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Original Article

Crimean-Congo Hemorrhagic Fever in Mopti : Epidemiological, Clinical and Diagnostic Aspects

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1 | BACKGROUND

Crimean Congo haemorrhagic fever (CCHF) is a zoonosis characterized by fever, coagulopathy and hepatitis. It is avoided in more than 30 countries in Africa, Asia, the Mid (1). It is one of twelve haemorrhagic fevers caused by viruses (2). Crimean-Congo hemorrhagic fever is transmitted by Hyalomma spp ticks or by contact with the blood or fluids of infected people or animals (3). It is endemic in Africa where the first cases were recorded in 1956 in the Democratic Republic of Congo (DRC). No active human case of the disease has been detected in Mali to date, but serological traces were found in Baguinéda in 1991 with a seroprevalence reaching 4.5% (4). This seroprevalence reached between 15% to 95% on bovine serum in all regions of the country (5). In February 2020, an epidemic of viral hemorrhagic fever in Crimea Congo occurred in the village of Kera, Korientzé health area in the health district of Mopti in Mali where cases of this disease were diagnosed. The index case is a shepherd aged around 39 who presented with fever, headache, general fatigue with epistaxis, vomiting and hematemesis in the village of Sampara, located some 15 kilometers from his home village, kera . Brought back by his father who came to pick him up, he died there on 01/11/2020. In order to better prepare the response against the next epidemics of viral hemorrhagic fever, we propose to capitalize on the experiences acquired during the present epidemic with the aim of describing the epidemiological, clinical, evolutionary and therapeutic characteristics of the cases of CCHF occurring in the region of Mopti in Mali.

2 | METHOD AND MATERIALS

The diagnostic criteria for Crimean Congo hemorrhagic fever were epidemiological, clinical and biological. The sudden onset of signs such as fever, vomiting, fatigue, diarrhea and various bleeding from the nose, genitals as well as the notion of contact with a sick or deceased person were the main criteria that prevailed for clinical diagnosis of the disease. For cases of death, the notion of contact with patients and especially the epidemiological link between cases of death have also been defined as diagnostic criteria. Biologically, real-time RT-PCR was the only method used for diagnosing cases while blood count (CBC) was used to look for thrombocytopenia. Whole blood samples from patients were sent in triple packaging to the national reference laboratory in Bamako, located 670 km further south. On the first samples, the tests carried out targeted different causes of hemorrhagic fever such as Ebola virus disease, Marburg hemorrhagic fever, West Nile Virus infection, Rift valley fever, Lassa fever and fever. Crimea-Congo. Testing for dengue and yellow fever viruses has not been carried out. For confirmation of the diagnosis, a first test was carried out at the laboratory of the National Institute of Public Health (INSP) then confirmed by the laboratory of the Center for Research and Training on Tuberculosis and HIV (SEREFO) located in the Faculty of Medicine and Odontostomatology (FMOS). Lab test results were returned after 48 hours.

3 | RESULTS

The most common signs associated with them were fever, vomiting, fatigue, muscle pain, joint pain, and vaginal bleeding. Thrombocytopenia with a platelet count of 15,000 / mm3 was found in one case. In the other patients, CBC was not done. Management was mainly symptomatic and consisted of rehydration, use of antipyretics, antibiotics and blood transfusion depending on the clinical picture. After one week of treatment in isolation, the clinical signs have generally improved. This clinical improvement was marked in particular by apyrexia, the cessation of bleeding and the disappearance of digestive signs. At the end of three weeks of evolution all the clinical signs disappeared in 8 patients. This clinical cure was followed by the biological because the control RT-PCR carried out 17 days after the first one came

Supplementary information The online version of this article (https://doi.org/10.15520/ijmhs.v11i01.3200) contains supplementary material, which is available to autho-rized users.

TABLE 1: symptoms found in patients

Symptoms	Number (N=10)	Percent (%)
Vomiting	10	100
Fatigue	10	100
muscle pain	10	100
joint pain	7	70
Fever	7	70
Anorexia	6	60
Vaginal bleeding	5	50
Headache	5	50
Epistaxis	3	30
Diarrhea	2	20
Abdominal pain	2	20
Disturbed consciousness + restlessness	1	10

back negative for all the patients. In addition, case-contact patients were placed under observation for 14 days. This made it possible to diagnose a new case among them who died after 3 days after the onset of his symptoms. Haemorrhagic complications such as disseminated intravascular coagulation (DIC) and hypo-volemic shock resulted in deaths among patients followed in the isolation center. We recorded nine deaths, five of which were epidemiologically linked in the village of Kera and three others during the follow-up of patients in the Mali Gavardo health center and the Sominé DOLO hospital in Mopti. Five deaths were recorded at the village level and three during the follow-up of patients in isolation. All the deceased patients had contact with a patient or a person who died. Three other cases whose PCR was negative also had contact with sick people. At the end of the follow-up of the patients and of the 15 contact persons, we recorded a case fatality of 30%. Only one contact subject developed the disease and died from it.

4 | DISCUSSION

The group of people, who subsequently fell ill, numbering 9, was taken to Sévaré and received separately in two different structures on 01/31/2020. The presence of these indigenous cases confirms that the virus is circulating in Mali and corroborates the results of the work of Traoré et al. (4) . Evidence of the index case's tick bite could not be established because he had previously died. However, there is a well-established relationship between this index case and the other cases that have arisen since. This intra-family contamination was favored by the absence of protective and hygienic measures when handling the body and / or fluids of those first affected by the disease. Intra-community contamination is well established after the occurrence of the first case (s). It was favored by the ignorance of the disease at the start of the epidemic because the first cases were not quickly diagnosed but also by traditional ritual practices and unsafe burials which contributed to its spread within the community. . We have two isolation centers for case management in two health facilities in Sévaré / Mopti. These are the Mali Gavardo health center and the Sominé DOLO Hospital where isolation centers have been set up for the occasion. The 6th and 7th deaths occurred during hospitalization on 02 and 05/02/2020, respectively. On 02/07/2020, a contact subject who had fallen ill 3 days previously was admitted to an isolation center and died there the same day. Crimean Congo hemorrhagic fever is characterized by its sudden onset, its complications and above all its case fatality rate which varies between 30 and 50% (1, 2). The epidemic usually starts with a case following contact with ticks or with an infected animal, and then spreads into the community through human-to-human transmission. This human-to-human transmission, which is the source of the spread in the community, is all the easier when the hygienic conditions are poor and the sick and / or the bodies of the deceased are handled by those around them without protective measures. The body of the first case was handled by close relatives without any protective measures. The remaining cases occurred in relatives who came into contact with the deceased, and some of them died after contracting the disease. The group of people, who subsequently fell ill, numbering 9, were taken to Sominé DOLO hospital and Mali Gavardo hospital. The cure rate reached 70%.

Limit of our study: The search for the virus in ticks and in local animals would have edified us in the search for the environmental factors which led to the outbreak of this epidemic as well as the extent

of the infestation, including in animals. The security conditions did not allow this work to be carried out because the agents responsible for doing this work were prevented from doing so by the armed groups operating on the ground. Similarly, the search for factors which contributed to the almost exclusive occurrence of the disease in women could not be carried out.

5 | CONCLUSION

The occurrence of an epidemic of Crimean-Congo hemorrhagic fever under the yet unclear circumstances suggests that further epidemics linked to other viruses hitherto unknown in our country remain possible. This is why the health authorities, through an effective epidemiological surveillance system, must be put in place in order to detect them as soon as possible and stop their spread within the population. (6–12)

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