



Prevalence of Crimean-Congo Hemorrhagic Fever among the patients admitted to Infectious Diseases hospital, Kabul, Afghanistan

Aminulhaq Sarwary¹, Ahmad Shekaib Rasikh¹, Abdul Tawab Noory¹, Mohammad Sediq Yousufzai¹, Abdul Jalil Hassan¹, Ahmad Zia Yosofzai², Hassebullah Yousufzai³

¹ Department of Infectious Diseases, Kabul University of Medical Sciences

² Department of Molecular Biology, Kabul University of Medical Sciences

³ Kabul University of Medical Sciences

Abstract

Introduction: Crimean-Congo Hemorrhagic Fever (CCHF) is a viral disease that generally has an acute and severe course and affects multiple organs. The CCHF virus is an RNA virus that belongs to the genus Nairovirus and the family Bunyaviridae. This virus spreads to humans through the bite of infected ticks, or contact with blood and fluids of infected persons. The CCHF virus is the second most common arbovirus after the dengue virus. The clinical features of the disease vary from a flu-like illness to non-lethal viral syndrome (encephalitis) or rapidly progressive haemorrhagic fever with a high mortality rate, which can reach up to 50% in humans. The first case of CCHF in Afghanistan was reported in 1998 after that, until 2007 no cases were reported, but in 2017 an unusual increase in cases occurred which is a concern.

Objective: The objective of this paper was to find the prevalence of CCHF among the patients admitted to Infectious Diseases hospital, Kabul, Afghanistan.

Method: This is a descriptive cross-sectional study. The CCHF cases admitted between 20th March 2018 to 20th March 2019 to Infectious diseases hospital, Kabul, Afghanistan were included. The data was collected using the patient's files and the hospital medical records and was analysed using the SPSS 26th

Results: From 20th March 2018 to 20th March 2019 totally 8435 adult patients were admitted to Kabul infectious diseases hospital, of which 164 patients (1.94%) were diagnosed and treated as CCHF cases. 80.5% of them were males and 19.5% females. The mean age of the patients was 33.92±14.51 years, and the majority of the patients were aged 15-25 years, and the least number of cases were in the age category of 66-75 years.

Conclusion: In this research, the CCHF cases were more common in the age category of 15-25 years and was more prevalent among men compared to women. In terms of occupation, the majority of cases have occurred among butchers.

Keywords: CCHF, prevalence, adult, infectious diseases hospital, Kabul, Afghanistan

Introduction

Crimean-Congo Haemorrhagic Fever (CCHF) is one of the most common tick-borne viral illnesses that affects humans. This disease was first identified in 1944 in the Crimea region and was named Crimean haemorrhagic fever. Later on, in 1969, the virus was identified as the cause of disease in the Democratic Republic of Congo, and the name Crimean Congo Haemorrhagic Fever was put on. The causative agent of the disease is the CCHF virus, which belongs to the genus *Nairovirus* and family *Bunyaviridae* and is transmitted to humans through the bite of *Hyalomma* ticks and is also transmitted via blood and infected tissues of the animals during slaughtering. Sometimes the virus may be transmitted from human to human in health facilities through contact with blood, secretions, and body fluids and organs. As its vector ticks are active during warm weather, the disease occurs more often during the summer season.^{1-4, 14}

On average, the incubation period of the disease is 3-7 days. Fever, bleeding, and thrombocytopenia associated with a history of travel or living in endemic areas shows the probability of CCHF. The clinical features of the disease are similar to other viral haemorrhagic diseases and vary from subclinical infection to severe fatal disease. Most of the cases have a nonspecific febrile illness characterized by sudden onset of fever, nausea, severe headache, and muscle pain and may recover without any treatment. In approximately 20% of the cases, the disease progress to haemorrhage that bleeding occurs from the nose, gums, vagina, and gastrointestinal tract. In severe cases, massive bleeding, multiple organ failure, disseminated intravascular coagulation, coma, and death ensues. Early diagnosis is important for the initiation of supportive treatment, prevention, and control measures. Laboratory diagnosis is based on the detection of viral RNA in blood with Reverse transcription-polymerase Chain Reaction (RT-PCR). The specific IgM antibody is detectable after day 5th of the illness and IgG antibody in days 7-9 of the illness, which are diagnostic. Other laboratory findings include thrombocytopenia, leukopenia, prolonged prothrombin time, and elevated liver enzymes and creatinine kinase.^{5-7, 15}

This disease is endemic in Asia, Europe, and Africa, and about 3 billion people are at risk. The case fatality rate of disease ranges from 10 to 40 %. The majority of cases are reported from countries like Turkey, Iran, Russia, and Pakistan annually. According to a report by the World Health Organization (WHO), about 10-15 thousand of CCHF cases are annually reported and causes the death of about 500 people. Men and women who work in agriculture, livestock, slaughterhouses, veterinaries, and health centres are groups at high risk of disease.^{7-9, 16}

CCHF, along with rabies, anthrax, brucellosis, and avian influenza, are the priority zoonotic diseases in Afghanistan. Afghanistan is located in the geographical area of *Hyalomma* ticks and experiences cases of CCHF annually. The first cases of CCHF were reported in Takhar province in 1998, which 12 out of 19 patients died. Later on, 20 cases were recorded in 2000 in Gulran district of Herat province, of which 15 patients have died. Active surveillance for CCHF was started in Afghanistan in 2007, and till 2018 totally 1284 clinically and laboratory-confirmed cases were reported. Of these numbers, 4 cases recorded in 2007 and 483 cases recorded in 2018, which shows a dramatic increase.^{5,6,10,17}

