

Outbreak of Chikungunya Fever – 2008

Background

Since early January 2008 there have been several reports to the Epidemiology Unit, Ministry of Health Sri Lanka of an increase in viral fever cases in districts of Anuradhapura, Ratnapura, Kegalle and Kalutara from numerous sources. These sources included some general practitioners, regional epidemiologists and Medical Officers of Health. This viral fever was characterized with high fever, severe joint and muscle pain and in some people a maculopapular rash. Since these symptoms resembled those of Chikungunya fever which was reported in large numbers the previous year, arrangements were promptly made to send samples of blood from these patients for virological studies on dengue and Chikungunya to the Medical Research Institute (MRI), Colombo. Initial samples were taken from Anuradhapura by a team from the MRI which visited there to investigate a large number of military personnel who fell ill with this fever particularly in Janakapura and Sampathnuwara. Thereafter samples were sent in by the MOHs of most affected areas in Ratnapura e.g. Kuruwita, Eheliyagoda and Kiriella. Most of these samples tested positive for Chikungunya virus and this outbreak of viral fever was attributed to the virus.

History

An outbreak of Chikungunya fever has been first reported in Sri Lanka in 1965. It resulted in an explosive outbreak of this debilitating disease attacking whole streets of people and affecting all members in most households in the districts involved. It originated in Colombo and spread along the South Western coastal belt from Negombo to Matara during the period from May – June in that year. Highly urban areas were severely affected and all age groups were involved (D R Munasinghe, P J Amarasekara, C F O Fernando. Ceylon Medical Journal; December 1966; pg 129-141).

The most recent Chikungunya outbreak reported in the country occurred in 2006. This was similar in nature to the 1965 outbreak and involved districts along the coastal belt namely Puttalam, Kalmunai, Colombo, Jaffna, Mannar, Batticaloa and Trincomalee. Kandy, Matale and Kurunegala were less affected. Over 40000 suspected cases were reported from this outbreak to the Epidemiology Unit.

Surveillance of Cases

The following case definition had been developed for surveillance of chikungunya cases by the Epidemiology Unit and is being adopted for outbreak investigations.

Case Definition

1. **Suspected case:** A patient presenting with acute onset fever usually with chills/rigors which lasts for 3 – 5 days with multiple joint pains/swelling of extremities that may continue for weeks to months.
2. **Probable case:** A suspected patient with above features with any one of the following:
 - a) history of travel or resident in areas reporting outbreaks
 - b) ability to exclude Malaria, Dengue and any other known cause for fever with joint pains
3. **Confirmed case:** Any patient with any one or more of following findings irrespective of the clinical presentation.
 - a) virus isolation in cell culture or animal inoculations from acute phase sera
 - b) Presence of viral RNA in acute phase sera
 - c) Seroconversion to virus specific antibodies in samples collected at least 1 – 3 weeks apart
 - d) Presence of virus specific IgM antibodies in single serum collected after 5 days of onset of illness

