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Hepatitis in Patients with Crimean –Congo Hemorrhagic Fever

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Abstract

***Background*:** Crimean–Congo hemorrhagic fever (CCHF) is a viral disease and causing approximately 30% fatality rate. Recent studies have been reported that hepatitis in CCHF patients is with high mortality. The aim of this study was to determine the prevalence of hepatitis in the CCHF cases and also detect the mortality rate among patients with hepatitis.

***Materials and Methods*:** The present study was conducted in patients with CCHF who were hospitalized in Boo-Ali hospital in Zahedan between Oct 2009 to Feb 2012. Liver function tests including aminotransferase enzymes and prothrombin time and mortality rate were evaluated.

***Results*:** Among 53 patients with CCHF, hepatitis was seen in 19 patients (45%). Nine patients died (21%). All dead patients had a serum aminotransaminase level ≥10 times the upper normal limit.

***Conclusion*:** Our study showed that hepatitis is prevalent in CCHF patients and a serum aminotransaminase level ≥5 times the upper normal limit (UNL) is a risk factor for severe disease and high mortality.

Introduction

Crimean-Congo hemorrhagic fever (CCHF) is a fatal viral infection which is found in Asia, Southern Europe, Africa, and the Middle East [1-3]. Recently, the disease is endemic in Iran, especially, in the southeastern Iran. Humans become infected through the bites of ticks, by contact with a patient with CCHF during the acute phase of infection, or by contact with blood or tissues from viremic livestock [2-4]. The onset of the disease is usually acute, with initial signs and symptoms including high fever, headache, muscle pain, joint pain, stomach pain, vomiting, and flu-like syndrome. Red eyes, sore throat, and petechiae on the palate and skin are common [2-5]. Symptoms may also include jaundice, and in severe cases, mental changes occur. As the illness progresses, severe nosebleed, and uncontrolled bleeding at injection sites appear, beginning approximately on the fourth or fifth day of illness and lasting for about two or three weeks [1-3].

Laboratory tests that are used to diagnose CCHF include enzyme-linked immunosorbent assay (ELISA) (IgG and IgM), real time polymerase chain reaction (RT-PCR) and virus isolation attempts [2-5]. Laboratory diagnosis of a patient with a clinical history compatible with CCHF can be made during the acute phase of the disease by using the combination of ELISA, RT-PCR in the blood or in tissues collected from a fatal case and virus isolation. The parameters such as organ failure, hepatitis, bleeding (Increased PT, PTT) and severe thrombocytopenia (less than 50,000) were reported as factors with poor prognosis [5-7]. Up to date; several studies have evaluated the effect of several clinical manifestations and laboratory findings on the mortality of CCHF [6-8]. To study the prevalence of hepatitis in patients with CCHF and to determine the mortality rate in Patients with hepatitis, we conducted this survey.

Materials and Methods

The present study was conducted in patients with confirmed CCHF who were hospitalized in Boo-Ali hospital, Zahedan (a subtropical area in the South-east of Iran) between Oct 2009 to Feb 2012. The confirmed patients were those who had a positive test for RT-PCR or a positive serologic test. We studied all files of patients with CCHF. The level of aspartate aminotransaminase (AST), alanine aminotransaminase (ALT), and prothrombine time (PT) were evaluated. The aminotransaminase levels more than 5 times the upper normal limit (according to hospitals laboratory index, normal level for AST was 35 IU/l and ALT 40 IU/l) was diagnosed as hepatitis. The mortality rate in CCHF patients with hepatitis was also evaluated.

Results

A total of 53 patients with CCHF (41 male and 12 female with age range of 20-78 years) were evaluated. 65% of our patients were from urban areas. Forty eight patients (90%) were Slaughterhouse workers and livestock handlers. Hepatitis (a serum transaminase ≥5 times UNL) was seen in 19 patients (45%). Nine patients died (21%). All dead patients had a serum aminotransaminase more than 10 times of the UNL. The INR was higher than 1.5 in all patients who died (Table1).

Table 1. Demographic factors and laboratory results of patients with Crimean–Congo hemorrhagic fever

Characteristics	Male	Female
Sex	41	12
Age (Years), Mean±SD	31.2±7.4	32.9±6.8
Living in rural area	27	7
Living in urban area	14	5
Livestock workers	46	2
Serum transaminase≥5 times UNL	15	4
Serum transaminase≥10 times UNL	8	1
INR>1.5	8	1
Lowest platelet count (/ml) (Mean±SD)	19600±6800	15000±5400
Mortality	8	1