Literature review

A study by Lwande et al. in 2012 studied the prevalence of CCHF in Ijara district in Kenya. In this study, from 517 patients, blood samples were taken for examination showed that 14% of them were positive. Most of these patients were aged 40-49 years, in terms of occupation, most of the cases were among farmers. ¹¹

Based on another study conducted by Sharifi et al. in 2016 titled the prevalence of CCHF among people at high risk in Iran showed that from 362 patients, 86% were male, and 14% were female and were aged 12-78 years. 34% of these patients were butchers, 28% farmers and livestock workers, 9% housewives, and 2% were students. ³

The findings of the above studies indicate that the prevalence of the CCHF varies in different countries; hence, it is necessary to conduct like this research at a hospital-level in Afghanistan in order to determine its prevalence.

Objective: The objective of this study is to find the prevalence of CCHF among the patients admitted to Infectious diseases hospital, Kabul, Afghanistan from 20th March 2018 to 20th March 2019

Specific objectives: to find the distribution of CCHF cases according to age, gender, place of residence, occupation, and contact with animals.

Questions of the research:

1. How is the prevalence of CCHF in terms of gender?
2. How is the prevalence of CCHF in terms of age?
3. How is the prevalence of CCHF in terms of occupation?

Materials and method: This is a descriptive cross-sectional study conducted in Infectious Diseases hospital Kabul, Afghanistan. The CCHF patients who have been admitted from 20th March 2018 to 20th March 2019 and confirmed by PCR examination were included. The data was collected using the files of the patients and the registry books of the hospital. The data was entered and analysed using the SPSS software version 26th. The patients with incomplete and missing documents (lack of laboratory reports) were excluded. The proposal of this study was approved by the ethical review board of the Kabul University of Medical Sciences.

Results

From 20th March 2018 to 20th March 2019 totally 8435 adult patients were admitted to Kabul infectious diseases hospital, of which 164 patients (1.94%) were diagnosed and treated as CCHF cases which the results are presented as follows:

Table 1: The number of CCHF cases among admitted patients

Percentage	Number	CCHF cases
1.94	164	Yes
98.05	8271	No
100	8435	Total

The above table shows that 1.94 percent of the patients who were admitted were diagnosed as CCHF.

Table 2: The distribution percentage of CCHF cases in terms of gender

Percentage	Number	Gender
80.5	132	Male
19.5	32	Female
100	164	Total

As can be seen in table 2, 80.5% of the CCHF patients were males

Table 3: Number and percentage of CCHF patients in terms of age

Percentage	Number	Age
40.24	66	15-25
20.73	34	35-26
15.25	25	36-45
12.8	21	46-55
9.75	16	56-65
0	0	66-75
1.21	2	76-85
100	164	Total

According to the above table, the majority of the CCHF patients were in the age category of 15-25 years

Table 4: Number and percentage of CCHF patients in terms of residence

Percentage	Number	Residence
53.65	88	Other provinces
46.35	76	Kabul
100	164	Total

As it can be seen in table 4, majority of the patients were residents of other provinces

Table 5: the prevalence of CCHF in terms of occupation

Percentage	Number	Occupation
34.1	56	butcher
25.6	42	livestock
16.5	27	farmers
7.5	12	animal traders
7.9	13	housewife
8.5	14	unemployed
100	164	Total

According to the above table, the majority of the cases have occurred among butchers.

Table 6: the prevalence of CCHF in terms of season

Percentage	Cases	Season
23.2	38	spring
61	100	summer
15.1	26	Fall
100	164	Total

According to the above table majority of the CCHF cases have occurred during the summer season.

Discussion

This study was conducted to find the prevalence of the CCHF among the patients admitted to Infectious Diseases hospital Kabul, Afghanistan. From the total 164 CCHF patients who were diagnosed and admitted from 20th March 2018 to 20th March 2019, 132 patients (80.5%) were males, 32 patients (19.5%) were females, and these 164 admitted CCHF patients made 1.94% of the total number of admitted patients during this period. The mean age of the patients was 33.92±14.51 years, and the majority of the cases has occurred in the age category of 15-25 years old and among the butchers and during the summer season. We have reviewed the literature in different journals and reached the following findings:

The findings of this research is different from the research conducted by the Lwande et al. in Kenya, which found the prevalence of the virus 14%. This difference could be due to geography and study setting. The majority of the patients in their study were aged 40-49 years while in our study mostly people age 15-25 years were more affected. This difference could be attributed to the young population of Afghanistan and the occupational exposure of this age to livestock.¹¹

According to another study by Gülden BİLGİN et al., which was conducted in Ankara city of Turkey, 128 patients were admitted as CCHF patients. of which 66 patients (51.6%) were males, and 62 patients (48.4%) were females which is compatible with our study. 55.5% of their participants were farmers, and 90.6% were residents of rural areas.¹²

In terms of gender and occupational distribution our research is compatible with the study conducted by Sharifi et al. in Iran which found that majority of the patients were men and were butchers.¹³

This is hospital-based study which may not be able to extrapolated to the society. The limitations of this study were the incomplete files of the patients and lacking laboratory reports of the patients.

Conclusion: 1.94 percent of the totally admitted patients between 20th March 2018 to 20th March 2019 were CCHF cases. The prevalence of CCHF was more common among the people aged 15-25 years. In terms of gender, it was more common among men, and the majority of the patients were butchers.

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