

The titer base line of Brucella antigens in the healthy persons at rural community around Kirkuk city

Ibrahem S. Al-jebory
Collage of Science – University of Kirkuk

Abstract

One hundred eighty three serum samples were collected from healthy persons living in villages around Kirkuk city and tested for the presence of brucella antibodies using slide agglutination test. The results showed that 123 sample gives positive results ranged between 1/20 to 1/320 (67.2%), in addition Coomb's test was used also to test the serum samples which give negative result with slide agglutination test show 16.3% chronic cases. The investigations indicate that the populations of these villages are highly susceptible to Brucella antigens, so the normality of antigen 1/160 suggested being the base line for diagnosis of Brucellosis in these rural areas.

Introduction

Brucella spp., like other pathogens, must cope with the environment of diverse host niches during the infection process (Diana et al, 2007).

Brucellosis is a worldwide disease of humans and &livestock that is caused by a number of a very closely related classical *Brucella* species (Shirley et al, 2005). Brucellosis is a zoonotic infection transmitted from animals to humans by ingestion of infected food products, direct contact with an infected animal, or inhalation of aerosols. This last method of transmission is remarkably efficient given the relatively low concentration of organisms (as few as 10-100 bacteria) needed to establish infection in humans and has brought renewed attention to this old disease. (Mert et al, 2003). The genus *Brucella* consist of 6 recognized bacterial species & 2 proposed new species recently isolated from marine mammals (Garcia et al, 2006). In Iraq, human brucellosis is a widely distributed disease (Al-thuwani et al, 2001). Laboratory diagnosis of human brucellosis in Iraq has relied on serological tests, because blood culture is often negative. Sera of previous or latent infections showed agglutinins for Brucella antigens in low dilutions (Al-nadawi et al, 1994; Al-shaarbaf et al, 1988). Interpretation of standard Brucella agglutination tests; therefore needed to be based on the level of Brucella antibodies in the sera of the healthy population (Omer et al, 1978). Accordingly a number of surveys have previously been carried

out in different regions all over the world to establish the level of normal agglutinins to Brucella antigens in the general population (Davis et al,1973; Eisele et al, 1973; Henderson et al, 1967 and Wilson et al, 1975). These surveys revealed that the level of Brucella antibodies varies greatly from country to country depending on endemicity of the disease (Omer et al,1978). Most surveys indicated that the percentage of reactant to Brucella antigen higher in rural than in urban communities (Farrell et al, 1975). However, there is no similar work done locally to establish the normal base line antibody titers for Brucellosis in the healthy populations in a villages communities around Kirkuk city. This study aim to establish a base line of Brucella antibody titer in the previous community.

Materials & Methods

We obtained data from survey of antibody levels against antigen of Brucella in the sera of healthy persons with different ages and gender from different areas of Kirkuk city.

The healthy subjects were selected on the basis of the following

- 1-No symptoms suggesting Brucella infection at the time of samples collection.
- 2- No symptoms related to any illness especially fever at time sampling.
- 3-Had no previous history of infection & vaccinations.

The Brucella slide agglutination test was performed using Brucella antigen which supplied by (vaccine & sera institute Baghdad) as a concentrated suspension of heat killed *B. abortus* strain 99 in a 0.5 % phenol solution and pH 3.65. The clinical laboratory aid manual Peral River, N. Y, 1968. Method was adopted in this test (pearl, 1968). Serum samples were subjected to serial dilutions between 1:20 to greater than 1:1200 on a large plate glass. However the non reactive sera on slide agglutination test were further subjected to coombs test, where the technique of the European method was adopted (FAO/WHO, 1986). The coombs test was performed to detect the incomplete antibodies which appeared in chronic carriers (Akdeniz & Anlar, 1998).

Results

The result showed that 123 (%67.2) had a detectable agglutination titers ranging from 1:20 to 1:320. However only (%16.3) of the negative samples gives positive results using coombs test (Table 1).

Table 1: Distribution of Brucella antibodies among healthy persons in rural community at Kirkuk city.

Titer	Nil	1:20	1:40	1:80	1:160	1:320
No. of cases	60	10	4	25	50	30

All reactant cases in both groups of study are farmers & animal breeders whether they are males or females. Moreover all cases gave positive history of contact with animals or their products. According to sex distribution females showed more prevalence of Brucella antibodies than males (Table 2).

Table 2: Sex distribution of reactant cases.

	SAT	Coombs	Total
Male	53	12	65
Female	70	18	87
Total	123	30	153

Discussion

Brucellae gain entry into human bodies through breaks in the skin, mucous membranes, conjunctiva, and respiratory and GI tracts. Sexual transmission is not documented convincingly. Infection usually occurs by ingestion of unpasteurized milk and milk products often it has a low bacterial load. Percutaneous needle stick exposure, conjunctively exposure through eye splash (Manture et al, 1996). Also, due to the fact, the rural population is in close contact with animals & fresh milk which may not always sterilized (Pasteurized), while the urban populations are aware about the disease. Hence study aim to evaluate the base line of antibodies titers in sera of healthy persons in villages around kirkuk city which is considered as a rural areas therefore the endemicity of brucellosis in these areas may be indicated by the result of such study. In this study the figure of the disease is closely related to the fact that the population under study is highly exposed to the Brucella antigen, hence they are bounded to have residual antibodies in their serum due to the post latent infection. However, another problem projecting there, that the cross reactivity of Brucella antigens with other microbial antigens present in such community. The results at this study agree with other studies in Sudan (Omer et al, 1978), Argentina (Wilson et al, 1979) & U.K (Farrell et al, 1975). In this study, reaction to Brucella antigens was associated slightly more in females than males, this reflecting the fact that the females are in close contact with

animals and their products than males in this community. Conclusively and on the bases of the data obtained, the base line was found to be around 1:160 for Brucella agglutinin in the healthy individuals of this community and need to be applied when reading agglutination reaction.

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مستوى العياريّة الأساس لمستضدات البروسيلة في الأشخاص الأصحاء للمجتمع القروي حول مدينة كركوك

إبراهيم صالح الجبوري
كلية العلوم – جامعة كركوك

الخلاصة

جمعت ١٨٣ عينة مصل من أشخاص أصحاء يقطنون القرى المحيطة بمدينة كركوك. أخضعت هذه العينات (المصول) لفحص تلازن الشريجة ، حيث تم تشخيص ١٢٣ حالة (٦٧،٢ %) وبعياريته تتراوح بين ١ / ٢٠ إلى ١ / ٣٢٠. أما تلك المصول التي أظهرت تفاعلا سلبيا مع فحص تلازن الشريجة ، فقد أخضعت لفحص كومب والذي شخص ٣٠ (١٦،٣ %) حالة مزمنة. بينت هذه الدراسة أن تعرض سكان القرى عالي لمستضد البروسيلة ، لذلك تؤكد هذه الدراسة بأن عياريته المستضد ١ / ١٦٠ تعد الخط الأساس لتشخيص حمى مالطا في المناطق الريفية حول مدينة كركوك .