Outbreak investigation report: Crimean Congo Hemorrhagic Fever cases in a Butcher Family at Hawailian, Abbottabad

Mumtaz Ali Khan[1], Ansari J[1], Muhammad Ishaq[2], Muazam AR[1]

This case report may be cited as: Khan AM, Ansari J, Ishaq M, Muazam AR.
Crimean Congo Hemorrhage Fever Cases in a Butcher Family at Hawailian, Abbotabad. JSMC 2017;7(2):131-133

BACKGROUND:

Crimean-Congo Hemorrhagic Fever (CCHF), transmitted by Hyaloma tick-bite or exposure to blood or secretions of infested animals or infected person[1]. The disease has most extensive geographic distribution and one of the medically important tick-borne viral diseases. Crimean Congo hemorrhagic fever (CCHF) disease is one of the severe forms of hemorrhagic fever and has a wide distribution which relates with the global distribution of Hyalomma tick, is endemic in Africa, Asia, Eastern Europe and the Middle East. In Pakistan, first fatal case was diagnosed in 1976, since then sporadic cases have continued to occur[2]. Mass-scale animal movements prior to Eid-ul-Adha could serve as a source of propagation for ticks' thereby increasing risk of transmission[3].

The disease can be transmitted from infested to human through bite of an infected tick or from crushing an infected tick with bare skin. Secondary transmission has also been reported from contact with infected animal blood or tissues, or by ingesting unpasteurized milk. Person-to-person transmission mostly occurred typically in healthcare settings from exposure to infected body fluids like blood; however, CCHF is frequently reported among agricultural workers following the bite of an infected tick, slaughterhouse workers exposed to the blood and tissues of infected livestock and healthcare personnel through contact with the body fluids of infected patients. Healthcare workers in endemic areas are at risk of infection through unprotected contact with infectious blood and body fluids[4].

The present outbreak was investigated in September 2013 at Islamabad and Abbottabad. Four confirmed cases from same family were identified.

1.National Institute of Health, Islamabad
2.Health Services Academy Islamabad

Correspondence: Dr. Mumtaz Ali Khan
National Institute of Health, Islamabad,

Received: May 15, 2017, Accepted: July 07, 2017

METHODOLOGY:

Histories. We also collected blood samples for CCHF serology from all identified contacts, except family members of the index case, who refused. All referral centres and clinics located around Sibi were asked to promptly report possible new cases. Most contacts were traced and interviewed within two weeks of diagnosis of the secondary cases. To determine the risk of contracting CCHF, we classified all family and hospital contacts of the index and the secondary cases into five exposure categories: percutaneous exposure, including all those who suffered accidental needle pricks or whose broken skin came into contact with infected blood; cutaneous exposure, i.e. blood-to-intact skin contact; cutaneous exposure to body fluids other than blood, including sweat, saliva, emesis, and excreta; skin-to-skin contact not involving body fluids; and proximity without physical contact.

Laboratory methods: We collected 5-10ml blood from each participant in a neutral tube, centrifuged and stored the serum in liquid nitrogen at 21-96.8^{0}C. The sera were tested with anti human-immunoglobulin antibodies for the presence of IgG and IgM against CCHF by a capture ELISA. histories. We also collected blood samples for CCHF serology from all identified contacts, except family members of the index case, who refused. All referral centres and clinics located around Sibi were asked to promptly report possible new cases. Most contacts were traced and interviewed within two weeks of diagnosis of the secondary cases.

To determine the risk of contracting CCHF, we classified all family and hospital contacts of the index and the secondary cases into five exposure categories: percutaneous exposure, including all those who suffered accidental needle pricks or whose broken skin came into contact with infected blood; cutaneous exposure, i.e. blood-to-intact skin contact; cutaneous exposure to body fluids other than blood, including sweat, saliva, emesis, and excreta; skin-to-skin contact not involving body fluids; and proximity without physical contact.

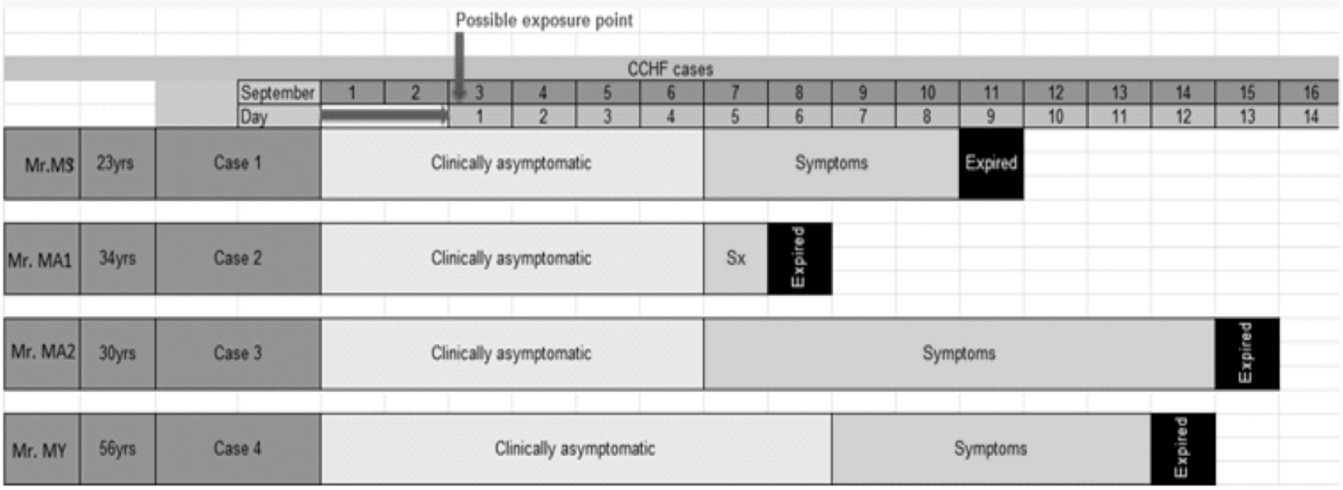
Conducted review of hospital record, interviews with healthcare staff and patients attendants and observation of infection control practices at hospital. Traced contacts at hospital and household/community level and observed them for two weeks.

