WEEKLY EPIDEMIOLOGICAL REPORT

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Crimean-Congo Haemorrhagic Fever - A Newly Emerging Infectious Disease

Crimean-Congo haemorrhagic fever (CCHF) is a newly emerging infectious disease which poses a serious public health threat in the South Asian region.

CCHF is a viral haemorrhagic fever caused by the *Nairovirus* group. Although primarily a zoonosis, sporadic cases and outbreaks of CCHF affecting humans do occur. The geographical distribution of the virus, like that of its tick vector, is widespread. Evidence of CCHF virus has been found in Africa, Asia, the Middle East and Eastern Europe.

The disease was first described in Crimea in 1944 and given the name Crimean haemorrhagic fever. In 1969 it was recognized that the pathogen causing Crimean haemorrhagic fever was the same as that responsible for an illness identified in 1956 in Congo and linkage of the 2 place names resulted in the current name for the disease and the virus. CCHF is a severe disease in humans, with a high mortality rate. Fortunately, human illness occurs infrequently, although animal infection may be more common.

The pathogen

The virus which causes CCHF is a *Nairovirus*, a group of related viruses forming one of the five genera in the *Bunyaviridae* family of viruses. All 32 members of the *Nairovirus* genus are transmitted by argasid or ixodid ticks.

Transmission

The CCHF virus may infect a wide range of domestic and wild animals. Many birds are resistant to infection, but ostriches are susceptible and may show a high prevalence of infection in endemic areas. Animals become infected with CCHF from the bite of infected ticks.

A number of tick genera are capable of becoming infected with CCHF virus, but the most efficient and common vectors for CCHF appear to be members of the Hyalomma genus. Trans-ovarial and venereal transmission have been demonstrated amongst some vector species, indicating one mechanism which may contribute to maintaining the circulation of the virus in nature.

However, the most important source for acquisition of the virus by ticks is believed to be infected small vertebrates on which immature Hyalomma ticks feed. Once infected, the tick remains infected through its developmental stages and the mature tick may transmit the infection to large vertebrates, such as livestock. Domestic ruminant animals, such as cattle, sheep and goats are viraemic for around one week after becoming infected.

Humans who become infected with CCHF acquire the virus from direct contact with blood or other infected tissues from livestock during this time or they may become infected from a tick bite. The majority of cases have occurred in those involved in livestock industry, such as agricultural workers, slaughterhouse workers and veterinarians.

Clinical features

The length of the incubation period for the illness appears to depend on the mode of acquisition of the virus. Following infection via tick bite, the incubation period is usually one to three days, with a maximum of nine days. The incubation period following contact with infected blood or tissues is usually five to six days, with a documented maximum of 13 days.

Onset of symptoms is sudden with fever, myalgia, dizziness, neck pain and stiffness, backache, headache, sore eyes and photophobia. There may be nausea, vomiting and sore throat early on, which may be accompanied by diarrhoea and generalized abdominal pain. Over the next few days, the patient may experience sharp mood swings and may become confused and aggressive. After two to four days, the agitation may be replaced by sleepiness, depression and lassitude and the abdominal pain may localize to the right upper quadrant with detect-

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able hepatomegaly.

Other clinical signs which emerge include tachycardia, lymphadenopathy and a petechial rash, both on internal mucosal surfaces, such as in the mouth and throat, and on the skin. The petechiae may give way to ecchymoses and other haemorrhagic phenomena such as melaena, haematuria, epistaxis and bleeding from gums. There is usually evidence of hepatitis. The severely ill may develop hepatorenal and pulmonary failure after the fifth day of illness.

The mortality rate from CCHF is approximately 30%, with death occurring in the second week of illness. In those patients who recover, improvement generally begins on the ninth or tenth day after the onset of illness.

Diagnosis

- Diagnosis of suspected CCHF is performed in specially-equipped, high biosafety level laboratories. IgG and IgM antibodies may be detected in serum by enzyme-linked immunoassay (the "ELISA" or "EIA" methods) from about day six of illness. IgM remains detectable for up to four months and IgG levels decline but remain detectable for up to five years.

