Original Article

Public Knowledge and Attitude toward Crimean Congo Hemorrhagic Fever in Tokat Turkey

*R Yilmaz[1], M Ozcetin[1], U Erkorkmaz[2], S Ozer[1], F Ekici[3]

[1] Department of Pediatrics, School of Medicine, Gaziosmanpasa University Tokat- Turkey
[2] Department of Biostatistics, School of Medicine, Gaziosmanpasa University Tokat- Turkey
[3] Department of Physiology, School of Medicine, Gaziosmanpasa University Tokat- Turkey

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Abstract

Background: The World health Organization (WHO) declares Crimean Congo hemorrhagic fever (CCHF) endemic in Turkey. Despite the magnitude of problem, no documented evidence exists in Turkey, which reveals the awareness and practices of the country's adult population regarding CCHF, its spread, symptoms, treatment, and prevention. This study was conducted to assess the level of knowledge, attitudes, and practices regarding CCHF in people visiting tertiary care hospital in Tokat, Turkey.

Methods: This questionnaire based cross-sectional survey was conducted among patients' relatives or guardians who admitted pediatric outpatient clinics during May-July 2008. The questionnaire was composed of 25 questions.

Results: A total of 1034 respondents participated in the survey. Sufficient knowledge about CCHF was not found in 28.9% of the sample. Literate individuals were relatively better informed about CCHF as compared to the illiterate people. Television and radio were considered as the most important and useful source of information on the disease.

Conclusion: We have found insufficient knowledge on CCHF in our population. It is thought to have no chance of success against a fatal disease such as CCHF, which has serious consequences, without the contribution of community. It is clear that there are important tasks for health, agriculture, and media sectors to improve public knowledge and awareness about CCHF.

Keywords: *Crimean Congo hemorrhagic fever, Public knowledge, Survey, Turkey*

Introduction

Crimean Congo hemorrhagic fever (CCHF), that is endemic in over 30 countries around the Black Sea and in the Middle East and Africa, is a potentially fatal virus infection. CCHF virus is transmitted to humans by bites of infected ticks or direct contact with secretions or blood of infected animal or human (Williams et al. 2000). Many CCHF outbreaks have occurred in Tokat and other Anatolian cities since 2003 (Bakir et al. 2005, Gozalan et al. 2007).

Changes in socioeconomic conditions and climate have increased animal and human migration, travel, the risk of bioterrorism and ecological deterioration. These factors may increase the spread of viral infections to new places and their incidence in endemic regions (Bakir et al. 2005).

In endemic regions, persons including farmers, shepherds and veterinarians who are in occupational contact with livestock and wild animals, are in high-risk group (Flick and Whitehouse 2005, Vorou et al. 2005). Recreational activities such as picnic, tracking in endemic areas also represent risk factor for tick bite. Healthcare workers caring with CCHF patients are the second major group at risk for infection (Ergonul et al. 2007).

Tokat is geographically located between the Black Sea and Central Anatolia. The climate is suitable for ticks survive. The first cases of CCHF virus infection in Turkey was reported from this region (Bakir et al. 2005).

*Corresponding author: Dr. Resul Yilmaz, E-mail: drresul@hotmail.com

We studied the public knowledge and attitude toward CCHF at a tertiary care hospital in Tokat, where CCHF outbreaks have still been reporting since 2003 in every spring to early autumn.

Materials and Methods

This questionnaire based cross-sectional survey was conducted among patients' relatives admitted to pediatric outpatient clinics during May-July 2008 in Gaziosmanpasa University Medical Center in Tokat, Turkey. We offered the patients' relatives to participate in the survey. If they agreed, informed consent was taken. A total of 1034 parent or guardian of child agreed to participate and completed the questionnaire.

The questionnaire was composed of 25 questions. The first four questions were constituted to access demographic data; remains were for knowledge and attitude toward CCHF. It was self administered and in Turkish. To access the readability and applicability of the questionnaire, a pilot study was assessed on 50 respondents. Questions, which were confusing, were simplified. When respondent needed instruction, researchers helped to understand and fill in the questionnaire. We respected the confidentiality of respondents, data were recorded anonymously.

