acute lymphocytic leukemia and refractory anemia with excess blast -2). The diagnosis of chikungunya were confirmed by a positive ELISA Ig-M for 13 patients (72%), virus isolation for

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Corresponding Author: Chua Hock Hin, Medical Department, Hospital Sultanah Aminah, 80100 Johor Bharu, Malaysia
Email: hhchua2004@yahoo.com

four patients (22%) and one RT-PCR detection (6%). All patients complained of fever on the day of presentation with majority (56%) recording a temperature of > 38°C. Joint pain was a very prominent feature in all patients admitted to the hospital. More than one joint were involved in all patients with 33% of patients having symmetrical polyarthralgia (pain but no swelling) including back and shoulder joint. Arthritis was present in 67% of patients, with knee swelling and pain being the commonest joint involved (50%), followed by ankle (28%), small joints of hand (28%) and elbow (22%). (Table I)

Maculopapular rash was observed in 67% of patients. In half of these patients, rash occurred on the first day of fever whereas the remainder occurred at the later stage. There was no bleeding manifestation seen in our patients even in those with platelets below 50,000 cells/mm^3. About 28% of patients presented with vomiting on admission and had no correlation with abnormal liver enzymes tests.

With regard to laboratory findings, lymphopenia and neutropenia (counts <1x10^3cells/mm^3) were seen in two-thirds of presenting patients during their admission to the hospital with median lymphocyte and neutrophil count of 0.8 x10^3cells/mm^3 and 0.9 x10^3 cells/mm^3 respectively. Thrombocytopenia were seen in 89% of patients (platelets <150,000cells/mm^3) with 22% of patients with a platelet value of less than 50,000 cells/mm^3. About 56% of patients were noted to have prolonged PTT by more than 1.5 times baseline. An increase in liver enzymes (both ALT and AST) of >1.5 times normal levels were observed in about 50% of our patients. However, there were no clinical correlation with abdominal pain and vomiting. All patients were discharged once fever, arthralgia and/or arthritis were resolve and improvement of laboratory results.

Table I: Clinical features of 18 patients with chikungunya infection

Clinical features	n	%
Fever	18	100%
Vomiting	5	28%
Symmetrical polyarthralgia	6	33%
Arthritis with swelling		
Knee	9	50%
Ankle	5	28%
Hands	5	28%
Elbow	4	22%
Skin rash		
No rash	6	33%
Occur Day 1	5	28%
Occur Day 2	1	6%
Occur ≥ Day 3	6	33%
Haemorrhagic signs	0	0

DISCUSSION

Since its first clinical description of chikungunya infection during the Tanganyika outbreak in 1953, several reports on clinical findings of laboratory proven chikungunya infection in India and France were published. Our aim is to provide some clinical features to complement the virology work that has been published earlier on chikungunya virus infection in Malaysia.

The majority of patients were treated by general practitioner at clinics in Johor with only a handful being hospitalized. A review of the referral letter for admission by the attending doctor at outpatient showed that more than 50% of patients were admitted for suspicion of dengue infection as they presented with thrombocytopenia and fever. In patient's perspective, many wanted admission because they were immobilize by the severity of the pain especially in older patients.

Fever with arthritis/arthralgia were the most prominent complain (100%) of all patients admitted to the hospital with many complaining of "an abrupt onset of severe pain with inability to walk due to pain in the leg and unable to hold any object due to pain in the hands". This is consistent with previous reports that fever and polyarthralgia were the two main clinical symptoms of chikungunya[5]. Most joint problem resolved by day 3 to 5 with simple analgesics. In comparison with dengue infection, joint swelling were not commonly seen in dengue infection and the distribution of the joint involvement were different. In our case series, small joints like the fingers which swelled like "sausages" and ankle were involved. Effusions of the joints were not seen.

Frequency of rash was observed in 67% of patients and differs from the typical dengue rash in its presentation. The occurrence of skin manifestations were extremely variable, as reported in other case series, ranging from 14% to 86%[5]. The chikungunya rash was maculopapular, patchy in distribution (unlike diffuse in dengue) and may affect the face especially the malar areas. No bullous lesion were seen. The onset of rash in chikungunya differ from dengue rash which usually occurred at defervescence, but may occur at onset or later in chikungunya, not unlike those previously reported in Reunion Island[5] and India[6]. Vomiting is the only gastrointestinal symptom (28%) present in our patients with chikungunya infection and is unrelated to the hepatomegaly and elevated liver enzymes as commonly seen in patients with dengue infection.

The frequency of haemorrhagic manifestation is uncommon in chikungunya infection as previously reported[6]. None of our patients had bleeding problems despite low platelet counts and prolong PTT. Lymphopenia and neutropenia were also consistently observed in about 67% of patients but has no clinical implication and blood counts improved spontaneously without any intervention. However, no cases of sepsis were seen in all patients, even though one patient was on chemotherapy during the chikungunya infection.

We did not encounter any neurological signs in chikungunya infection like meningoencephalitis[7]. Patients were given adequate hydration of at least 3-4 liters a day with tablet paracetamol for pain relief. Non steroidal analgesics were not commonly prescribed in our ward due to worries of dengue co-infection as dengue is highly endemic in Johor and there have been reported cases of co-infection with dengue in Perak[8]. However, none of the serology test for dengue (ELISA IgM and IgG) were positive in all 35 patients who were suspected of chikungunya infection. None of the patients were given any blood products for low blood counts.

Both our haematological patients were reviewed one month later and blood counts resumed to their normal baseline value with no active intervention. However, both these patients (aged 60 and 72 years old) were still complaining of intermittent joint pain on later follow up but nonetheless it was less painful than the initial insult. Chronic pain is not uncommon and may be remitting relapsing for up to 6 months[9].

This is a retrospective study, so symptoms and laboratory data may not have been recorded comprehensively. In addition, the number of laboratory confirmed patients for review was small. Only results of 35 out of the 117 patients were available for review as many of the blood specimens were rejected due to leakage during transport or incomplete request form.

CONCLUSION

In our review of 18 laboratory confirmed Chikungunya patients,fever with arthritis/arthralgia are the most common presentation. Maculopapular rashes were present in only 67% of our cases. All patients regardless of severity of presentation, age and concomitant medical problems were discharged well with little or no morbidity and mortality. It must be stressed that these patients may not be representative of the whole general population during the outbreak. The majority of patients were treated by general practitioners and were not referred to hospital, thus we may be missing out the milder forms of chikungunya infection.

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