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Prevalence of Crimean-Congo Hemorrhagic Fever in Infectious Diseases Hospital, Kabul

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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 hemorrhagic 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, up to 2007, no cases were reported, but in 2017 an unusual increase in cases occurred, which is a concern
Objective: The objective of this paper is to find the prevalence of CCHF in infectious diseases hospital, Kabul, during the year 1397
Method: This is a descriptive cross-sectional study conducted with 164 patients who were admitted to Kabul infectious diseases hospital during one year.
Results: During the year 1397 total of 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% 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 butcher.

Keywords: CCHF, prevalence, adult, infectious diseases hospital

Introduction

Crimean-Congo Haemorrhagic Fever (CCHF) is one of the most common tick-borne viral illnesses that affect humans. This disease was first identified in 1944 in the Crimea region and was named Crimean hemorrhagic 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 it. 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 a 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] [2] [3] [4]

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 hemorrhagic diseases and vary from subclinical infection to severe fatal disease. Most 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 hemorrhage 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 in with Reverse transcription-polymerase Chain Reaction (RT-PCR). The specific IgM antibody is detectable after day 5 of the illness and the IgG antibody in days 7-9 of the illness, which is diagnostic. Other laboratory findings include thrombocytopenia, leukopenia, prolonged prothrombin time, and elevated liver enzymes and creatinine kinase. [5] [6] [7]

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 centers are groups at high risk of disease. [8] [9] [7]

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, and 12 out of 19 patients died. Later on, 20 cases were recorded in 2000 in the Gulran district of Herat province, of which 15 patients have died. Active surveillance for CCHF was started in Afghanistan in 2007, and up to 2018 total of 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]

Research by Lwande et al. in 2012 studied the prevalence of CCHF in Ijara district in Kenya. In this study of the 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 the study conducted by Sharifi et al. in 2016 titled the prevalence of CCHF among people at high risk in Iran showed that of 362 patients, 86% were male, and 14% were female and were aged 12-78 years. 34% of these patients were butchers, 28% of 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, its necessary to conduct like this research at a hospital-level in Afghanistan in order to determine its prevalence among the patients who are admitted in infectious diseases hospital.

Objective: the objective of this study is to find the prevalence of CCHF in Infectious diseases hospital, Kabul during the year 1397

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 which is conducted among CCHF patients who have been admitted to infectious diseases hospital Kabul during the year 1397. First, the files of the patients were collected and studied. All the concerned and important points were noted. After that, by going to references and literature on the internet and other available sources, the related issues were copied, and after comprehensive review and comparison of concerning points based on the objective as mentioned above, the results and conclusions were inferred was discussed. In the end, the necessary recommendations were proposed.

Sampling method: census sampling was used in this cross-sectional study among patients who were admitted in Kabul infectious diseases hospital during the year 1397

Inclusion criteria: all the patients who were admitted as CCHF cases during the year 1397 were included in this study.

Exclusion criteria: those patients who were diagnosed otherwise and with incomplete and missing documents (lack of laboratory reports)

Variables: include age, gender, occupation, and place of residence

Results

This research was conducted within one year in a descriptive cross-sectional method with the participation of 164 patients who were diagnosed as CCHF cases during the year 1397 infectious diseases hospital Kabul. The results are presented as follows:

Table 1: the number of admitted CCHF patients among infectious disease patients admitted during the year 1397

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 CCHF.

Table 2: the percentage of CCHF 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 according to 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 according to residence

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

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

Table 5: the prevalence of CCHF according to the 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 (34.1%).

Table 6: the prevalence of CCHF according to the 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 (61%).

Discussions

This research paper was conducted on the prevalence of the CCHF among the admitted patients in Kabul infectious diseases hospital. This descriptive cross-sectional study was conducted with the participation of 164 CCHF patients who were admitted to the infectious diseases hospital Kabul during the year 1397. 132 patients (80.5%) were males, 32 patients (19.5%) were females, and this 164 admitted CCHF patients made 1.94% of the total number of admitted patients during this year. 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:

Based on research conducted by the Lwande et al. in 2012, the prevalence of the CCHF virus in the Ijara district in Kenya, of the 517 patients that their blood samples were taken for examination among them 14% were reported positive. The majority of the patients were aged 40-49 years and were farmers. [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 those, 66 patients (51.6%) were males, and 62 patients (48.4%) were females. 55.5% were farmers, and 90.6% were residents of rural areas. [12]

Another research by Sharifi et al. in 2014 titled the prevalence of CCHF among high-risk groups in Iran found that of the total 362 CCHF patients, 86% were men, and 14% were women and were aged 12-78 years. 34% of these patients were butchers, 28% were farmers and livestock workers, 9% were housewives, and 2% were students. [13]

In another study which was conducted in Herat province by the Niazi et al., 63 patients were admitted as CCHF of which 38 patients (60.3%) were males and 25 patients (39.7%) were females and were aged 9-90 years, and their mean age was 35.4±20 years, and the majority of the patients were aged 11-40 years (69.8%). In terms of occupation, 36.5% were housewives, 22.2% were farmers, 11.1% were butchers, 4.8% were shepherds, and the remaining 25.4% had other occupations. 28.6% were living in cities, and 71% were residents of rural areas. [14]

In a research conducted by Hakimoglu et al. in Monif Islamoglu secondary hospital in Castamonos city in Turkey, 19 cases of CCHF were admitted, of which 52.6%(10 people) were women, and 47.4% (9 people) were men and were aged 20 to 87 years. [15]

In another study conducted in the same hospital during 2014-2017 by Hasan Tahsin total of 31 patients were admitted, of which 19 patients (61.3%) were females, and 12 patients (38.7%) were males, and the mean age of them was 52.8±16.1 years. [16]

In another study by the Yolmaz et al. between 2002-2007, a total of 1820 positive cases were recorded, of which 53% were men, and 47% were women, and the patients were aged 1-92 years, and the mean age of the patients was 42 years. In terms of occupation, 36.4% were equipment keepers, 34.1% were farmers, and 6.6% were those who had animal-related jobs. [17]

Conclusion: 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.

