

Data Analysis of Crimean-Congo Hemorrhagic Fever Disease (CCHF) in Al-Muthanna Province Iraq

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Abstract:

Background: Crimean – Congo Haemorrhagic Fever (CCHF) is a viral tick borne disease. The incubation period: 3-10 days. It is transmitted to humans by Infected tick's bites, and direct contact with blood or tissues from infected humans and livestock. CCHF is endemic in Africa, the Middle East, the Balkans, and Asian countries. Iraq is one of the Middle East countries where CCHF is endemic. The first case was reported in Iraq in 1979 in AL-Yarmouk Hospital in Bagdad. The study will conduct a descriptive analysis of CCHF cases during the 2021 - 30/6/2023 in Al-Muthanna Province.

Methods: Descriptive analysis of surveillance data. Data sources from the surveillance unit, control communicable disease division, and public health department. Duration of study from 1 May -30/ June /2023. After official approval from the AL-Muthanna public health department, data management, and analysis by SPSS version 26 software was used for clearing, organizing, and analysing data .

Results: Thirty-nine cases enrolled in this study including. total case fatality rate from 2021 - 30/6/2023 was recording 26%. with 70% of the fatalities being female. The age group of 32-49 years saw the highest percentage (54%). CCHF was recorded at 56% among housewives. The high incidence of patients with CCHF was recorded in Al-Rumaitha and the first AL-Samawah districts at 66%. The peaked cases were reported on week 28 when 3 cases. Death cases were recorded in 80% of females. Female cases were recorded in 59% of all cases.

Conclusion: The majority of cases are reported in females, particularly housewives. Most cases were reported in AL-Rumaitha and First AL-Samawah health sector. Most cases are reported in the age group 32-49 years. promoting health awareness by taking preventative measures to ward off illness. Use insect repellent on exposed skin and clothing, especially for agricultural workers and anyone who works with animals. Healthcare professionals must take the right infection control procedures to avoid occupational exposure.



Keywords: Iraq, AL-Muthanna governorate, CCHF.

1. Introduction

Crimean-Congo hemorrhagic fever virus (CCHFV) is an arthropod-borne virus (arbovirus) that is mostly spread by tick [1] CCHFV is a potentially fatal human disease that is widely spread over Africa, Asia, Eastern Europe, South-Western Europe, and numerous Middle Eastern nations. [1]. Iraq had previously reported a number of occasional cases of Crimean-Congo hemorrhagic fever (CCHF). [2]. In 2021- 2022–2023-year Iraq witness sever outbreak especially in south of Iraq [11]. The virus that causes Crimean-Congo hemorrhagic fever is primarily transmitted by ticks. Additionally, both during and immediately following animal slaughter, it can be contracted through contact with viremia animal tissues, or animal tissues from which the virus has already entered the bloodstream. [3]. 88% of people who are infected will have subclinical symptoms. A major sickness affects one in eight people. 3 to 10 days are needed for incubation. [3]. Public health services are threatened by CCHF outbreaks because the virus can produce epidemics, has a high case fatality rate (10–40%), and may induce outbreaks in hospitals and other healthcare facilities. In all of Africa, the Middle East, and Asia, CCHF is endemic. [4]. When the disease was discovered there for the first time in 1944, Crimean hemorrhagic fever was given as its official name.

Sudden onset fever, chills, trembling, myalgia, headaches, nausea, vomiting, stomach pain, and arthralgia are the most common signs and symptoms. The following few days brought on bleeding from the mucous membranes, hematomas, ecchymosis, melena, hematuria, nosebleeds, vaginal bleeding, bradycardia, thrombocytopenia, and leukopenia. [3]. In locations where CCHF is prevalent, those who care for livestock at slaughterhouses and herders are particularly vulnerable. Healthcare workers in endemic areas are vulnerable to infection through unprotected contact with infected blood and body fluids. International travelers as well as anybody who deal with cattle in endemic areas could be exposed. [5].