Statistical Analysis

The continuous variables were presented as mean and standard deviation. The categorical variables were presented as count and percentage. Analyses were performed using commercial software (PASW ver. 18, SPSS Inc, Chicago, IL)

Results

A total of 1034 respondents participated in the survey. Mean age was 30.28±10.75 yr (range 18-84). Demographic information about respondents was given in Table 1.

The sources of CCHF information is presented in Fig. 1. Participants thought Civil Society Organizations in Tokat informed, partially informed and did not informed the community about CCHF n= 115 (11.2%), n= 344 (33.3%) and n= 575 (55.6%), respectively. Factors that could correlate with the source of CCHF information is shown in Table 1. Job and education were statistically significant factors that effects where they could get the information. Questions that measure public knowledge and preventive measures about CCHF and their answers are given in Table 2 and Table 3.

22.1% of participants did not have picnic. Remains had at least one picnic in a year and n= 635 (61.5%) point out CCHF affected their picnic habit.

Table 1. Basic demographics of respondents

		n	%
Gender	Female	547	52,9
	Male	487	47,1
Residence	City	654	63,2
	Town	287	27,8
	Village	93	9,0
Educational level	Elementary+ Middle school	297	28,7
	High School	261	25,2
	University	476	46,0
Job	Farmer	23	2,2
	Retired	42	4,1
	Tradesman	50	4,8
	Worker	114	11,0
	Housewife	220	21,3
	Government Employee	274	26,5
	Student	311	30,1

Table 2. The questions and answers of paticipants about CCHF

		n	%
The causative agent is	A virus	652	67.1
	A bacteria	98	9.5
	Unknown	130	12.6
	Bioterrorism agent	138	14.9
Transmission to human by	Ticks	802	77.6
	Close contact with patient	65	6.3
	Secretion of infected animals	138	13.3
Where were CCHF first emerged?	Africa	264	25.5
	Russia	160	15.1
	Europe		
	Turkey	42	4.1
	I don't know	158	15.3
		400	39.7
What kind of disease is CCHF?	Not contagious but dangerous	100	9.7
	Common, dangerous disease	76	7.4
	Non remediable disease	86	8.3
	Fatal, contagious and dangerous	772	74.7
Is there a treatment for CCHF?	Yes	538	52
	No	329	31.8
	I don't know	167	16.2
Is there a vaccine against CCHF?	Yes	152	14.7
	No	579	56
	I don't know	303	29.3
What are the symptoms of CCHF?	Fever	200	19.3
	Myalgia	19	1.8
	Headache	8	0.8
	Fatigue- Low appetite	72	7
	All	735	71.1
Who are at risk for CCHF infection	Farmers- Shepherds	278	26.9
	Healthcare workers	12	1.2
	People who are visiting rural area	48	4.6
	All	735	71.1
When will symptoms appear after tick bite?	Within 1-3 days	579	56
	At least 9 days	390	37.7
	In first month	47	4.5
	Longer than 1 month	18	1.7
Which season is CCHF common?	Spring	182	17.6
	Summer	845	81.7
	Autumn	7	0.7
Can you eat your livestock's meat if a tick bites it?	We can eat its meat	157	15.2
	We cannot eat	201	19.4
	It has to destruct	382	36.9
	I do not know	294	28.4

Table 3. The questions and answers of paticipants about CCHF's preventive measures

		n	%
What is the most effective method for prevention?	Insecticide	208	20.1
	Minimizing the open area of the body	328	31.4
	Disseminating poultry	218	25.1
	Avoidance of areas where ticks are abundant	180	17.4
	Use of repellents	103	10
Who can remove embedded the tick?	Their self	8	0.8
	Healthcare workers or doctors	1000	96.7
	I don't know:	26	2.1
How do you remove the tick when it embeds your livestock or pet?	Use of repellants	323	31.2
	Naked hand	18	1.7
	Wearing gloves and other protection materials	493	47.7
	I don't know	200	19.3

Discussion

The Gaziosmanpasa University Health Practicing Center is the only tertiary health care facility which accepts and gives care to the severe CCHF children patients in Tokat where the survey was conducted, no referral was needed (Yilmaz et al. 2009). We determined that parents or guardians of these children were not aware of the seriousness of the disease. We wanted to emerge the knowledge and attitude towards CCHF in this population.