Affected Areas

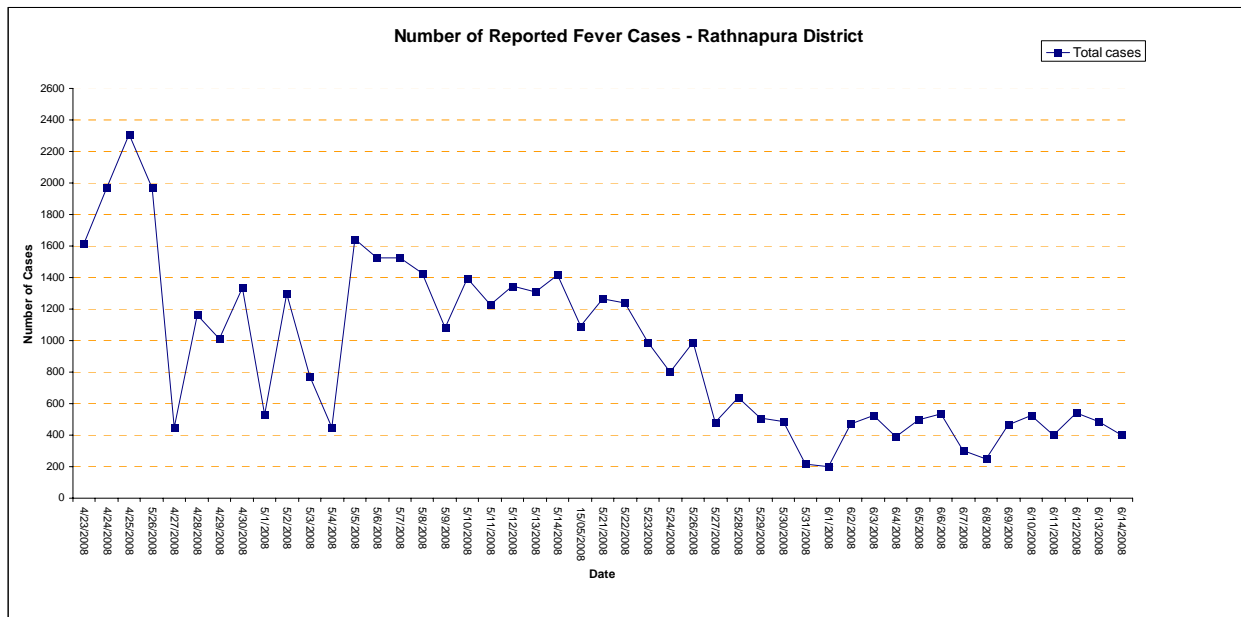
Most affected districts this year were Ratnapura, Kegalle, Kalutara and Anuradhapura (See the attached map of Sri Lanka). All 17 MOH areas of the worst affected Ratnapura district reported large numbers of cases. Eheliyagoda, Kiriella, Embilipitiya, Godakawela, Kuruwita, Nivithigala and Ayagama were among the hardest hit. MOH areas in the Kalutara district adjacent to the neighbouring Ratnapura district's border, Mathugama, Agalawatta, Ingiriya, Bulathsinhala and Palindanuwara reported cases. In the Kegalle district those MOH areas geographically closer to the neighbouring Ratnapura district's border, Dehiowita, Deraniyagala, Ruvanwella, Yatiyanthota and Warakapola were affected.

In the Anuradhapura district the disease was reported in February/March where a large number of military personnel fell ill with this fever particularly in Janakapura, Padaviya and Sampathnuwara.

A fever surveillance programme to include suspected and confirmed Chikungunya fever cases were initiated in most hospitals in the affected areas by respective regional epidemiologists with due guidance from regional directors. Data derived from this activity included all fever cases seeking care at these hospitals and excluded those being treated in the private sector.

Data from the fever surveillance activities carried out in the Ratnapura district alone has yielded over 40000 fever cases from the last week of April to date (See Figure 1 below). Some Medical Officers had reported these cases in the Weekly Return of Communicable Diseases (WRCD) and there were 7540 such cases recorded in the central database in the Epidemiology Unit. Over 90% of these were from the Ratnapura district. The total number of cases are still being updated and a detailed epidemiological report would be prepared once the special surveillance forms are analyzed.

Figure 1: Reported Fever Cases from Ratnapura District



Source: Epidemiology Unit, Ministry of Health

Laboratory Diagnosis

Samples from chikungunya patients from hospitals and mostly the field have been tested at the Medical Research Institute (MRI) and Molecular Medicine Unit of the Department of Microbiology at University of Kelaniya during the initial outbreak period. A total of 488 samples were tested at these laboratories and out of them 264 (54%) were positive for chikungunya.

Following are the number of cases which have been laboratory tested during the outbreak.