The laboratory methods used to identify CCHF (IgG and IgM) include real-time polymerase chain reactions (RT-PCR), efforts to isolate the virus, and antibody detection by ELISA. Combining the detection of the viral antigen (ELISA antigen capture), viral RNA sequence (RT-PCR) in the blood or in tissues retrieved from a dead case, and virus isolation, a patient's laboratory diagnosis of CCHF can be made during the acute phase of the illness. [6]

Prevention Agricultural workers and anyone who handle animals are advised to use insect repellent on exposed skin and clothing. The most efficient tick-prevention products are those that contain DEET. Additionally, people should avoid touching the sick or dead bodies of animals or people, as well as their blood and body fluids. To prevent occupational exposure, healthcare workers must implement the required infection control measures. [7].

Since the first incidence of CCHF was documented in 1979, Iraq in particular has developed into an endemic region. The Iraqi health officials report several CCHF instances each year [10]. There have been confirmed 66 deaths in year 2022 and more than 350 confirmed cases This is already ten times higher than the 33 occurrences that were reported in 2021 which covered the entire year. [8] while in 2023 Iraq reported 410 confirmed cases with 55 deaths from One January till 30/6/2023. Governorate of Al-Muthanna there will be 905,000 people living there till 30/6/2023. It shares borders with Saudi Arabia, Kuwait,



Al-Diwaniya Governorate, Al-Basra, and Theqar. [9]. Tick infestations in livestock animals can endanger family members. The inadequacy of livestock spraying over the preceding two years as a result of COVID-19 is believed to be one of the causes of the outbreak. In a place like Iraq, where raising cattle is fairly widespread, it is especially problematic. [8]

2. Methodology

Descriptive analysis of surveillance data. Data sources from surveillance unit, control communicable disease division from 2021 to June 30, 2023. data management, and analysis by SPSS version 26 software was used for clearing, organizing, and analyzing data. Between 2021-30/6/2023, only (39) of the 79 cases from 5 districts in the AL-Muthanna governorate who had acute-phase serum samples and were thought to have the CCHFV virus were really infected. At the time of hospital admission, serum samples from cases were taken, and the public health laboratory in the AL-Muthanna health directorate transferred them to the central public health laboratory in Baghdad. The diagnosis was confirmed using the real-time polymerase chain reactions (RT-PCR) from the Special Pathogens Unit of the National Institute for Communicable Diseases. The researcher is part from Rapid response team and the epidemiological investigation team perform the epidemiological investigation of the infected person after the positive test result is revealed. Identification information on the infected person is gathered, as well as demographic information, clinical information, contact information, risk factor information, and results of laboratory testing data are then consolidated and analysed.

3. Result

79 possible CCHF cases were recorded in the governorate of AL-Muthanna between 2021- 30/6/2023. In Baghdad, 270 kilometres away, the Central Public Health Laboratory verified a 49% positive case (n=39). There were 39 patients in all, of whom 26% died (n=10), with 70% of the fatalities being female. The age group of 32–47 years saw the highest percentage (54%). The prevalence of CCHF among housewives was 56%. Al-Samawah and Al-Rumaitha health sectors originally recorded around (66%) of the CCHF. Week 28 saw the highest number of instances reported (n=8). Out of all cases, Male to female ratio=1:1.4.

A 91% increase in cases occurred in the months of April, May, June, and July. 39% of the patients were semi-urban, whereas 48% of the patients lived in rural areas. In the patient's residence, there are animals in a total of 61%, with sheep making up 52% of the total. In 41% of the cases deals with raw meat was directly contacted, and in 30% of the cases exposure to tick bite. 100% of patients had suffering from fever.

Table 1: The Cases of Crimean- Congo haemorrhagic fever in AL-Muthanna province in 2021 - 30/6/2023.

