The Prevalence of Brucellosis in Different cities s of Anbar governorate with focus on 2009-2019 Years: Routine database study

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Summary

Background: Brucellosis as a zoonotic disease between human and animal widespread that it one of major public health problem diseases, transmitted mainly through milk and dairy products. Because of the limited epidemiological studies conducted on the distribution of Brucellosis in Anbar Governorate, Iraq. We had to study the epidemiological situation of the brucellosis distribution. Objective: A study targeted investigate prevalence with incidence of brucellosis infections in the Anbar governorate, Iraq with focus on period 2009-2019. Methods: Routine data base study depending on software and hard ware archives regarding the brucellosis distribution that registered in different cities hospitals of Anbar governorates with focus on 2009 to 2019 years Results: Of 3048 brucellosis case, 1151 (37.8%) were males and others1897 (62.2%) females at different hospital of Anbar governorates. Incidence of brucellosis were (21.106, 29.997, 40.652, 42.875, 30.000, 12.143, 0.571, 1.639, 1.981, 1.674 & 5.994) / 100,000/ year during 2009, 2010, 2011, 2012, 2013, 2014, 2015,2016,2017 2018& 2019 respectively. One peak of brucellosis incidence during 2011-2012 with sharp decrease of incidence of this disease during a period from2013-2019. Half of brucellosis in age groups 15-45-year-old. Conclusion: There has been a sharp decrease in the incidence of Malta fever in recent years, and this may be due to the use of pasteurized milk and following the correct prevention methods for the disease

Keyword: Brucellosis, prevalence, Incidence, Routine data base study, Anbar governorate, Iraq

1. Introduction

Brucellosis is also name as "undulant¬ or Malta fever", & "Mediterranean fever". There is extensive of brucellosis in the Arab region, the Mediterranean basin, the Indian subcontinent, Central Asia, Afghanistan and Central Africa, in addition to many countries in the South American continent [1].

Brucellosis is a zoonotic disease that it is spread from domestic animals to humans by unpasteurized milk ingestion & dairy products, as well as through contaminated blood from aborted animals infected with brucellosis [2]. Brucellosis can be transmitted through interaction and ingestion of contaminated water and food with an infectious tissues, particularly placentae of the aborted animals as well as blood, urine, vaginal secretions that contain contaminated brucella spp, aborted fetuses of domestic animal as sheep, goats, cows, or camels [3].

Brucella are gram negative, coccobacillia shape very small, non-motile , non-spore forming , intracellular parasites micro-organism that responsible for chronic progressive disease. B. melitensis (infect sheep and goat), B. abortus (infect of cattle and sheep), B. canis (infect of dogs), in addition to B. suis (infect of swine) mainly also infect of human [4]. B. melitensis usually highly virulent when compare with B. aborts. the main characteristic signs of patients infect with brucellosis: highly sweating with pain of muscle joint [5]. There are limited studies on the spread of brucellosis in Anbar Governorate, so current study to shed light on the brucellosis distribution focus on 2009-2019 Years.

2. Materials and methods

Routine data base study on brucellosis distribution in different cities hospitals of Anbar governorates with focus on years 2009-2019 using sofware and hardware files associated with brucellosis the registered during this period. Hardware and software routine data base contain socio-demographic data with serum IgM antibodies results of brucellosis through using of rose Bengal test. Two specialized doctor's consultants in the pediatric and internal medicine confirmed brucellosis in the infected patients depending on WHO criteria for diagnosis of this disease. Anbar University Medical Ethics Committee was approved this study.

Statistical examination

IBM SPSS Statistics version 24 has been used for statistical study. A P-value <0.05 has reflect statistically significant differance. Age groups with gender, years of distribution with socio-demographic data frequency and fate were presented number percentage of occurrence among the cases.

3. Results

The mean age of males of brucellosis case were 28.4 ± 5 and mean age of females of brucellosis cases were 23.2 ±

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6.3, significantly difference between mean ages of males and females of brucellosis cases p value ≈ 0.001

Of 3048 brucellosis case, 1151 (37.8%) were males and others1897 (62.2%) females. statistically significant difference in brucellosis distribution among males and females during study period females (p value ≈0.000) (Figure 1).