- Patients with fatal disease do not usually develop a measurable antibody response and in these individuals, as well as in patients in the first few days of illness, diagnosis is achieved by virus detection in blood or tissue samples. There are several methods for doing this. The virus may be isolated from blood or tissue specimens in the first five days of illness and grown in cell culture. Viral antigens may sometimes be shown in tissue samples using immunofluorescence or EIA.

More recently, the polymerase chain reaction (PCR) has been successfully applied in diagnosis.

Treatment

- General supportive therapy is the mainstay of patient management in CCHF. Intensive monitoring to guide volume and blood component replacement is required.
- The antiviral drug ribavirin has been used in treatment of established CCHF infection with apparent benefit. Both oral and intravenous formulations seem to be effective.

The value of immune plasma from recovered patients for therapeutic purposes has not been demonstrated, although it has been employed on several occasions.

Prevention and control

- Although an inactivated, mouse brain-derived vaccine against CCHF has been developed and used on a small scale in Eastern Europe, there is no safe and effective vaccine widely available for human use. The tick vectors are numerous and widespread and tick control with acaricides (chemicals intended to kill ticks) is only a realistic option for well-managed livestock production facilities.
- Patients with suspected or confirmed CCHF should be isolated and cared for using barrier nursing techniques. Specimens of blood or tissues taken for diagnostic purposes should be collected and handled using universal precautions. Sharps (needles and other penetrating surgical instruments) and body wastes should be safely disposed of using appropriate decontamination procedures.
- When patients with CCHF are admitted to hospital, there is a risk of nosocomial spread of infection. In the past, serious outbreaks have occurred in this way and it is imperative that adequate infection control measures be observed to prevent this disastrous outcome.
- Persons who work with livestock or other animals in the endemic areas can take practical measures to protect themselves. These include the use of repellents on the skin (e.g. DEET) and clothing (e.g. permethrin) and wearing gloves or other protective clothing to prevent skin contact with infected tissue or blood.

Source

Crimean-Congo haemorrhagic fever, available from

http://www.who.int/mediacentre/factsheets/fs208/en/

Compiled by Dr. Madhava Gunasekera of the Epidemiology Unit

Table 3 : Water Quality Surveillance
Number of microbiological water samples - Feb / 2012

District	MOH areas	No: Expected *	No: Received
Colombo	12	72	12
Gampaha	15	90	NR
Kalutara	12	72	NR
NHIS	2	12	NR
Kandy	23	138	NR
Matale	12	72	NR
Nuwara Eliya	13	78	NR
Galle	19	114	0
Matara	17	102	4
Hambantota	12	72	NR
Jaffna	11	66	32
Kilinochchi	4	24	NR
Manner	5	30	19
Vavuniya	4	24	3
Mullatvu	4	24	NR
Batticaloa	14	84	NR
Ampara	7	42	NR
Trincomalee	11	66	NR
Kurunegala	23	138	36
Puttalam	9	84	5
Anuradhapura	19	114	NR
Polonnaruwa	7	42	NR
Badulla	15	90	NR
Moneragala	11	66	72
Rathnapura	18	108	NR
Kegalle	11	66	17
Kalmunai	13	78	NR

* No of samples expected (6 / MOH area / Month)
NR = Return not received

Table 1: Vaccine-preventable Diseases & AFP

10th – 16th March 2012 (11th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2012	Number of cases during same week in 2011	Total number of cases to date in 2012	Total number of cases to date in 2011	Difference between the number of cases to date in 2012 & 2011
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	01	09	22	- 59.09 %
Diphtheria	00	00	00	00	00	00	00	00	00	-	-	-	-	-
Measles	02	01	00	00	00	0	00	0	00	03	04	16	24	- 33.3 %
Tetanus	00	00	00	00	00	00	00	00	00	00	01	02	05	- 60.0 %
Whooping Cough	01	00	01	00	00	00	00	00	00	01	02	21	08	+ 162.5 %
Tuberculosis	55	30	04	03	10	00	01	00	24	127	330	1882	1879	+ 0.16 %

Table 2: Newly Introduced Notifiable Disease

10th – 16th March 2012 (11th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2012	Number of cases during same week in 2011	Total number of cases to date in 2012	Total number of cases to date in 2011	Difference between the number of cases to date in 2012 & 2011
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	36	11	19	16	16	26	10	07	33	174	74	1233	1128	+ 9.30 %
Meningitis	02 CB=1 GM=1	03 NE=1 ML=2	02 HB=2	02 VU=1 MT=1	01 AP=1	01 KR=1	00	00	01 RP=1	12	14	156	227	+ 31.27 %
Mumps	102	05	09	04	34	06	09	46	08	226	44	1041	464	+ 122.19 %
Leishmaniasis	00	00	03 MT=2 HB=1	00	00	00	03 PO=2 AP=1	00	00	06	21	187	148	+ 26.35 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

DPDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008.

