

# First nosocomial outbreak of CCHF in Rajasthan: A case report

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## Abstract

Crimean-Congo haemorrhagic fever (CCHF) is a tick-borne disease caused by a member of the genus *Nairovirus* of the family *Bunyaviridae*. CCHF outbreaks constitute a threat to public health because of its epidemic potential, its high case fatality ratio (10-40%), its potential for Nosocomial (hospital acquired) infection outbreaks and the difficulties in treatment and prevention. Human beings are the only known host of CCHF virus in which disease is manifested. In endemic countries, majority of cases have occurred in those involved with the livestock industry, such as agricultural workers, slaughterhouse workers and veterinarians. The existence of CCHF in India was first confirmed in 2011 in Gujarat state. An nosocomial outbreak was reported one year back in Rajasthan which killed two out of four male nurses who suffered from the disease. Universal infection prevention and control practices should be strictly adhered to in all healthcare facilities dealing with suspected, probable and confirmed cases. There is a need for improved diagnostic facilities, more containment laboratories, better public awareness about the mode of transmission and the means for personal protection, and implementation of thorough tick control in the affected areas during and after epidemics in cattle can be undertaken in consultation with animal husbandry department. There is currently no specific antiviral therapy for CCHF. Ribavirine is the only antiviral known to have some effect on the viruses causing VHF.

**Keywords:** Crimean-Congo haemorrhagic fever, nosocomial, ribavirine.

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## INTRODUCTION

Crimean-Congo haemorrhagic fever (CCHF) is a tick-borne disease caused by a member of the genus *Nairovirus* of the family *Bunyaviridae* an often fatal viral infection described in about 30 countries, and it has the most extensive geographic distribution of the medically important tickborne viral diseases, closely approximating the known global distribution of *Hyalomma* spp ticks. Human beings become infected through tick bites, by

crushing infected ticks, after contact with a patient with CCHF during the acute phase of infection, or by contact with blood or tissues from viraemic livestock. Clinical features commonly show a dramatic progression characterised by haemorrhage, myalgia, and fever<sup>3</sup>. In diagnosis, enzyme-linked immunoassay and real-time reverse transcriptase PCR are used. Early diagnosis is critical for patient therapy and prevention of potential nosocomial infections. Supportive therapy is the most essential part of case management. Health-care workers have a serious risk of infection, particularly during care of patients with haemorrhages from the nose, mouth, gums, vagina, and injection sites. In India, the first laboratory confirmed case was reported on 19th January, 2011 in Gujarat<sup>4</sup>. In India's neighbourhood, Pakistan reports 50-60 cases annually. CCHF outbreaks constitute a threat to public health services because of its epidemic potential, its high case fatality ratio. (10-40%), its potential for nosocomial (hospital acquired infection) outbreaks and the difficulties in its treatment and prevention<sup>5</sup>

