

Clinical and Laboratory Findings of Crimean-Congo Hemorrhagic Fever in Albania in 2013-2015

Marsida Krasniqi¹ & Silvia Bino²

Abstract

Crimean-Congo hemorrhagic fever (CCHF) is caused by infection with a tick-borne virus (Nairovirus) in the family Bunyaviridae. Crimean-Congo hemorrhagic fever (CCHF) is a zoonotic viral disease that is asymptomatic in infected animals, but a serious threat to humans. The objective of this study is to analyze demographic and epidemiological characteristics, laboratory findings of cases with Crimean Congo Hemorrhagic Fever (CCHF) in Albania. The diagnosis of CCHF was done with the detected of IgG and IgM antibodies in the serum by enzyme-linked immunoassay (ELISA methods), the test was done in the Department of Public Health Institute of Tirana. 27 cases with CCHF were included in this study, which included a period of time from 2013-2015. Mean ages of the patients was 44.8 ± 16.4 years. The majority of the cases was from Has and Kukes. The symptoms were fever, headache, fatigue, nausea, vomiting and abdominal pain. Regarding laboratory analyses was seen most commonly an increase of hepatic enzyme (AST, ALT) and was seen lower level of platelets and leucocytes.

Keywords: Crimean Congo Hemorrhagic Fever, Albania, Clinical finding, epidemiological

1.0 Introduction

Crimean-Congo hemorrhagic fever (CCHF) is a zoonotic disease caused by a tick-borne. CCHF virus (CCHFV) of the genus Nairovirus of the family Bunyaviridae (Appannanavar & Mishra, 2011). The disease was first characterized in the Crimea in 1944 and given the name Crimean hemorrhagic fever. It was then later recognized in 1969 as the cause of illness in the Congo, thus resulting in the current name of the disease (Hoogstraal, 1979).

The distribution of the virus, like its tick vector, is widespread. The disease is endemic in many countries in Africa, Europe, Asia, Kosovo, Albania, Islamic Republic of Iran, Pakistan, and South Africa (Gozalan et al., 2007). CCHFV usually circulates between asymptomatic animals and ticks in an enzootic cycle. Members of the genus Hyalomma seem to be the principal vectors (Zakhashvili et al., 2010). Transmission to humans occurs through contact with infected ticks or animal blood. CCHF can be transmitted from one infected human to another by contact with infectious blood or body fluids.

The first sign of Crimean-Congo hemorrhagic fever is fever and other nonspecific symptoms including chills, severe headache, dizziness, photophobia, neck pain, myalgia and arthralgia. Gastrointestinal symptoms and abdominal pain are also common. This early stage of disease is called the prehemorrhagic phase (Ergonul, Celikbas, Baykam, Eren, & Dokuzoguz, 2006).

After the prehemorrhagic phase is the hemorrhagic phase. A petechial rash may be the first symptom; rash is followed by petechiae, ecchymoses and large bruises on the skin and mucous membranes (Pinazo et al., 2008). Hematemesis, melena, epistaxis, hematuria, hemoptysis and bleeding are also common. In this study it was analyzed the demographic, epidemiologic and laboratory finding in cases with CCHF in Tirana from 2013 to 2015.

¹ Catholic University "Our Lady of Good Counsel" Tirana, Albania.

² Institute of Public Health, Tirana, Albania.

Material and Methods

In 128 cases with febrile condition and suspected for Hemorrhagic fever were presented to Mother Teresa Hospital in Tirana from January 2013 to December 2015. Blood samples were taken from the patients and sent to the Public Health Institute of Tirana to confirm the diagnosis. Only 27 cases were confirmed for CCHF with enzyme linked immunosorbent assay (ELISA method). The test was positive for presence of IgG and IgM in the serum of the patients in the 27 cases. In this study a questionnaire was completed and data as age, sex, occupation, residence, presence of tick signs in the body of the patients, clinical and laboratory findings were analyzed. Data collected were presented as mean and standard deviation. T-student test and chi-square test were used, and a $p < 0.05$ was set as a significant p-value.