Dengue Prevention and Control Health Messages

You have a duty and a responsibility in preventing dengue fever. Make sure that your environment is free from water collections where the dengue mosquito could breed.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

10th – 16th March 2012 (11th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	126	2126	2	29	0	4	2	59	8	20	4	29	1	2	1	18	0	1	**100**
Gampaha	53	1567	3	25	0	1	1	18	1	1	6	43	0	4	6	64	0	1	**73**
Kalutara	21	552	2	29	0	2	1	14	0	3	12	58	0	1	0	6	0	1	**85**
Kandy	25	526	1	20	0	0	0	8	5	9	1	22	5	52	0	4	0	0	**96**
Matale	4	114	2	26	1	3	1	7	1	4	0	9	0	2	0	5	0	0	**83**
Nuwara	7	82	8	34	0	1	1	10	0	0	1	10	2	21	0	7	0	0	**85**
Galle	23	296	2	27	0	1	0	6	0	4	1	22	1	12	0	1	0	0	**84**
Hambantota	9	149	5	14	0	0	0	2	0	6	3	19	0	17	0	3	0	0	**83**
Matara	27	431	1	21	0	3	0	9	0	10	6	36	0	29	0	44	0	0	**100**
Jaffna	5	162	7	60	0	4	7	143	0	8	0	2	4	223	0	2	0	0	**100**
Kilinochchi	2	13	0	6	0	0	0	10	0	39	0	2	1	19	0	1	0	1	**50**
Mannar	2	59	0	7	0	1	0	7	5	13	1	12	0	25	0	1	0	0	**100**
Vavuniya	2	22	0	4	1	13	0	2	0	3	0	14	0	0	0	1	0	0	**100**
Mullaitivu	1	4	0	4	0	1	0	3	0	1	0	2	0	4	0	0	0	0	**100**
Batticaloa	21	435	2	40	0	0	3	8	0	5	0	4	0	0	0	3	0	1	**93**
Ampara	1	27	4	33	0	0	0	2	0	0	2	13	0	0	0	1	0	0	**71**
Trincomalee	2	55	2	38	0	1	2	15	0	1	1	16	0	1	0	1	0	0	**92**
Kurunegala	23	349	2	37	0	5	1	31	0	6	5	44	0	14	1	16	0	1	**96**
Puttalam	20	279	2	22	0	2	0	2	0	1	2	15	0	7	0	0	0	0	**92**
Anuradhapu	4	97	0	21	0	0	0	1	0	1	0	32	2	13	2	21	0	0	**74**
Polonnaruw	1	62	0	10	0	0	0	1	0	0	0	13	0	2	0	5	0	1	**71**
Badulla	3	66	2	26	0	2	1	9	0	1	0	10	1	12	0	13	0	0	**82**
Monaragala	6	57	4	21	0	1	0	7	0	0	1	24	0	28	4	28	0	0	**91**
Ratnapura	36	365	1	67	1	17	1	14	0	2	7	93	1	10	3	37	0	0	**94**
Kegalle	23	370	0	23	0	2	0	10	0	5	1	27	1	12	14	159	0	0	**91**
Kalmune	7	108	3	64	0	0	0	5	1	9	0	1	0	0	0	3	0	1	**77**
SRI LANKA	**454**	**8373**	**55**	**708**	**03**	**64**	**21**	**403**	**21**	**152**	**54**	**572**	**23**	**510**	**31**	**444**	**00**	**08**	**88**

Source: Weekly Returns of Communicable Diseases WRCD).
***Dengue Fever / DHF** refers to Dengue Fever / Dengue Haemorrhagic Fever.
****Timely** refers to returns received on or before 16th March, 2012 Total number of reporting units 329. Number of reporting units data provided for the current week: 290
A = Cases reported during the current week. **B** = Cumulative cases for the year.

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