Discussion

Crimean-Congo hemorrhagic fever is an acute, tick-borne viral disease that involves almost exclusively human. Although, CCHF is an acute and generally self-limiting disease, it can cause disease-related mortality (30-70%) [2-5]. Several studies have reported the prognostic factors for CCHF from various parts of the world [9-11]. In the previous studies, several clinical and laboratory data such as hemorrhage, diarrhea, melena, confusion, platelet (PLT) count, prothrombin time (PT), activated partial thromboplastin time (aPTT), international normalized ratio (INR), AST, ALT, LDH were reported to be the prognostic factors. In our study, Hepatitis (a serum transaminase ≥5 times the UNL) was seen to be a potent risk factor for severity of the disease and death, especially, when the level of serum transaminase was more than 10 times of the UNL. Therefore, among 19 patients with hepatitis, 9 patients died (48%). All dead patients had a serum transaminase more than 10 times the UNL and a platelet count less than 20,000 per microliter. Swanepoel et al reported that if one of the following factors including a platelet count ≤ 20,000/mm^3, an AST level ≥ 200 U/l, an ALT level ≥150 U/l, an activated partial thromboplastin time ≥60 sec during the first 5 days after the onset of illness is present, the fatality risk will be approximately 90% [11]. In this study, the cut-off points for AST, ALT, in the fatal patients were determined 200 (5×UNL), 50 (1×UNL), respectively. Yilmaz et al. reported that optimum diagnostic cut-off points for specific laboratory parameters in the severe group were: PLT 90,000/mm^3, PT 13.1 sec, aPTT 34 sec, INR 1, AST 117 IU/l and ALT 7 IU/l. Higher levels of AST (≥700 IU/l) and ALT (≥900 IU/l) were suggested to be the severity criteria by Ergonul et al. [6]. Although, mortality rate in our patients was less than Swanepoel report (45% vs. 90%), all death was happened in the patients with platelet < 20.000 and AST and ALT more than 10 times UNL. In a study by Cevik et al. among the fatal cases versus non-fatal cases, the mean ALT (1688 vs 293 IU/l), mean AST (3028 vs 634 IU/l), and the mean INR (1.38 vs 1.1) were higher, and the mean PT (18.4 sec vs 13.4 sec) and the mean aPTT (69.4 sec vs 42.7 sec) were longer [13]. Onguru et al. reported that platelet count, PT, aPTT, INR, and fibrinogen were prognostic factors associated with higher mortality in CCHF [14]. One Study in Zahedan (Iran), showed the platelet count less than 20,000 was in relation with high mortality rate comparing to those who had a platelet count more than 20,000 [15]. In conclusion, it is necessary for a physician working in the primary, secondary or tertiary care hospital, to find and decide the severity of disease every time according to the risk factors related to mortality in order to find a better way to treat patients and prevent the complications of the disease. We believe that if the physician address severity grading score (SGS)-based triage for patients, it will reduce the intensity of secondary or tertiary care hospitals.

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Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

The authors declare no conflict of interest.

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References

1. Mardani M, Keshtkar-Jahromi M. Crimean-Congo hemorrhagic fever. Arch Iran Med 2007; 10(2): 204-214.
2. Alavi-Naini R, Moghtaderi A, Koohpayeh HR, et al. Crimean-Congo hemorrhagic fever in southeast of Iran. J Infect 2006; 52(5): 378-382.
3. Sharifi-Mood B, Mardani M, Keshtkar-Jahromi M, et al. Clinical and epidemiologic features of Crimean-Congo hemorrhagic fever among children and adolescents from South eastern Iran. Pediatr Infect Dis J 2008; 27(6): 561-563.
4. Sharifi-Mood B, Metanat M, Ghorbani-Vaghei A, et al. The outcome of patients with Crimean-Congo hemorrhagic fever in Zahedan, southeast of Iran: A comparative study. Arch Iranian Med 2009; 12(2): 151-3.
5. Sharifi-Mood B, Mardani M, Metanat M. Clinical manifestations, laboratory findings and clinical outcome in pregnant women with Crimean-Congo hemorrhagic fever. Iran J Clin Infect Dis 2007 2(4): 193-196.
6. Ergonul O, Celikbas A, Baykam N, et al. Analysis of risk-factors among patients with Crimean-Congo haemorrhagic fever virus infection: Severity criteria revisited. Clin Microbiol Infect 2006; 12(6): 551-4.
7. Yilmaz G, Koksal I, Topbas M, et al. The effectiveness of routine laboratory findings in determining disease severity in patients with Crimean-Congo hemorrhagic fever: severity prediction criteria. J Clin Virol 2010; 47(4): 361-5.

8. Ozkurt Z, Kiki I, Erol S, et al. Crimean-Congo hemorrhagic fever in Eastern Turkey: clinical features, risk factors and efficacy of ribavirin therapy. J Infect 2006; 52(3): 207-15.
9. Ergonul O. Crimean-Congo hemorrhagic fever. Lancet Infect Dis 2006; 6(4): 203-14.
10. Scientific assessment report of the Crimean-Congo hemorrhagic fever .The Turkish Medical Association Publications, 2010. Available from: http://www.ttb.org.tr/kutuphane/kirim_kongo_rpr.pdf (last accessed on December 20, 2011).
11. Swanepoel R, Gill DE, Shepherd AJ, et al. The clinical pathology of Crimean-Congo hemorrhagic fever. Rev Infect Dis1989; 11 (Suppl 4): S794-800.
12. Yilmaz G, Koksal I, Topbas M, et al. The effectiveness of routine laboratory findings in determining disease severity in patients with Crimean-Congo hemorrhagic fever: severity prediction criteria. J Clin Virol 2010; 47(4): 361-5.
13. Cevik MA, Erbay A, Bodur H, et al. Clinical and laboratory features of Crimean-Congo hemorrhagic fever: Predictors of fatality. Int J Infect Dis 2008; 12(4): 374-9.
14. Onguru P, Dagdas S, Bodur H, et al. Coagulopathy parameters in patients with Crimean-Congo hemorrhagic fever and its relation with mortality. J Clin Lab Anal 2010; 24(3): 163-6.
15. Sharifi-Mood B, Alavi-Naini R, Metanat M, et al. Efficacy of high-dose methylprednisolone in patients with Crimean-Congo hemorrhagic fever and severe thrombocytopenia. Proceeding of the 20th Iranian congress of infectious diseases and tropical medicine. Tehran: The Ministry of Foreign Affairs; 2011.

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