CASE REPORT
pISSN 0976 3325 | eISSN 2229 6816
Open Access Article
www.njcmindia.org
DOI: 10.5455/njcm.20210821061332

Study of Profile of Crimean-Congo Hemorrhagic Fever in Bhavnagar District: An Emerging Public Health Threat to Community

Bansi J Trivedi[1], Atul V Trivedi[2]

[1]Senior resident, Department of Community Medicine, Government Medical College Bhavnagar, Bhavnagar
[2]Associate professor, Department of Community Medicine, Government Medical College Bhavnagar, Bhavnagar

ABSTRACT

Saurashtra region is highly affected by presence of highly contagious zoonotic disease. Crimean-Congo Hemorrhagic Fever is cause by tick borne virus belonging Bunyaviridae family. Eleven confirm cases of CCHF were identified in Bhavnagar District during January to December 2019 and out of 11 cases 6 patients were died. Case Fatality Rate (virulence power) of CCHF was 55%. Most of cases were identified in male. History of Animal contact present in all cases. Infection found in livestock with sero positivity16%.

Keywords: Crimean Congo Hemorrhagic fever, tick borne, Seropositivity

Infectious diseases remain as the major causes of human and animal morbidity and mortality leading to significant healthcare expenditure in India. In addition to the novel aspects of the human-animal interphase, complex interactions of biological, sociocultural and ecological influences raise additional challenges with regard to the emergence of infectious diseases.[1]Emerging infections can be defined as "infections that have newly appeared in a population or have existed previously but are rapidly increasing in incidence or geographic range.[2]The main challenges facing the control and prevention of emerging and re-emerging infectious disease range from recognizing the effect of emerging factor to creating reinforced monitoring system that can reduce human suffering and death. Crimean-Congo hemorrhagic fever (CCHF) is a viral hemorrhagic fever cause by Nairoviras a RNA virus belonging to Bunyaviridae family was first isolated in Congo in 1956. CCHF virus can persist in the tick throughout its life stages by transtadial transmission, and can be passed onto the offspring by transovarial transmission.The disease is endemic in many countries in Africa, Europe and Middle East. The virus shows a zoonotic life cycle with animal to animal transmission and is transmitted to humans either by exposure to the bite of Hyalomma ticks or by direct contact with infected blood and tissue and contact with blood or tissue of domestic livestock infected with virus. High transmission risk when providing direct patient care or handling dead bodies. [3]Occupational vulnerability to CCHF for animal handlers, veterinarians, abattoir workers, and health care workers has been documented.[4]The case fatality rate is as high as 10-40%.[2] The incubation period of CCHF if acquired through tick bite is 1-3 days and if through infected blood is 5-6 days.[4] First case of CCHF were notified in Gujarat state from Ahmedabad district and since thereafter scattered cases reported from all over state.[5]This study was carried out to identify cases of CCHF early in limited resource and to describe epidemiology of human CCHF in Bhavnagar District by demographic, geographic and seasonal characteristics study carried out to describe epidemiology of human CCHF in Bhavnagar district by demographic, geographic and seasonal characteristristic and to identify cases of CCHF early in limited resources

Faculty from community medicine department Government Medical College Bhavnagar is designated

How to cite this article: Trivedi BJ, Trivedi AV. Study of Profile of Crimean-Congo Hemorrhagic Fever in Bhavnagar District: An Emerging Public Health Threat to Community. Natl J Community Med 2021;12(8):259-261. DOI: 10.5455/njcm.20210821061332

Financial Support: None declared **Conflict of Interest:** None declared

Date of Submission: 21-08-2021; **Date of Acceptance**: 29-08-2021; **Date of Publication**: 31-08-2021

Correspondence: Dr. Bansi Trivedi (Email: bansijanaktrivedi@gmail.com)

member of Rapid Response Team (RRT). All suspected cases were visited by RRT (during January-December 2019) as and when cases reported by epidemic branch of district panchayat Bhavnagar. Observed data were further describe here with time, place and person distribution with taken control measures

PATHOGENESIS

The pathogenesis of CCHF is not well identified. Their ability to disable the host immune response by attacking and manipulating the cells that activate the antiviral response is a common pathogenic characteristic of hemorrhagic fever viruses.[6] This damage is characterized by marked viral replication, vascular system and lymphoid organ dysregulation.[7] Endothelial damage causes homeostatic failure by stimulating platelet aggregation and degranulation with consequent activation of the intrinsic coagulation cascade. In the early stage of the disease patients had grossly abnormal markers of coagulation system activity and disseminated intravascular coagulation is noted as an early and prominent feature of the disease phase.[3]

ILLUSTRATIVE DISEASE OUTBREAK

Saurashtra region became vulnerable to contagious zoonotic disease because of high animal density, high chances of transmission from infected tick to human occur. A number of ticks 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 (ixodid ticks). Once infected, the tick remains infected through its developmental stages, and the mature tick may transmit the infection to large vertebrates, such as livestock.[8,9] Between January -November 2019, 11 cases of CCHF were identified. As and when epidemic branch of District Panchayat called for investigation, dedicated team of microbiologist, epidemiologist, physician and pediatrician of Government Medical College, Bhavnagar visits and investigate the cases in field with collaboration of district health team.