Data was collected through a pre-tested questionnaire. Case definitions for probable, confirmed cases and contacts adopted based on time place and person. Data were tabulated and analyzed by Epi-Info-7.

Laboratory methods: Blood samples (5ml) from suspected cases were collected in a neutral tube, serum was extracted in the lab under strict biosafety precautions and tested by RT-PCR.

RESULTS/FINDINGS:
All four fatal cases; father and three sons, were butchers, declared positive for CCHF and were involved in slaughter of a cow suspected to be the source of infection. Common symptoms were fever, hemorrhage, lower limbs paralysis and altered consciousness. Timeline of events developed shows common source infection. Household contacts (n=18) and hospital contacts (n=39) were enlisted and followed for 14 days and remained asymptomatic except four who developed fever; their samples were negative.

Implement control and prevention measures:
Health staff was briefed about the recommended infection prevention & control measures. Guidelines regarding Infection control measures and tick elimination was distributed to the health professionals. Media Awareness campaign especially in regards to Eid-ul-Azha and risk of the spread of Congo virus conducted. Federal health ministry issued an advisory and alert to all provincial Health Directorates about the risk during Eid-ul-Azhaand recommended preventive measures.



Summary of the cases:
Mr. MY and his 03 sons were butchers, selling meat at Havailian, a suburb of Abbottabad.

S#	Name	Age/Sex	profession	Symptoms	Date of onset	Date of Adm	Labs	Treatment	Outcome
1	MrMA1	34yrs/M	Butcher	Fever, Body aches, Vomiting, Petechial rashes, Epidstaxis, bleeding from iv sites etc	7th Sept.13	8th Sept. 13	Not available	supportive	Expired on 8th Sept. 13
2	Mr. MS	23yrs/M	Butcher		7th Sept 13	11th Sept 13	Thrombocytopenia Hematuria deranged LFTs & coagulation profile		Expired on 11th Sept 13
3	Mr. MS	56yrs/M	Butcher		10th Sept 13	11th Sept 13		Ribavirin, Antibiotics, supportive therapy	Expired on 14th Sept.13
4	Mr. MA2	30yrs/M	Butcher		07th Sept 13	11th Sept 13			Expired on 15th Sept 13

CONCLUSION:

Animal handlers are at risk of acquiring infection due to poor knowledge. There is immense need for strengthening integrated surveillance system, awareness campaign and adopting one health strategy, and capacity building of health staff to identify suspected cases. Effective tick prevention aids such as tick repellents may help reduce the risk. There is immense need to have a joint venture of human health and livestock departments to combat the disease.

Recommendations: There is need to develop veterinary surveillance in high risk areas, mapping of endemic areas and risk assessment for CCHF in order to strengthen preparedness and response of CCHF. Implementation of bio-safety measures to avoid nosocomial infections.All doctors and healthcare staff working in endemic areas must be sensitized to be vigilant. Hemorrhagic fever case management refresher trainings of health staff must be conducted. The butchers association should be communicated regarding precautionary measures.

Outcome: With effective prevention measures and awareness raising, no further case reported from the area and all contact remained healthy. Insecticides sprayed on the animals'habitatsand collaboration & coordination of Livestock & Health department was developed.

REFERENCES:

1. CRIMEAN CONGO HEMORRHAGIC FEVER IN HAZARA DIVISION, Saqib Malik, InayatUllahDiju*, FarhatNaz, J Ayub Med CollAbbottabad 2011;23(2).
2. CRIMEAN CONGO HEMORRHAGIC FEVER: AN EMERGING TICK-BORNE DISEASE. AssiminaZavitsanou 1, FotoulaBabatsikou 2, CharilaosKoutis, HSJ HEALTH SCIENCE JOURNAL, VOLUME 3, ISSUE 1 (2009).
3. Ergönül Ö. Crimean Congo Hemorrhagic Fever. Lancet Infect Dis 2006; 6:203-14.
4. Crimean-Congo Hemorrhagic Fever Knowledge, Attitudes, Practices, Risk Factors, and Seroprevalence in Rural Georgian Villages with Known Transmission in 2014. Ashley L. Greiner, Nana Mamuchishvili, etal. PLoS One. 2016; 11(6).
5. CRIMEAN-CONGO HEMORRHAGIC FEVER PAKISTAN, Archive Number: 20131009.1990994, dated Tue 8 Oct 2013. Athar MN, Baqai HZ, Ahmad M, Khalid MA, Bashir N, Ahmad AM, et al.
6. Short report: Crimean-Congo haemorrhagic fever outbreak in Rawalpindi, Pakistan, February 2002. Am J Trop Med Hyg 2003; 69:2847.
7. C. Crimean-Congo hemorrhagic fever: experience at a tertiary care hospital in Karachi, Pakistan. Trans R SocTrop MedHygi 2005;99:57784. Jamil B, Hasan RS, Sarwari AR, Burton J, Hewson R.
8. Congo Crimean hemorrhagic fever in Baluchistan. J Coll Physicians SurgPak 2007;17:5435. Durrani AB, Shaikh M, Khan Z.