Recommendations:

1. Establishment of a detailed registration system by the authorities in infectious diseases hospital
2. Establishment of a well-equipped laboratory to perform bacteriology, biochemistry, and serologic examinations in infectious diseases hospital.
3. Creation of a computerized database system so that in the future, the researchers and the hospital staff would not face any difficulties.
4. Enhancing public awareness about the CCHF disease and its modes of transmission and ways of prevention.

References:

[1] A. F. S. S. Sahak MN, "Descriptive epidemiology of Crimean-Congo Hemorrhagic Fever (CCHF) in Afghanistan," *International Journal of Infectious Diseases,* vol. 88, no. 2019, pp. 135-140, 2016-2018.

[2] E. A. B. H. G. E. B. A. K. A. e. a. Cevik MA, "Clinical and laboratory features of Crimean-Congo hemorrhagic fever : predictors of fatality.," *Int J Infect Dis. ,* vol. 12, p. 374–379, 2008.

[3] M. M. A.-n. R. Sharifi-mood B, "Prevalence of Crimean-Congo Hemorrhagic Fever Among High-Risk Human Groups," *Int J High-Risk Behav Addict.,* vol. 3(1), p. 5–8, 2014.

[4] M. A. Qaderi S, " Investigation of Crimean - Congo hemorrhagic Fever in Patients Admitted in Antani Hospital, Kabul, Afghanistan, 2017–2018.," *Int J Prev Med. ,* vol. 10, p. 117, 2019.

[5] A. S. S. S. S. F. Sharififard M, "Epidemiological Survey of Crimean-Congo Hemorrhagic Fever (CCHF), a Fatal Infectious Disease in Khuzestan Province, Southwest Iran, During 1999 -2015.," *Microbiology. ,* vol. 9, p. 5, 2016.

[6] P. B. C. S. Mostafavi E, "Clinical Symptoms and Laboratory Findings Supporting Early Diagnosis of Crimean-Congo Hemorrhagic Fever in Iran.," *J Med Virol Clin.,* 2014;(July).

[7] C. A. D. B. E. S. N. E. H. .. Ergonul O, "Characteristics of Patients with Crimean-Congo Hemorrhagic Fever in a Recent Outbreak in Turkey and Impact of Oral Ribavirin Therapy.," *Clin Infect Dis.,* vol. 39, p. 284–287, 2004.

[8] S. A. T. Z. Farzinnia B, "Study of the Epidemiological Status of Crimean-Congo Hemorrhagic Fever Disease in Qom Province, 2011," *Iran. Qom Univ Med Sci J.,* vol. 7, p. 4, 2013.

[9] W. H. Organization., " Introduction to Crimean-Congo Haemorrhagic Fever.," 2018.

[10] G. R. C. M. V. K. Z. E. M. Z. Kilinc C, "Examination of the specific clinical symptoms and laboratory findings of Crimean-Congo hemorrhagic fever.," *J Vector Borne Dis. 2016,* vol. 53, p. 162–167, (February 2018).

[11] I. Z. T. C. C. E. O. B. Lwande OW, "Seroprevalence of Crimean Congo Hemorrhagic Fever virus in Ijara District, Kenya.," *Vector Borne Zoonotic Dis.,* vol. 12, p. 9, 2012.

[12] G. B. e. all, "An investigation of pulmonary findings of Crimean–Congo hemorrhagic fever patients," *Turkish Journal of Medical Sciences,* pp. 162-167, 02.01.2014.

[13] M. M. R. A.-N. Batool Sharifi-Mood, "Prevalence of Crimean-Congo Hemorrhagic Fever Among High-Risk Human," *Int J High-Risk Behav Addict.,* p. 3(1): e11520, 2014.

[14] M. J. J. A. A. P. A. D. D. T. W. Aziz-ur-Rahman Niazi, "Crimean-Congo Hemorrhagic Fever, Herat Province, Afghanistan, 2017," *Emerging Infectious Diseases • www.cdc.gov/eid,* vol. 25, pp. 1596-1598, 2019.

[15] N. A. D. Hüseyin Can Hekimoğlu, "Evaluation of cases with a preliminary diagnosis of Crimean-Congo hemorrhagic, and comparison of characteristics in patients admitted to a secondary in Kastamonu, Turkey," *African Health Sciences,* vol. 14, pp. 873-880, 2014.

[16] H. T. Gozdas, "Evaluation of Crimean-Congo hemorrhagic fever suspected cases admitted toa secondary care hospital in Kastamonu, Turkey between 2014-2017," *African Health Sciences,* vol. 19, pp. 1433-1440, 2014-2017.

[17] T. B. H. I. A. S. R. U. M. A. C. M. A. C. Gul Ruhsar Yilmaz, "The epidemiology of Crimean-Congo hemorrhagic fever in Turkey, 2002—2007," *International Journal of Infectious Diseases,* vol. 13, pp. 380-386, 2009.