Although all of the respondents were familiar with CCHF, vast majority of them pointed out CCHF transmission to human was by tick bites. One fifth of them marked close contact with infected patients and secretions of infected animals. These are not strange findings because Tokat is the first city where first CCHF cases were reported from here in Turkey. Despite all the participants heard about CCHF, ¾ of them remembered CCHF to be contagious and dangerous disease. ¼ of them said it was not contagious.

One third of the respondents did not know the causative agent. About 15% of the participants believed that CCHF virus was a biological war agent, coming from some foreign countries. This result may be indicating that people consider new diseases are mostly biological war agent.

"Tick disease" and CCHF are the currently known two expression of CCHF in public. 2/3 of the participants showed adequate knowledge about the symptoms. There is no similar study about public knowledge and attitude towards CCHF in English literature, so we did not compare our results. Half and 40% of participants specified CCHF symptoms would appear in 1-3 d and at least 9 d, respectively. It is compatible with literature group (Flick and Whitehouse 2005, Vorou et al. 2005).

Although knowledge about symptoms was insufficient, knowledge about the treatment of CCHF was not clear. Half of the patients considered there was no treatment or they did not know whether there was a treatment or not.

Almost all the participants pointed out that they could remove the embedded tick at health care centers. Ticks can be removed by using tweezers to gasp the tick as close to the skin as possible (Sloan, 2009). Using fire, home remedies, alcohol or petroleum jelly can cause tick to regurgitate its guts contents to the bitten person's or animal's blood stream that increases the chance of CCHF infection

or other tick born diseases (WHO fact sheet 208, 1998). Seventy percent of participants gave the correct answers how they remove the tick when it bites their livestock or pet, but only 15% of them recognized they can eat the meat of tick bitten livestock. Destructing the tick bitten livestock can bring a huge economical load on the farmers' budget; farmers in our region mostly have low income.

The most effective preventive measure is avoidance of areas where ticks are abundant. One fifth of participants gave right answer. If they want to go rural area where ticks are present, they can use repellants and/or they can wear trousers tucked in boots or socks and a long sleeved shirt tucked in at the waist (WHO fact sheet 208, 1998).

When the participants were asked "What is the source of your information on CCHF?" They mostly pointed out media including radio-TV and newspapers. In literature, public knowledge and information on infectious disease mostly obtained from media (Itrat et al. 2008, Mossialos and Rudisill, 2009). Our study is consistent with these studies. Media can exaggerate or oversee the situation. This behavior of media leads CCHF information is mostly inappropriate or wrong. There is a great responsibility on media to transmit appropriate and right information on CCHF.

Several studies have reported a higher socioeconomic status correlates with better knowledge score (McArthur et al. 2001, Winch et al. 2002). In the present survey occupation and education are associated with more knowledge about CCHF. Participants, who had high school or university graduate certificate, gave most accurate answers. Farmers in our region have lower education and income than in farmers from western part of Turkey (Dincer et al. 1996). These findings suggested that more effective programs, which would target farmers and low educated people for public knowledge, needed to be implemented.

Four fifth of participants had a picnic at least once a year and they pointed out CCHF affected their picnic habit. Common (popular) infections, zoonotic disease affect people's attitude. When an avian influenza outbreak occurred in Turkey in 2006, most of the people did not consume poultry products (Cultu-Kantaroglu et al. 2007). In our survey, we determined people did not have picnic or postponed to winter or late autumn.

The level of knowledge and attitude of community is important to get the highest support from community before launching any disease control program (Singh et al. 2006). CCHF outbreaks have occurred every year since 2003 so it can be said that people from this area have a higher knowledge. Our survey is limited to a university hospital so these data cannot be generalized to rest of Turkey, where has different socioeconomic status and cultural background. Nationwide or sum of local studies can provide the accurate status of public knowledge and attitude towards CCHF. By using these data, ministry of health and ministry of agriculture can easily establish the program of controlling the disease.

In conclusion, we have found insufficient knowledge in our population. It is thought to have no chance of success against a fatal disease such as CCHF, which has serious consequences, without the contribution of community. It is clear that there are important tasks for health, agriculture, and media sectors to improve public knowledge and awareness about CCHF.

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