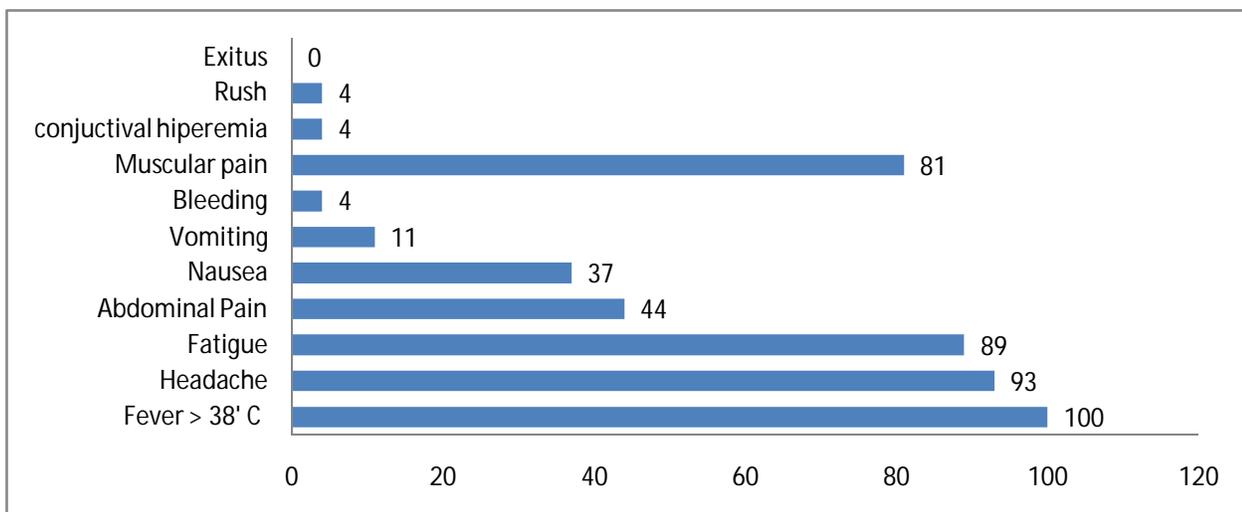
Results

In this study 27 cases were confirmed with CCHF where 15 (55.6%) of them were female and 12 (44.4%) were male. The mean age of the cases was 44.8 ± 16.4 , were the mean age of females was 48.6 ± 14.7 and the males were 40.1 ± 17.7 years old. Regarding the occupation, the majority of the cases 16 (59.3%) were housewife, were 11 of them was female. The majority of cases were seen in north Albania, and more frequently in Has 17 (62.9%), while in south Albania were seen only 3 (11.1%) cases in Gjirokaster (Table 1).

	Female	Male	Total nr (%)
Total nr (%)	15 (55.6%)	12 (44.4%)	27 (100%)
Age (mean \pm stDev)	48.6 \pm 14.7	40.1 \pm 17.7	44.8 \pm 16.4
Occupation			
Farmer	1	0	1 (3.7%)
Housewife	11	5	16 (59.3%)
Student	1	6	7 (25.9%)
Other	2	1	3 (11.1%)
Residence			
Has	12	5	17 (62.9%)
Kukes	2	3	5 (18.5%)
Gjirokaster	1	2	3 (11.1%)
Burrel	0	1	1 (3.7%)
Tropoje	0	1	1 (3.7%)

Table 1: Demographic data of cases with Crimea Congo Hemorrhagic Fever.

The commonest symptoms were fever seen in 27 (100%) of cases, headache in 25 (93%), fatigue in 24 (89%) and muscular pain in 22 (81%) (Graphic 1).



Graphic 1: Prevalence of symptoms in cases with CCHF in percentile

As we can see from Table 2, both female and male has the same prevalence of the symptoms and it has not seen any difference between them. It was seen only one case with conjunctival hyperemia in female and one case of rash in male.