Total number of cases in 2021	1
Total number of cases in 2022	20
Case fatality rate in 2022	30%
Total number of cases from 1/1- 30/6/2023	18
Incidence rate from 1/1- 30/6/2023	2/100000
Total number of death with CCHF from 1/1- 30/6/2023	10
Positivity rate form 2021-30/6/2023	52%
Total case fatality rate	26%

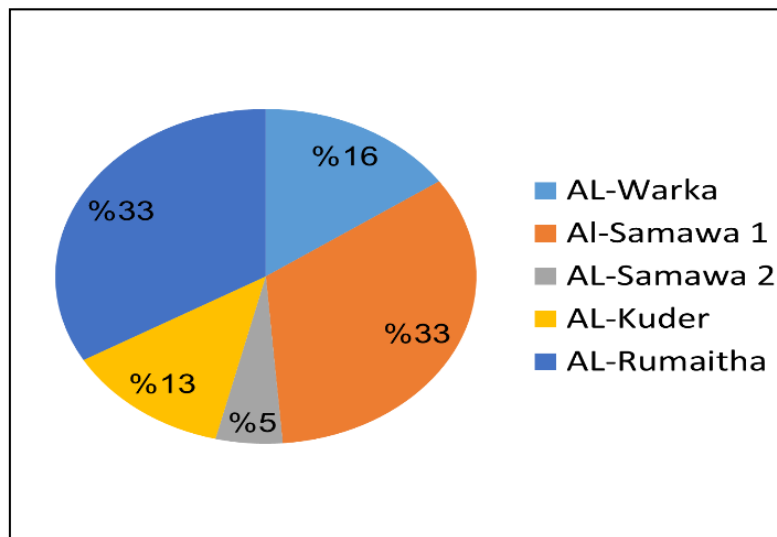


Chart 1: Shows the distribution of the disease Crimean-Congo haemorrhagic fever in the AL-Muthanna governorate. According to the district in 2021-30/6/2023

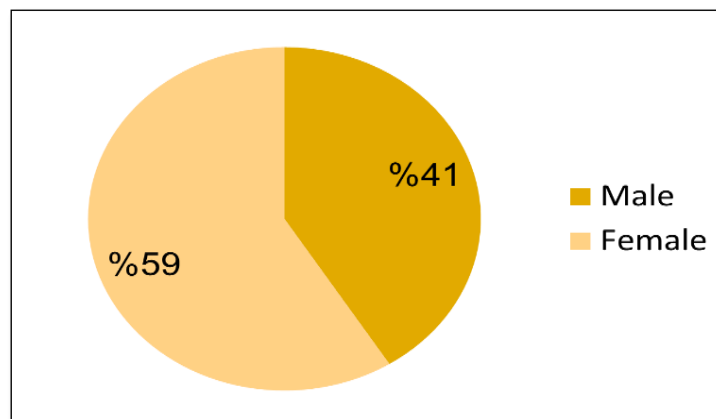


Chart 2: Show the Distribution of Crimean - Congo haemorrhagic fever disease in AL-Muthanna province according to sex for year 2021 – 30/6/2023.

Table 2. The Crimean-Congo haemorrhagic fever cases by age group and sex in the AL-Muthanna province from 2021 to 30 /6/ 2023

Age (years)	Male	Female	Total	Range
1-14	-	1	1	2%
15-29	7	3	10	26%
30-49	6	15	21	54%
50+	3	4	7	18%
Total	16	23	39	
	41%	59%		100%

Table 3: shows the distribution of Crimean-Congo haemorrhagic fever cases by type of occupation in the AL-Muthanna province from 2021 to 30 /6/ 2023.

Type Of Occupation	Number of Cases	Percentage rate
Housewife	22	56%
Farmers	1	2.5%
Butchers	2	5%
Shepherd	3	8%
Students	2	5%
Building Man	2	5%
Child	1	2.5%
Security Man	3	8%
Poultry worker	2	5%
Employee	1	2.5%

