

Inappropriate Dietary and Occupational Patterns: Major Risk Factors Associated With Brucellosis in the Area Covered by Karaj Health Center No. 2

Yosef Khani,¹ Abolfazl Mollajan,^{1,*} and Farhad Rahimi²

¹Department of Diseases Control, Karaj Health Center No. 2, Alborz University of Medical Sciences, Karaj, IR Iran

²Department of Expansion, Karaj Health Center No.2, Alborz University of Medical Sciences, Karaj, IR Iran

*Corresponding author: Abolfazl Mollajan, Department of Diseases Control, Karaj Health Center No.2, Alborz University of Medical Sciences, Karaj, IR Iran. E-mail: dr.mollajan@gmail.com

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Abstract

Background: Brucellosis is one of the most common diseases among humans and livestock. Using contaminated and unpasteurized dairy products, having contact with infected livestock and, in general, inappropriate dietary patterns, as well as lack of hygiene, can be noted as the most common modes of transmission for such a disease.

Objectives: Since the establishment of Alborz province in Iran and, accordingly, Alborz university of medical sciences, Karaj, Iran, there has been no study on the epidemiological situation of the disease. Therefore, the present study examines the epidemiology of Brucellosis at Karaj Health center No. 2, Karaj, Iran, during 2011 - 2012.

Patients and Methods: This research was a cross-sectional descriptive study, on patients with Brucellosis, during 2011 - 2012, in the area covered by Karaj health center No. 2, Karaj, Iran. The data about all suspected cases, collected from polyclinic, laboratories and health centers, and confirmed by Wright, combs Wright and 2ME tests were reviewed. After recording the demographic data and laboratory results, they were entered into STATA 11 software and analyzed.

Results: The number of patients reported in this study was 67. The incidence of the disease during 2011 - 2012 was, respectively, 3.75 and 4.6 per hundred thousand and the average incidence of the disease was 4.2 per hundred thousand. The highest rate of infection, in terms of occupation, was found among ranchers (40.29%). In 100% of the cases, there was a history of consumption of cottage cheese, fresh cow milk or other unpasteurized dairy products. Considering the incidence season, most cases of the disease (38.80%) had occurred in the spring. In terms of gender, 56.71% were male and 43.28% of patients were female. As well, in terms of age, more 50% of the patients were in the age groups of 31 - 40 and 41 - 50 years old.

Conclusions: Given the occurrence of more cases of the disease among individuals with risk factors, such as consumers of unpasteurized dairy products, as well as ranchers, it seems that healthcare education, isolation of the places where animals are kept from humans, livestock vaccination, and, particularly, improvement of dietary patterns are effective in reducing the incidence of the disease.

Keywords: Brucellosis, Dairy Products, Pasteurization, Food Patterns

1. Background

Brucellosis is one of the most common diseases in humans and animals, with a worldwide distribution (1, 2). This disease causes damage to the country's economy through creating abortions among livestock and reducing livestock (3). This disease is transmitted to human through food (consumption of dairy products, such as fresh cottage cheese, unpasteurized milk, etc.), respiration, contact of pathogens with human mucosal tissues, such as human's eye, and, also, through placenta (4). Several studies have been carried out on the epidemiology of the disease all over the world and in Iran (1, 3, 5-16). Many countries in the Eastern Mediterranean region are included among the areas where brucellosis is endemic (17-19). In Iran, several factors, such as direct contact and living with livestock, especially in rural areas, consumption of unpasteurized

dairy products, along with lack of vaccination of animals, lead to an increase in the incidence of the disease (1, 3, 5, 10). Consequently, in spite of a good healthcare system, Brucellosis in Iran is still an endemic disease and in terms of incidence rate. Iran is ranked the fourth in the world (17-19). However, the incidence of the disease has been declared 25 among per hundred thousand people (17, 20).

2. Objectives

Since the establishment of Alborz Province in Iran, and, accordingly, Alborz university of medical sciences, Karaj, Iran, there has been no study on the epidemiological situation of the disease. As animal husbandry is still common in many regions of the province, an epidemiological

study of the disease and determining the factors affecting the transmission would presents a primary picture of the disease, and can also be a great contribution to more advanced studies in the future, proving the necessity of this study from this perspective

3. Patients and Methods

This research was a cross-sectional descriptive study on patients with brucellosis during 2011 - 2012 in the area covered by Karaj health center No. 2, Karaj, Iran. The data about all suspected cases collected from polyclinic, laboratories and health centers, and confirmed by Wright, combs Wright and 2ME tests were assessed. The inclusion criteria were wright and coombs wright test of 1/80 or more and 2ME test of 1/40 or more. Data collection forms, already prepared, were used to collect information. After recording the demographic data and laboratory results, they were entered into STATA 11 software (STATA Corp LP, College Station, TX, USA) and analyzed.