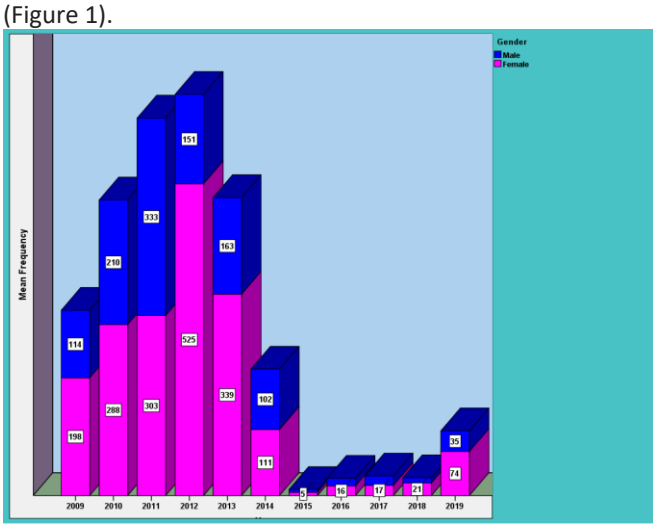

Figure 1: Brucellosis distribution among males and females during 2009- 2019 in differnat cities hospitals of Anbar Governorates , Iraq

Incidence of brucellosis were (21.106, 29.997, 40.652, 42.875, 30.000, 12.143, 0.571, 1.639, 1.981, 1.674 & 5.994) / 100,000/ year during 2009, 2010, 2011, 2012, 2013, 2014, 2015,2016,2017 2018& 2019 respectively One peak of brucellosis incidence during 2011-2012 with sharp decrease of incidence of this disease during a period from2013-2019 as illustrated in Figure 2.

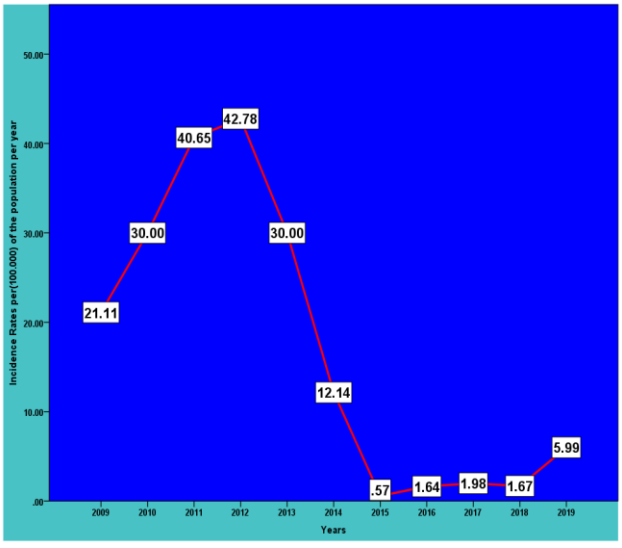

Figure 2: Incidence of Brucellosis per (100000) of the population / per years in Anbar governorates, Iraq.

Frequency of brucellosis in a year's 2009,2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019 were 312 (10.2%), 498 (16.3%), 636 (20.9%), 676 (22.2%), 502 (16.5%), 213 (7.0%), 10 (0 .3%), 33 (1.1%), 30 (1.0%) 109 (3.6%) respectively and the total brucellosis cases were 3048 as illustrated in Table 1. Statistically significance in frequency of brucellosis among different years of study.

Table 2: Frequency and Incidence of Brucellosis per (100000) of the population / per years in Anbar governorates, Iraq.

Year	Person under Risk/year	Brucellosis case number (%)	Brucellosis incidence / 100,000 person/year	P. Value
2009	1478226	312 (10.2)	21.106	0.000
2010	1660123	498 (16.3)	29.997	
2011	1562025	636 (20.9)	40.652	
2012	1600000	676 (22.2)	42.875	
2013	1636861	502 (16.5)	30.000	
2014	1753968	213 (7.0)	12.143	
2015	1750000	10 (0 .3)	0.571	
2016	1769230	29 (1.0)	1.639	
2017	1665000	33 (1.1)	1.981	
2018	1791390	30 (1.0)	1.674	
2019	1818318	109 (3.6)	5.994	
Total		3048 (100.0)		

The greatest brucellosis cases were registered during 2011-2012, it was gradually decrease during the following years as illustrated in Figure 3.

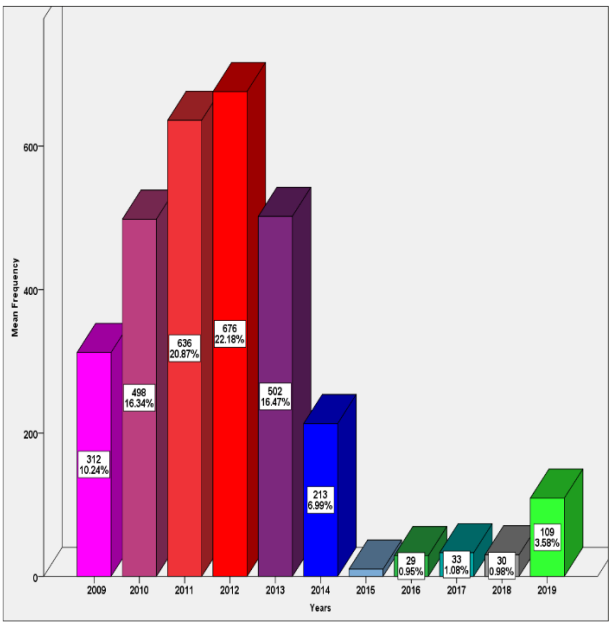

Figure 3: Distribution of Brucellosis during 2009 - 2019 in Anbar governorate, Iraq.

