

Original Article

**Report of the Crimean Congo hemorrhagic fever in Abadan, Iran:
Summer 2016 (Case Report)**

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Abstract

Crimean-Congo Hemorrhagic Fever (CCHF) is a tick-borne, viral disease that may also be transmitted through person-to-person transmission by exposure to infected body fluids. It causes a severe disease in humans with high mortality rates. Here we present two cases of CCHF patients with sudden onset of lethargy, fever, nausea, vomiting, headache, and hemorrhagic manifestation. With one of the patients tick bite was confirmed, then he was treated with ribavirin in isolation and recovered completely. The second patient was in contact with the infected blood of a sheep and, unfortunately, despite the treatment, he passed away. Public health measures should focus on preventing this infection by raising the awareness of CCHF symptoms and route of its transmission, and also by adopting practices to decrease the chances of spreading infections in hospitals.

Keywords: Crimean-Congo Hemorrhagic Fever; Abadan; Iran

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1. Introduction

The Crimean Congo Hemorrhagic Fever (CCHF) is a viral hemorrhagic fever that is caused by Nairoviruses. This disease is an animals' specific disease, but its sporadic and epidemic forms also occur (1, 2). Crimean Congo hemorrhagic fever is a common zoonotic disease between humans and animals (3). CCHF viruses can infect a wide range of domestic and wild animals. Various types of ticks can transmit CCHF virus, but the strongest vector for this virus is the hyalomma ticks. Given that the vertical and horizontal transmission mechanism of the virus in the ticks has been proven, the virus is preserved in nature, and its propagation cycle occurs by ticks (4, 5). The disease causes mild vomiting and fever in domestic and wild animals that lasts up to a week, but its clinical symptoms vary in humans. The virus has a commune period of 3 to 9 days in ticks bites and 6 to 13 days in infections caused by contact with infected blood and tissues (6). After the commune period, the symptoms appear suddenly, including headaches, dry neck pain, fever, nausea and vomiting, muscle aches, abdominal pain, and dizziness. At this stage, laboratory findings, such as leukopenia and thrombocytopenia, are observed. Usually, from the third day of onset of symptoms, bleeding begins, usually primarily as petechia, especially in the upper body, and then hematoma, melena, hematuria, and gastrointestinal bleeding can also be observed (7, 8).

The disease is endemic in Southern Europe (Balkans), Turkey, Russia, the Middle East, sub-Saharan Africa, Central Asia, and western China, and its epidemics have been reported in Kosovo, Albania, Iran, Pakistan, and South Africa, and in recent decades, there has been a rapid increase in reported cases from Iran and Turkey (9). In

this report, two definite cases of CCHF disease in Abadan (southwest of Iran in Khuzestan provinc) and their outcomes will be reported.

Case presentation:

First case:

The subject was a 57-year-old resident of border town who was a farmer. A patient with sudden onset of symptoms including fever, muscle aches, and nausea and vomiting referred to the clinic of Ayatollah Taleghani Hospital, and due to the severe weakness as well as the high age, the patient was hospitalized. Initial laboratory tests reported thrombocytopenia and increased liver enzymes. As a result of the patient's worsening condition and the progression of symptoms, dizziness and bleeding from the palate began; while at this stage, the physician suspected CCHF disease. The Zoonotic Disease Control administration of the City was then informed, and after visiting the hospital and epidemiological surveys, it was found that the patient had two cows at home, and he also had constant contact with ticks in a way that he has had a direct contact with tick in the last few days. According to his biography, and also due to Swanepoel forms (Table.1), the patient received a score of 14 points. After collecting blood samples for transmission to the ArbroVirus laboratory of Pasteur Institute of Iran (as the reference for diagnosis), the patient was transferred to the isolated room as a probable case of CCHF, and treated with ribavirin for ten days (30 mg / kg body weight at once), then 15 mg / kg body weight every 6 hours for 4 days, then 7.5 mg / kg body weight every 8 hours for 6 days). After three days, the patient had normal symptoms, and his general condition became normal.

The patient was then kept at the hospital for the completion of the treatment period until the end of the ten days of ribavirin administration, and then he was discharged

from the hospital after training for the recovery of the disease and hygiene of livestock.

Table 1. Criteria for Clinical Diagnosis of Crimean-Congo Haemorrhagic Fever (21)