4. Results

The number of patients reported in the present study was 67, of which 56.71% of subjects were male and 43.28% were female, respectively. The incidence of the disease during 2011 - 2012 was 3.75 and 4.6 per hundred thousand, respectively, and the average incidence of the disease was 4.2 per hundred thousand. The highest rate of infection, considering occupation, was found among ranchers (38.80%) and the lowest rate was detected among students (2.98%). A total of 55.22% of patients had a history of contacts with livestock. In 100% of the cases, there was a history of using cottage cheese, fresh cow milk or other unpasteurized dairy products. In terms of the type of the dairy products consumed, by the infected subjects, the highest consumption was related to cottage cheese products (74.62%) (Table 1).

5. Discussion

The average incidence of brucellosis in the present study was 4.2 per hundred thousand. However, based on the previous studies, the incidence of the disease in Iran is 25 per hundred thousand (17, 20). In similar studies, carried out by Sofizadeh et al. (21) and Shoraka et al. (22), the incidence of the disease was 31.9 and 23.13 per hundred thousand, respectively. Therefore, it can be noted that the incidence of the disease in the area covered by Karaj health center No.2, Karaj, Iran, is much lower than the incidence of the disease in other parts of the country. It seems that it is mainly due to the lack of cooperation between private and even public sectors in reporting cases of patients, as well as the failure to identify the patients. According to the results of this study, most cases of the disease were among the age groups of 31 - 40 and 41 - 50 years old (50.74%). In terms of gender, the infected cases were found predominantly in males than females,

Table 1. Evaluation of Some Demographic Characteristics of the Patients

Variable	Values ^a
Age, y	
0 - 10	6 (8.95)
11 - 20	4 (5.97)
21 - 30	11 (16.41)
31 - 40	17 (25.37)
41 - 50	17 (25.37)
50	12 (17.91)
Gender	
Male	38 (56.71)
Female	29 (43.28)
Occupation	
Rancher	27 (40.29)
Housekeeper	15 (22.38)
Desk Clerk	5 (7.46)
Worker	3 (4.47)
Student	2 (2.98)
Other	15 (22.38)
Type of Consumed Dairy Product	
Milk	20 (29.85)
Cream-like milk	12 (17.91)
Cheese	50 (74.62)
Butter	10 (14.92)
Cream	8 (11.94)
Place of Residence	
Urban	66 (98.50)
Rural	1 (1.5)
Time Between Signs and Symptoms and Diagnosis, d	
1 - 15	8 (11.94)
16 - 30	10 (14.92)
31 - 60	17 (25.37)
61 - 90	22 (32.83)
91 - 120	10 (14.92)
Season of Symptoms and Signs Occurrence	
Spring	26 (38.80)
Summer	10 (14.92)
Fall	17 (25.37)
Winter	14 (20.89)
Contact With Livestock	
Yes	37 (55.22)
No	30 (44.77)
Familial History of the Disease	
Yes	15 (22.38)
No	52 (77.61)

^aData are presented as No. (%)

which is consistent with several previous studies in Iran (2, 23-26), while in the studies conducted in Imam Khomeini hospital and Sina hospital in Tehran, the infection rate was higher among women than men (27). On the other hand, in the study by Ghasemi *et al.* the infection rate was similar in both genders (28). In the present study, in terms of occupation, most cases of the disease were found among ranchers (40.29%), followed by housekeepers (22.38%). The results, in this regard, are consistent with the findings of Shoraka *et al.* (22), although in a related study in Kurdistan, more patients were housekeepers, with the difference being insignificant (3). In the current study, most cases of the disease occurred in the spring (38.8%) and the lowest rate was in winter (14.9%), percentages which are in agreement with the study by Shoraka *et al.* (22), Sofizadeh *et al.* (21) and the research conducted in Uzbekistan (20, 22, 29). Nevertheless, the study conducted in Yazd, Iran, revealed that most cases had occurred in the summer (56.5%) (26). In this study from Karaj, 43.28% of disease cases were diagnosed in 1–3 months after symptoms, while in similar studies (2, 21, 24, 26), cases of the disease were diagnosed during the first month after symptoms. Based on the results of the present study, although the incidence of brucellosis is lower in the area covered by Karaj health center No.2 in Karaj county, Iran, compared to the other parts of the country, it is increasing overall. On the other hand, given the occurrence of most cases among individuals with risk factors, such as using unpasteurized dairy products and ranchers, it seems that healthcare education and isolation of the places where animals are kept from human, and, especially, improvement of dietary patterns are effective in reducing the incidence of the disease.

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Footnotes

Authors' Contribution:Yosef Khani developed the original idea and the protocol, abstracted and analyzed data, wrote the manuscript, and is guarantor. Abolfazl Mollajan and Farhad Rahimi contributed to the development of the protocol, abstracted data, and prepared the manuscript.

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