According age group that categarized in to five groups: Less than one year, 1–4 years old, 5–14 years old 15–45 years & over 45 years old, Brucellosis mainly distributed in three age groups 15-45 Year with 1587 (51.9%) cases followed by 1–4 years old with 589 (19.3%) cases followed by over 45 year with 516 (16.9%) (Figures 4). Statistically significant variance between these five age groups of Brucellosis in years of research (Value 0.000).

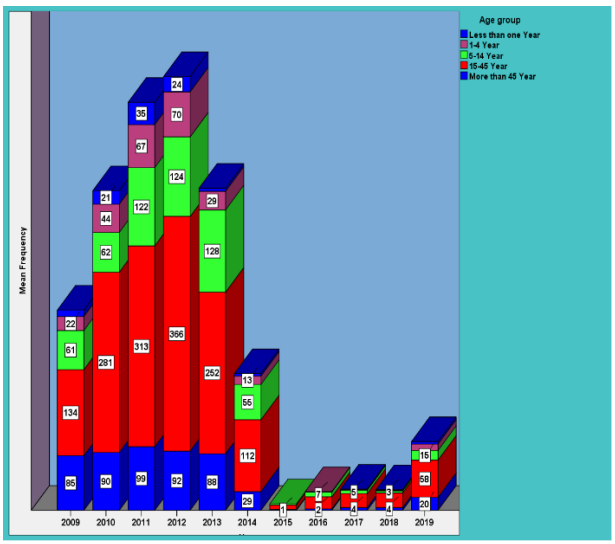

Figure 4: Brucellosis frequencies over years 2009 - 2019 by Age group in Anbar governorate, Iraq

4. Discussion

This is the first detailed study that gives detailed information on the rate of brucellosis in Anbar Governorate. The study exhibited that the total confirmed brucellosis cases that registered were 3048 during the period from 2009-2019 in Anbar governorate (Table 1).

High Brucellosis prevalence was recorded in Anbar Governorate during the years 2011-2012, because of the disappointment from proper usage of control method & health awareness to prevent of brucellosis infection, including not consuming pasteurized milk or sterilized dairy products, or it may be due to contact with the tissues of aborted animals infected with fever. Maltese, such as the placenta or blood or urine of these animals, and this is also related to the lack of periodic vaccination of animals with the Brucellosis vaccine, which led to the outbreak of the disease and its transmission to humans, result in the present research was consistent with numerous previous study on same disease [6, 7] that exposed Brucellosis vaccination of animals as bovine, sheep & goat result in sharp decrease brucellosis infection in human and animals.

The results of the current study are similar to the results obtained in a previous study in Iraq [8], and they also similar to previous studies conducted in adjacent countries as Turkey & Saudi Arabia kingdom [9, 10] and this decrease may be due to the effective control of Brucellosis in domestic animals or the adoption of proper health procedures to prevent infection, prophylaxis or eradication programs [6, 7].

However, the sharp decline in the brucellosis infection rate during 2014, 2015 and 2016, may not be due to following proper health procedures such as eradication and vaccination, but rather due to the displacement of most of Anbar's residents from Anbar cities to the numerous Iraqi governorates and to different countries around the world This is due to the terrorist operations carried out by ISIS in this governorate in this period.

Brucellosis vary widely around the word; it rang from 13.5 / 100,000 person / year in Saudi Arabia kingdom Al-Sherida et al. [7] to 12 / 100,000 person / year in United sate of America Pappas et al. [2] to "23.2 / 100.000" person / year in Iran Kassiri et al. [11] to 11.1 / "100.000" person / year in Japan [12].

Previous studies Al-Sherida et al. [7], Zeinalian Dastjerdi et al. [13] demonstrated that majority of Brucellosis take place in age group 15-45 years and this was consistent with current study

Among 3048 brucellosis cases appear in present study, 1151 (37.8%) were males and 1897 (62.2%) were females in various hospitals in Anbar Governorate. to milk and more contact with the animal, which may be exhausted due to brucellosis, which makes them more susceptible to infection than males

The current study showed that among 3048 cases of brucellosis, 1151 (37.8%) were males and 1897 (62.2%) were females in various hospitals in Anbar Governorate during the period from 2009 - 2019 .This result was consistent with the findings of previous studies Aloufi et al. [14], Soheil et al. [15] that showed that females are more susceptible to infection with brucellosis, and this may be due to the fact that females consume more milk and have more contact with animals that may be exhausted due to brucellosis, which makes them more susceptible to infection than males.

The current study showed a significant sharp reduction in Brucellosis prevalence in the last two years of study (2018-2019) in different Anbar cities because of pasteurized milk injection " (free from brucellosis) " in addition to regular brucellosis vaccination of domestic animals that reflected on the reduction of the brucellosis prevalence of in both humans and animals alike.

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