Table 1: Number of cases tested for Chikungunya

Month	District	MOH Area	Number of Samples					
			Collected	Positive for CK	Positive for Dengue	Positive for both Dengue & CK	Negative for both	
January	Anuradhapura	Galnewa	95	8	9	0	78	
	Kandy	Galagedara	4	0	0	0	4	
		Hataraliyedda	4	2	0	0	0	
February	Ratnapura	Kuruwita	20	10	0	0	6	
		Godakawela	62	44	4	2	12	
March	Anuradhapura	Padaviya	25	8	5	2	10	
April	Colombo	Hanwella	25	19	0	3	3	
		Anuradhapura	Sampathnuwara	25	14	2	1	8
	Padaviya		20	18	0	2	0	
	Anuradhapura		12	8	1	0	3	
			Janakapura	31	20	1	0	10
			Kegalle	9	1	0	0	8
			Warakapola	16	13	0	0	3
			Ratnapura	15	13	2	0	0
			Kuruwita	20	19	0	0	1
			Devipahala	10	9	0	0	1
		Eheliyagoda	30	30	0	0	0	
		Embilipitiya	38	2	0	0	36	
		Ayagama	27	26	0	0	1	

Source: Medical Research Institute (MRI), Ministry of Health and Department of Molecular Medicine, Faculty of Medicine, University of Kelaniya

Prevention and Control

All provincial and district health authorities namely provincial directors of health services, deputy provincial directors of health services and regional epidemiologists were promptly informed on the situation and guidelines were issued to initiate surveillance. Special investigation forms which had been developed last year to collect information from suspected cases were sent to all the sentinel sites (major hospitals) and relevant officials along with the fact sheet which also had been earlier developed.

Fever surveillance activities on Chikungunya fever were initiated in most hospitals in the affected areas by respective regional epidemiologists with due guidance from regional directors. Clinicians were encouraged to differentiate and confirm the suspected cases from Dengue which closely resembles Chikungunya clinically. Necessary arrangements were made to transport specimens for laboratory diagnosis wherever necessary. Hospitals were persuaded to

notify the confirmed as well as suspected cases by completing the special investigation forms to the Epidemiology Unit. Assistance and cooperation of the Infection Control Nurses in the institutions were obtained to carry out this task.

As in the previous year, Medical Officers of Health were mobilized to initiate preventive measures against the spread of Chikungunya fever. This included health education campaigns for the public to highlight the mode of spread and possible preventive measures. Priority was given to organize parallel campaigns promptly to carry out entomological surveys and to eliminate mosquito breeding places especially in public places such as schools and working places.

Information about the disease was already available on the official website of the Epidemiology Unit www.epid.gov.lk. and the situation report was duly updated.

Conclusions

According to the data received up to date at the Epidemiology Unit the outbreak was limited mainly to 3 districts this year. Significantly these districts were not largely affected during the previous outbreak and therefore it would be safe to conclude that this outbreak was limited to a mostly unimmunized virgin population with regard to Chikungunya.

However surveillance in the sentinel hospitals and field is being continued with support from the regional health administrators. Initial data obtained through the Regional Epidemiologists to date may be overestimated since these surveillance activities were based in the Out Patients' Departments on all fever cases. Therefore it includes the large numbers who opted to seek hospital care for all viral fevers during this period. However a clearer and a more accurate report would be available once the special surveillance forms are analyzed.

Environmental risk factors which play a leading role in vector borne diseases, were abundant in the worst affected Ratnapura district and affected MOH areas in Kegalle district and Kalutara district. Abandoned gem mining pits, coconut shells used for rubber tapping and large areas of foliage such as Habarala, bamboo etc which collect water on their leaf axils have been incriminated as possible unique breeding sites for the *Aedes albopictus* which is a forest dwelling mosquito. Possible breeding sites for *Aedes aegypti*, a household container breeder were commonly found in all the areas. In the Anuradhapura district, used remains of the mortar shells in the military camps were attributed to vector breeding in the affected areas.

Incessant rainfall which has been recorded in the worst affected Ratnapura district from the beginning of the year to date also would have contributed positively for vector breeding.