	Incubation period following known or potential exposure:	
	< 1 week	> 1 week or undetermined
I. HISTORY OF EXPOSURE TO INFECTION		
Bitten by tick/s or crushed tick/s with bare hands	3	2*
OR		
Had direct contact with fresh blood or other tissues of livestock or game animals	3**	2***
OR		
Had direct contact with blood, secretions or excretions of confirmed or suspected CCHF patient (including needle pricks)	3	2
OR		
Resided in or visited a rural environment where contact with livestock or tick was possible, but a specific incident constituting exposure could not be identified	2	1
II. SIGNS AND SYMPTOMS:		
Sudden onset		1
Fever > 38°C on at least one occasion		1
Severe headache		1
Myalgia		1
Nausea and/or vomiting		1
Bleeding tendency: petechial rash, ecchymosis, epistaxis, hematemesis hematuria or melena		3
III. CLINICAL PATHOLOGY DURING FIRST 5 DAYS OF ILLNESS:		
Leukopenia or leukocytosis		1
WBC < 3000/mm ³ OR WBC > 9000/mm ³		
Thrombocytopenia		
Platelets < 150000/mm ³		1
Platelets < 100000/mm ³		2
OR		
50% decrease in either WBC or platelet counts within 3 days		1
Abnormal PI		1
Abnormal PTT		1
Raised transaminases		
AST > 100U/L		1
ALT > 100U/L		1

*South African tick-born typhus and Ehrlichiosis must be excluded.

**Rift Valley Fever and Anthrax must be excluded.

***Brucellosis, Q Fever and Anthrax must be excluded.

A total score of 12 points or more constitutes was an indication for treating a patient as a case of CCHF.

Second case:

The patient was a 25-year-old man who was a driver and resident in the village. The patient was hospitalized in Ayatollah Taleghani Hospital with sudden onset of symptoms, such as Gastrointestinal (GI) bleeding. Primary laboratory findings showed abnormalities, such as thrombocytopenia, increased liver enzymes, and total bilirubin boost. At the start of his hospitalization, the Zoonotic Disease Control administration of the City was informed about the patient and the relevant experts are deployed to the hospital. In the biography of the patient and his relatives, it was determined that the patient participated in the slaughter of a sheep about ten days ago, and referred to the doctor with symptoms, such as headache, muscle aches, neck stiffness, and abdominal pain 3 days after and was treated for flu due to a misdiagnosis. In a Swanepoel Test (Table.1), the patient earned the score of 14 points. After collecting the blood sample to be transferred to the ArbroVirus Laboratory of Pasteur Institute of Iran, the patient was also transferred to the isolated room as a CCHF suspected case, and was treated with ribavirin for ten days. Unfortunately, despite the administration of platelets, plasma and ribavirin, and the necessary supportive care, the patient died the day after admission. The results of the tests conducted at the Pasteur Institute of Iran confirmed the presence of the Crimean Congo hemorrhagic fever virus in patient's plasma sample.

2. Discussion

Crimean-Congo hemorrhagic fever (CCHF) is a severe, viral, zoonotic disease with hemorrhagic manifestations and substantial mortality in humans. The virus is extensively dispersed around the world, and reports of

outbreak have recently increased (10, 11). Major host of CCHF virus are wild and domestic mammals and birds. Sheep, goats, and cattle develop high titres of virus in blood, but they do not become ill. Humans are usually infected with CCHF virus through a tick bite or close contact with contaminated tissues or fluid of the domestic animals. Blood and secretion of the infected patients could also disperse the infection to medical and laboratory staff (11, 12). Among risk factors involved in CCHF seropositivity, contact with animals, animal husbandry, farming, history of tick bite, housewife, hunting, exposure to contaminated secretion, and slaughtering were found to be the most frequent risk factors (13). Ribavirin (a synthetic purine nucleoside analogue) has been shown to prevent replication of the CCHF virus *in vitro*. It has been used in the treatment of CCHF, but its efficacy is debated (10). Ribavirin has been used in CCHF, and its effectiveness was estimated at 89% in patients with confirmed CCF and 70% in patients with suspected CCHF in a large clinical study of 139 treated patients (14). During June 1999 to February 2004, a total of 255 patients with CCHF were recorded in Southeast Iran. Ninety-three percent of the cases were treated with oral ribavirin (15). There has been many papers reporting the occurrence of CCHF worldwide (5, 12) with various disease outcomes. There are reports of confirmed CCHF cases from Europe (11), Scotland (6), India (7, 16), Turkey (17), Iraq (18), Afghanistan (19, 20), Iran (2, 3, 8, 14, 15, 21), and South Africa (22). The treatment outcome in almost all regions with the presence of the disease was either complete recovery of the patient or death (8, 17, 19, 20).

3. Conclusion

Crimean Congo hemorrhagic fever is an endemic disease in Iran and its neighboring countries (9). Given the epidemiological nature of the disease, and also due to the severe epidemic trend of the disease, it seems that educating people living in high-risk areas of the disease is one of the

essential requirements in disease control. For this purpose, multimedia, such as television and radio, and local newspapers, can be used to help, and necessary information can be transferred to people with the dissemination of various pamphlets.

On the other hand, and considering the fact that a quick diagnosis of a disease can rescue lives, training physicians and sensitizing health and medical personnel in the disease transmission seasons can be helpful in timely diagnosis of a disease. This can be conducted through holding workshops and training sessions for these people. In such trainings, physicians and treatment staff must be trained about the symptoms of the disease, and also transmission routes of the disease so as to be able to protect themselves and others against the transmission of the disease, and prevent outbreak.

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