Case definitions used during the outbreak investigation

1. **Suspected case**: Patient with sudden onset of illness and fever for more than 3 days and less than 10 days in Crimean-Congo haemorrhagic fever (CCHF) endemic area or those among contact with livestock.[10]
2. **Probable case**: Suspected case with thrombocytopenia and haemorrhagic symptom.[10]
3. **Confirmed case**: CCHF confirmed from NIH through ELISA/PCR

Clinical feature of CCHF are divided into two phase

The pre hemorrhagic period characterized by sudden onset of fever, Headache, Myalgia, Abdominal pain, Neck pain, Photophobia, Congested sclera, Conjunctivitis. Pre hemorrhagic period lasts an average 3 days. Hemorrhagic period is usually 2-3 days and characterized by vaginal bleeding, gingival bleeding, & cerebral hemorrhage, haematuria, haemetemesis, melena. The levels of liver enzymes, creatinine phosphokinase and lactate dehydrogenase are raised and bleeding markers are prolonged.

RESULTS

Study find middle aged male were commonly affected by Crimean congo hemorrhagic fever. While eliciting place wise distribution, 11 cases were reported in 6 Blocks out of 10 blocks of Bhavnagar and from this 6 blocks, maximum 3 found at palitana followed by Umrala (2), shihor (2) Bhavnagar(2) followed by Valbhipur (1) and Gariyadhar (1) respectively.

CCHF is a highly fatal disease (CFR=55%). Mean time of delay (Gap between date of onset of symptoms and date of admission) is 4 days. Almost all patients of CCHF reported fever and bleeding symptoms. History of animal contact was also present in all cases.

Out of 11 confirm cases of CCHF 6 patients died and 5 cases were successfully treated and discharge from hospital. Livestock specimen were tested for anti CCHF antibodies by anti CCHF cattle IgG ELISA assay-Real time RT PCR assay.191 samples were tested, out of which 30 sample were positive. Evidence of CCHF infection (IgG positive) was also found in livestock with sero-positivity of 16%.

CONCLUSION

Tick act as reservoir of infection in CCHF, which are often found in domestic livestock generally male member of family are in contact with livestock and so more cases of CCHF are found in male. Haemorrhagic manifestation and low platelet count provide a clue to early detection of disease. Vaginal bleeding can be a sign of CCHF and need immediate action, as there is no vaccine available either for human or animals and therefore preventive measures are very much crucial. Thus, in primary prevention, health education is an important key to detect cases early and for favourable outcomes. In secondary prevention, early diagnosis and treatment with antiviral as well as supportive treatment are essential for management of CCHF and for that strong referral system and well equipped trained staff and facility required at tertiary care Centre.

ACKNOWLEDGEMENT

Author expressed sincere thanks to Epidemic Cells of Commissioner Office, Health, Medical Services and Medical Education, Gandhinagar for approval and support.

Activities carried out by health department and animal husbandry department

Preventive measures such as active case finding, deticking activity, malathion and lime dusting, Tick sample collection, animal treatment medical college RRT, monitoring of close contacts, Information Education Communication activity through distribution of pamphlets that describe sign and symptoms of CCHF and how the disease can be prevented were distributed in all houses of village in collaboration with health department and Animal husbandry department.

Figure: Animal Sample Collection

REFERENCES

1. Mourya DT, Yadav PD, Ullas PT, Bhardwaj SD, Sahay RR, Chadha MS, et al. Emerging/re-emerging viral diseases & new viruses on the Indian horizon. Indian J Med Res. 2019 Apr;149(4):447–67.
2. Morse SS. Factors in the emergence of infectious diseases. Emerg Infect Dis. 1995;1(1):7–15.
3. Ergönül Ö. Crimean-Congo haemorrhagic fever.Lancet Infect Dis 2006; 6: 203–14. :13.
4. Kadri A, Kundapur R, Khan A, Kakkar R. IAPSM'S Text book of Community Medicine. 1st ed. Jaypee Brothers Medical Publishers(P) Ltd; 2019. 1191 p.
5. Mourya DT. Crimean Congo hemorrhagic fever serosurvey in humans for identifying high-risk populations and high-risk areas in the endemic state of Gujarat, India. BMC Infect Dis. 2019;19(104):8.
6. Geisbert TW, Jahrling PB. Exotic emerging viral diseases: progress and challenges. Nat Med 2004; 10: S110–21.
7. Feldman H, Jones S, Klenk HD, Schnittler HJ. Ebola virus: from discovery to vaccine. Nat Immunol 2003; 3: 677–85.
8. World Health Organization, Fact sheet on CCHF, WHO, http://www.who.int/mediacentre/factsheets/fs208/en/.
9. David C Pigott, CBRNE-Viral Hemorrhagic Fevers, E-Medicine, http://emedicine. medscape.com/article/ 830594/overview, May 2009.
10. Guideline for manafement of Crimean Congo Hemorrhagic fever.Epidemic Branch Commissionerate of Health, Fw and Medical Services Gandhinagar, Gujarat.Page No:3-5.