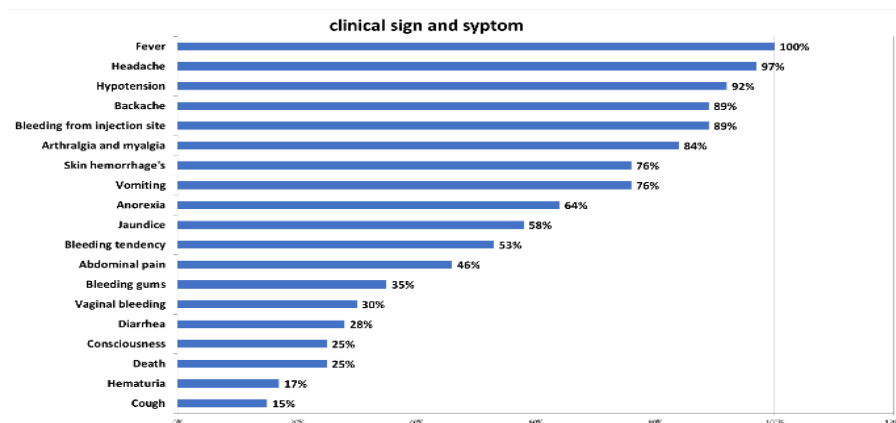


Chart 3: Shows the clinical signs and symptoms that were recorded in 39 instances of Congo-Crimean hemorrhagic fever in the AL-Muthanna province from 2021 to 30 /6/ 2023.

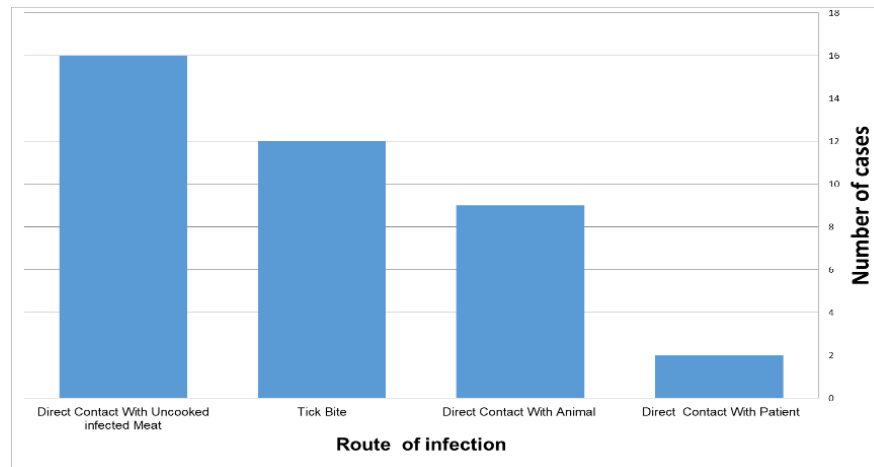


Chart 4: shows the distribution of Crimean-Congo haemorrhagic fever patients by route of infection from 2021 to 30 /6/ 2023 in the Al-Muthanna province.

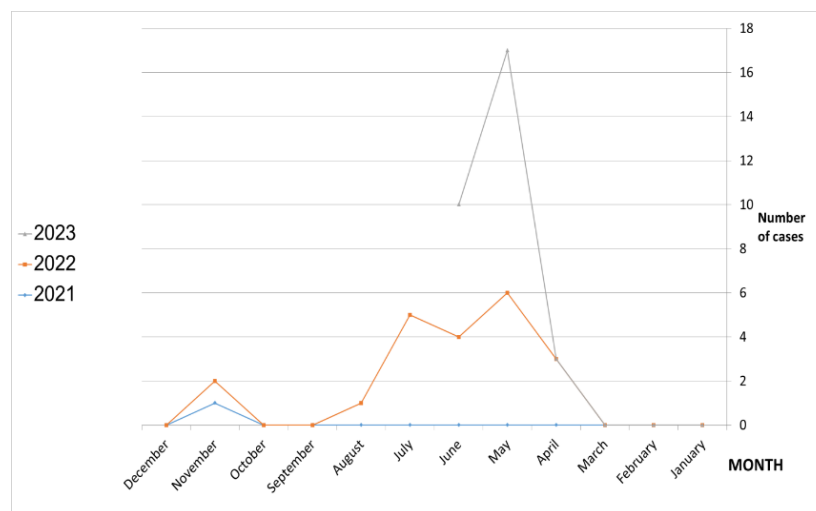


Chart 5: Shows a trend analysis of the hemorrhagic fever illness epidemic in the Al-Muthanna province from 2021 to 2023 per month.