	Female	Male
Fever > 38' C	15 (100)	12 (100)
Headache	13 (87)	12 (100)
Fatigue	13 (87)	11 (92)
Abdominal Pain	7 (47)	5 (42)
Nausea	5 (33)	5 (42)
Vomiting	2 (13)	1 (8)
Bleeding	1 (7)	0 (0)
Muscular pain	13 (87)	9 (75)
Conjunctival hyperemia	1 (7)	0 (0)
Rash	0	1 (8)
Exitus	0	0 (0)

Table 2: Symptoms in cases with CCHF according to sex

In this study it was not any significance difference between age in female and male. In table 3, laboratory finding of cases with CCHF were compared in terms of their gender. High level of ALT and AST were found in female and male but between genders this was not significant. Thrombocytopenia 3 (11%) and leucocytosis 10 (37%) were seen, but it was not any significance between male and female.

	Female nr (%)	Male nr (%)	P-value
Age	48.6 ± 14.7	40.1 ± 17.7	0.09
High ALT	10 (67)	10 (83)	NS
High AST	11 (73)	9 (75)	NS
Thrombocytopenia	2 (13)	1 (8)	NS
Leucocytosis	6 (40)	4 (33)	SN

Table 3: Laboratory finding of cases with CCHF

Discussion

In Europe, CCHF is recorded in different countries in the region such as Albania, Kosovo, Turkey, and the Ukraine as well as south-western regions of the Russian Federation, CCHF is currently only endemic in Bulgaria (team, 2010). During the last decade, CCHF outbreaks have also been noted in Albania in 2001 and 2003, and in Kosovo in 2001 (Papa, A., C. Drosten, S. Bino, E. Papadimitriou, M. Panning, E. Velo, M. Kota, A. Harxhi, 2007). Has and Kukes is situated in north part of Albania, which is close to Kosovo boarder, and has an environment for ticks spreading CCHF due to its geographic structure, climate and lifestyle of people living there. The patients presenting with fever, fatigue, nausea/vomiting, and bleeding were admitted to the religion hospital of Has and Kukes. After the examination and some laboratory test they were sent to the Department of Infection disease in Tirana. The differential diagnosis for CCHF was done in Public Health Institute of Tirana, using the ELISA method.

Tick bites are especially seen in livestock farmers and agriculturists (Bodur, Akinci, Ascioğlu, Öngürü, & Uyar, 2012). In this study CCHF was diagnosed mostly in the housewife and agriculturists, who were usually young adults working in open field and taking care and cleaning of animal barns. It is interesting to note that except two cases, all the infected patients were from the villages of northern part of Albania, close to Kosovo. For diagnosis of the disease, isolation of virus from blood and tissue samples, serology of the viral antigens and antibodies against the viral antigen are used. Antibodies can be analyzed by ELISA serologically. PCR is also used in diagnosis (Koksal et al., 2010). Immunofluorescent test can also be performing to confirm serology of cases. In our study diagnostic test were performed in the Laboratory of Public Health in Tirana. 27 cases were reported with IgG and IgM positive with ELISA test.

Onset of symptoms is sudden, with fever, muscular pain, dizziness, headache, sore eyes and photophobia. There may be nausea, vomiting and sore throat, which may be accompanied by diarrhea and generalized abdominal pain. Other clinical signs which emerge include tachycardia, lymphadenopathy, and a petechial rash, both on internal mucosal surfaces, such as in the mouth and throat, and on the skin (Maltezou & Papa, 2011). Leucopenia and thrombocytopenia can be observed as laboratory findings. Laboratory showed elevated levels of ALT, AST, GGT, CK and LDH. Bleeding time, PT and PTT are prolonged (Ergonul, O., 2007). In our study, leucopenia and thrombocytopenia were the commonest hematological findings. High level of AST and ALT were also been notice.

Conclusion

The Economic condition, geographic structure, climate and habitat had an important role in the distribution of the infection in different areas of Albania. The differential diagnosis should also include laboratory findings such as thrombocytopenia, leucopenia and elevated liver enzyme.

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