## CASE REPORT

A death from viral haemorrhagic fever reported from a private hospital of Jodhpur district of Rajasthan on January 18, 2015 on very second day another case with similar symptoms from same hospital in deteriorated condition airlifted to AIIMS Delhi, patient died in AIIMS on January 20, 2015. Blood samples of the two patients were collected and sent to NIV Pune for investigation before the patient died. Teams from state IDSP and district IDSP were deputed for investigating the outbreak. Two more cases reported with the similar symptoms from same hospital patient went to Apollo hospital Ahmedabad for treatment. NIV Pune Confirmed the diagnosis as CCHF on January 22, 2015. Preventive and control measures for viral hemorrhagic fever implemented immediately included ICU of the private hospital that reported positive cases proper fumigation and other disinfection protocol was not found and hence was advised to the hospital to close ICU until satisfactory reports were given to them by department of microbiology, daily reporting/ nil reporting of suspect/probable/confirmed CCHF cases (as per case definition) by all Govt. and private hospital. Private hospitals were instructed to constitute infection control committee for infection control, fumigation and waste disposal, monitoring of all contacts twice daily for clinical symptoms for 14 days from the day of last exposure with the patient or other source of infection, Setting up of separate isolation ward for suspect/probable/confirmed CCHF cases in Mathura Das Medical college hospital. Sensitization and distribution of information booklet on CCHF to representative of all major private hospital so that information about the disease can be spread till lower level in their hospital. IEC to improve personal hygiene and sanitary conditions in the village Ratan ki Bassi, Jaisalmer. Following coordination with animal husbandry department tick control measures were under taken by the department of Animal Husbandry in village Ratan Ki Bassi, Jaisalmer. All the domestic animal (Approx 1000 in No.) were sprayed using Cypermethrine (3.4 ml/Lt of water). As Pakistan annually reports cases of CCHF screening of passengers travelling from that express (an international train that connects Pakistan to India) started at the railway station. Municipal Corporation of Jodhpur were informed about the disease transmission and current outbreak and asked for proper cleaning and spraying of 2.5% hypochloride solution in dairy farms and dumpyards. During investigation it was found that all four cases reported were male staff nurse working in ICU of same private hospital onset of symptoms started between 13-15 January 2015. When hospital records were reviewed for list of patients admitted in ICU in last one month and the

patients who expired in the duration, duty schedule of nursing staff was looked into and hospital administration was interrogated it was found that these all four male nurses attended a patient admitted with viral haemorrhagic fever aged 42 years resident of Ratan ki Bassi, village Pokhran of Jaisalmer admitted in ICU on 8<sup>th</sup> January at 11.30 am. The patient was complaining of fever, agitation, diarrhea, swelling around the eyes upper GI bleeding since 8<sup>th</sup> January night, which was continuing on next day (9<sup>th</sup> January). The patient was also complaining of bleeding from nose and mouth. History of haematuria also was present. The various investigations were done like HIV, HbsAg, HCV, HAV, HEV, malarial parasites and dengue for which report was negative. On ultrasonography mild hepatomegaly was found with mild right pleural effusion, CT scan of brain report was normal, Hematological examination revealed platelets count was 11000 lacs/cumm patient also had altered liver functions. The patient was given supported treatment but the condition was deteriorating and he expired on 10<sup>th</sup> January, at 7.00 am. For further investigation of possible index case team moved to village of patient in Jaisalmer where it was found that patient was employed to distribute free fodder in the village from first week of Dec, 2014. Fodder was to be distributed on daily basis as per requirement of the villagers. It was also found that a truck loaded of fodder was delivered in the village on 5<sup>th</sup> January of 2015 for distribution in the village and patient suffered from fever 6<sup>th</sup> January onwards. Survey was carried out in village along with department of animal husbandry and cattle in the village were found to be infested with ticks blood samples from 44 domestic animals were collected which included 24 cattle 10 each from sheep and goats, 352 live ticks were collected mainly from cattle, sheep, goat and camel. Blood samples of animals and ticks samples were sent to National Institute of High Security Animal Diseases, Bhopal and were found to be negative for CCHF.

## DISCUSSION

Rajasthan is sharing borders with Gujarat and Pakistan two places which report CCHF cases this increases risk of transmission of infection in the state. Current outbreak reported from Jodhpur gives a confirmation about the presence of virus and ticks transmitting the infection in state, this also sets a good example that health care providers are not aware about the disease as well its transmission first the case was not suspected as CCHF so samples could not be sent for laboratory confirmation secondly nursing staff did not follow universal precautions leading to transmission of infection to four male nursing staff attending same patient that too in ICU. So as to detect prevalence of CCHF serological/ tick

surveillance in domestic animals must be carried out in and around the area anti tick measures should be repeated to keep tick density at low level, To prevent tick bites personal protection measures including insect repellents should be undertaken by health care staff involved in the surveillance. Continued medical education of medical and para-medical staffs on the dynamics of disease transmission should be carried out.

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