4. Discussion

This study provides an epidemiologic description of the 2021-30/6/2023 CCHF outbreak in AL-Muthanna province that started on 4 November 2021 (n=1) in the centre of town than appear in April 24, 2022, in AL-Warka district, 20 kilometres to the north of AL-Muthanna governorate, in the village of AL-Negara's (n=1 cases), and thereafter expanded to all districts in AL-Muthanna districts, the outbreak is still ongoing. The study showed most confirmed cases were female this result disagrees with another study result that showed Most confirmed cases were male which living in southern Iraq [12]. This study showed the total case fatality rate was recorded 26% this study disagrees with another study result that showed the case fatality rate was 16.4% in Iraq [12]. But agree with another study conduct



by CDC Atlanta that showed the case fatality rate can range anywhere from 10 to 40% [13]. And disagree with another report conduct by WHO that show case fatality rate (CFR) 13% [2]. This study showed Positivity rate form 2021-30/6/2023 was recorded (52%). This result disagrees with another study that showed between 1 January to 22 May 2022, the health authorities of the Republic of Iraq notified WHO of 212 cases of Crimean-Congo Haemorrhagic Fever (CCHF), of which 115 (54%) were suspected and 97 (46%) laboratory-confirmed [2]. The Crimean-Congo haemorrhagic fever outbreak in Iraq is mostly due to the absence of tick control programs in Iraq for more than two years. The absence of tick control initiatives due to Iraq's approximately 2 million covid -19 cases between 2020 and 2022. The primary obstacle to controlling this endemic is inadequate coordination between the animal and human sectors. Acaricides in animal hospitals due to a lack of financial and human resources. The initial signs of CCHF include clinical symptoms and patient history, particularly travel to endemic areas, history of tick bites, or exposure to the blood or tissues of animals or human patients. Clinical symptoms vary from patient to patient, but the most common symptoms include fever, petechial rash, bleeding from various places on the body, the gastrointestinal tract, the nose, the gums, and other bleeding signs. Significant thrombocytopenia was also discovered by laboratory tests.

5. Conclusion

The largest and continuing Crimean-Congo haemorrhagic fever (CCHF) outbreak is in the governorate of Al-Muthanna. It is important to educate residents of endemic areas about infection prevention measures. The majority of cases are reported in female, particularly housewives. Most cases were reported in the province was recoded in canter and north of province. Muthanna Large agricultural areas that are home to numerous settlements with lots of sheep and people who work in both farming and sheep herding. Iraq, along with nearby nations like Turkey and Iran, is a place where Crimean-Congo haemorrhagic fever (CCHF) is prevalent. Effective Crimean-Congo haemorrhagic fever (CCHF) surveillance and control programmes are required and might be useful in Iraq. The effective and well-coordinated CCHF surveillance system in place in Iraq was one of the elements that helped suppress this outbreak. In addition to ongoing surveillance of this illness, the system also manages outbreaks.

6. Recommendation

Utilizing tick repellents can assist avoid or minimize contact with infected ticks, preventing and controlling the Crimean-Congo haemorrhagic fever (CCHF) infection. Wear protective gear and remove ticks as soon as possible and properly. Strict universal measures, such as barrier nursing, should be taken with hospitalized cases because nosocomial cases of Crimean-Congo haemorrhagic fever (CCHF) are quite common and frequently have a high fatality rate. Healthcare professionals in particular need to be aware of this occupational risk and take the necessary precautions while caring for patients who are agricultural labourer's. Gloves should always be used when working with animals, it should be urged. The three main preventive measures for Crimean-Congo haemorrhagic fever (CCHF) include avoiding tick bites, using personal protective equipment, and controlling Crimean Congo haemorrhagic fever in animals by using acaricides in livestock production facilities. A 14-day quarantine period has also been employed before slaughter.

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