Two patients with co-infection of chikungunya and dengue

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Introduction

Chikungunya is considered to be a rare form of viral fever caused by an Alpha virus belonging to the Group IV *Togaviridae* family. The disease is transmitted to the humans through virus infected *Aedes aegypti* and *Aedes albopictus* mosquitoes. Warm and humid climate and water reservoirs serve as breeding ground for chikungunya. From the beginning of 2006, in areas around the Indian Ocean there was an outbreak of chikungunya.

The symptoms of the disease, followed by an incubation period of 2-3 days in majority, include a sudden onset of chills, high body temperature that rises up to 102-103 degrees, petechial or maculopapular rashes and arthralgia, photophobia and severe headache. The fever normally comes down in about a week's time however the prevalence of the other symptoms such as insomnia, headache and particularly the joint pains could be prolonged for weeks. In older victims the joint pains could persist for months[1].

The dermatological manifestations of the disease include a maculopapular rash, nasal blotchy erythema, flagellate, hyper pigmentation, multiple ecchymotic spots, lesions, urticaria etc.

Chikungunya is a clinical diagnosis considering the epidemiological background. Virus specific IgM antibodies are readily detected by ELISA in patients recovering from infection and this may persist in excess of 6 months[3]. This test is currently available in Sri Lanka. IgM tests of this type cross-react with other alpha viruses of the serological complex.

Dengue the other *Aedes* borne hemorrhagic fever that does not need an introduction as it is currently considered as endemic in Sri Lanka.

Case history 1

A 63 year old retired principal from Vavuniya presented with a 3 days history of fever after a week's stay in Colombo. The fever was initially low grade in nature and associated with chills. He had generalized body aches from the day of onset of fever. On the third day he began vomiting. He had no bleeding manifestations or any symptoms related to respiratory and urinary systems. He complained of giddiness on getting up from the bed. On day 5 of the illness he had high spiking fever, which lasted for two more days and then subsided. Subsequently he had severe arthralgia involving knee joints, wrists and small joints of the hands. He did not have a febrile illness in the recent past. The patient was known to have had hypertension, bronchial asthma and dyslipidaemia for which he was on medication.

Physical examination was unremarkable except that he was flushed, had elevated blood pressure (170/100) with a postural drop and mild oedema of the lower limbs. He did not have any dermatological manifestations or evidence of arthritis.

Initial investigations on admission revealed leucopenia with moderate thrombocytopenia with a platelet count of 94,000/mm. The red cell indices were within normal range. A five fold rise of ALT was noted. His renal functions and ECG were normal.

Considering his clinical picture and the recent outbreak of chikungunya, serological tests for both dengue and chikungunya were performed. The IgM antibody for chikungunya and the IgM, IgG antibodies for dengue were positive.

The patient made an uneventful recovery with antipyretics, analgesics, intravenous fluids and his usual medications.

Case history 2

A 20 year old previously healthy male admitted with a history of fever for 4 days and abdominal pain. On admission he had vomiting. His temperature was low grade on admission and was not associated with chills. He did not have any symptoms related to the respiratory tract or urinary tract. He had high temperature spikes on the 7th day of the onset of illness. He did not have any bleeding manifestations.

On examination there were no remarkable signs except that he had diffuse abdominal tenderness.

Investigations on admission revealed leucopenia and thrombocytopenia, these returned to normal levels on the 4th day after admission. Here again the serological tests for dengue (IgM and IgG) and IgM antibody for Chikungunya were positive.

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Discussion

The most probable diagnosis of co-infection of chikungunya and dengue in patient-1 is illustrated by the history, physical signs and laboratory investigations. The temperature chart recorded in the patient was biphasic, showing low grade continuous fever in the early part and high spiking one in the latter part. The initial low grade fever could have been due to chikungunya as opposed to dengue which usually produces a high spiking fever in the early part of the illness. This is not a surprising observation as the incubation period of chikungunya is shorter than dengue. Polyarthralgia involving small joints of the hands and oedema of lower limbs are classical features of chikungunya rather than dengue. Leucopenia with a lowest recorded platelet count of 82,000/mm is highly suggestive of dengue fever, which was confirmed subsequently by serology.

A similar clinical scenario was observed in patient-2. Considering the very recent outbreak and the absence of a history suggestive of a febrile illness in the recent past, a positive IgM antibody to chikungunya makes co-infection of these two *Aedes* borne virus illnesses very likely. There have been 25 cases of dengue reported from La Reunion in France between January and March 2006. Out of these, 20 was confirmed to be co-infection with chikungunya[4].

A possibility of a cross-reaction of antibodies detected by ELISA is also worth considering. But if this was the case it would have been likely that the antibody test would be weakly positive rather than a normal positive reaction. Cross-reactions of antibodies are more common with other alpha viruses rather than a flavi virus group in which the dengue virus is classified. Cross reaction of IgG antibodies is more likely than IgM which is more specific[2].

References

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Old Age

There is nothing whatever the matter with me,
I'm just as healthy as I can be;
I have arthritis in both my knees,
And when I talk, I talk with a wheeze;
My pulse is weak and my blood is thin,
But I'm awfully well for the shape I'm in.
Sleep is denied me night after night..
And every morning I am a sight;
My memory's failing, my head's in a spin
But I'm well for the shape I'm in!
The moral of this tale I unfold,
Is for those of us who are growing old –
It's better to say "I'm fine" with a grin,
Than to let folks know the shape we are in.

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