The incidence of Brucellosis in Salahaddin Governorate

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Key words: Brucellosis, Brucella species.

Abstract:
Three hundred ninety eight patients who suffer from symptoms of brucellosis were included in this study. The study was conducted in Tikrit teaching hospital at Tikrit city during the period from 1\textsuperscript{st} of June 2004 to 31 August 2004. The incidence of Brucellosis was 166 out of 398. Among the positive cases, the higher rate of incidence was in female (59.6%). According to association between the age and sex with Brucellosis, the rate of incidence of Brucellosis was higher in female 99 (59.6%) than in male 67(40.4%), most male cases 34 (50.7%) were in age groups (20 -30y), while in female were 37(37.4%) in age groups (>40y). The lower rate of incidence of Brucellosis in male (4.5%) was in age groups (10-20y) and in female was (4%) in age groups (1-10y). Also the study revealed that, the higher rate of infection was found in patients who live in rural areas and who were animal keepers.

Introduction:

Brucella is animal pathogen transmitted to human by accidental contact with infected animal products such as: feaces, urine, milk, and tissues. The common sources of infection for humans are unpasteurized milk, milk products, cheese and occupational contact ( eg, farmers, veterinarians, slaughterhouse workers ) with infected animals [1]. Although each species of brucella has a preferred host, all can infect a wide range of animals, including humans. Human can be infected through the intestinal tract (ingestion of infected milk) mucous membranes (droplets) and skin (contact with infected tissues of animals)[2].

The disease is characterized by : fever, GIT symptoms, headache, joint pain and Sciatica, profuse sweating, chills and rigour, cough urinary symptoms, weakness, fatigue, weight loss, depression and disorientation, the most predominant sign of the disease are splenomegaly, hepatomegaly, lymphadenopathy, neck stiffness and joint effusion[3,4,5].

The diagnosis of brucellosis is most readily confirmed by serum agglutination test, complement fixation test, slide agglutination test, milk ring test and blood culture in special media. Additionally the enzyme linked immunosorbent assay (ELISA), which is expected to be an important tool in the serological diagnosis of brucellosis [6].

Although brucellosis is being eliminated in some countries, it is prevalence has increased in most others such as southern Europe, north Africa, middle east and Latin America [7].The increase in its prevalence in eastern Mediterranean countries is caused by sheep while in southern- east Asia caused by pig [5,8].

The aim of the present study is to describe the epidemiological picture of brucellosis in Salahaddin governorate from 1\textsuperscript{st} of June to 31 August 2004, and to demonstrate the incidence of the disease among patients admitted to Tikrit teaching hospital during that time.

Patients and Methods:
The total number of patients included in this study was 398. 158 (39.7%) of them were male and 240(60.3%) were female. Data were collected using especially designed questionnaire which contains 6 variables such as (age, sex, occupation and residence area), and the relation of contact with domestic animals around the house or field and type of animals. All collected blood samples in this study were centrifuged and laboratory diagnosis of brucella was achieved using slide agglutination test (it is easy, rapid, inexpensive and available). High titer of agglutination (>1:160) confirms an acute episode and lower titer indicate earlier infection [9]. If agglutination test is negative with strong clinical evidence of Brucellosis, that mean the presence of "blocking" antibodies. These can be detected by adding antihuman globulin to the antigen- serum mixture [2]. In this study significant test was performed and P values of < 0.05 were regarded as statistically significant.

Result:
A total of 398 patients were included in this study. Their age at time of data collection ranged between 1 year to elder than 40 years.

As shown in Table (1), there are 166 cases out of 398 were positive for brucella test.of them 67 (40.4%) were male, and 99 (59.6%) were female.

Table (1): The correlation between sex and brucella test .

<table>
<thead>
<tr>
<th>Brucella Test Results</th>
<th>SEX</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male NO.(%)</td>
<td>Female NO.(%)</td>
</tr>
<tr>
<td>Positive</td>
<td>67 (40.4)</td>
<td>99 (59.6)</td>
</tr>
<tr>
<td>Negative</td>
<td>91 (39.2)</td>
<td>141 (60.8)</td>
</tr>
<tr>
<td>Total</td>
<td>158 (39.7)</td>
<td>240 (60.3)</td>
</tr>
</tbody>
</table>

X²=0.05
P < 0.05

Table (2) explained that the rate of incidence of Brucellosis was higher in female 99 (59.6%) than in male 67(40.4%), most male cases 34 (50.7%) were in age groups (20 -30y), while in female were 37(37.4%) in age groups (>40y). The lower rate of incidence of Brucellosis in male (4.5%) was in age groups (10-20y) and in female was (4%) in age groups (1-10y).
Table (2): The relationship between the age and Brucellosis.

<table>
<thead>
<tr>
<th>Age</th>
<th>Male No. (%)</th>
<th>Female No. (%)</th>
<th>Total No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10y</td>
<td>4 (6)</td>
<td>4 (4)</td>
<td>8 (4.8)</td>
</tr>
<tr>
<td>10-20y</td>
<td>3 (4.5)</td>
<td>7 (7.1)</td>
<td>10 (6.0)</td>
</tr>
<tr>
<td>20-30y</td>
<td>34 (50.7)</td>
<td>33 (33.3)</td>
<td>67 (40.4)</td>
</tr>
<tr>
<td>30-40y</td>
<td>15 (22.4)</td>
<td>18 (18.2)</td>
<td>33 (19.9)</td>
</tr>
<tr>
<td>&gt;40y</td>
<td>11 (16.4)</td>
<td>31 (37.4)</td>
<td>42 (25.2)</td>
</tr>
</tbody>
</table>

X² = 5.78
P < 0.05

Table (3) illustrates the association between the infection and residence of patients. The higher rate of infection (55.4%) was found in patients who were from rural areas.

Table (3): The association between Brucellosis and residence.

<table>
<thead>
<tr>
<th>Residence</th>
<th>Total No. (%)</th>
<th>No.of (+ Ve) cases (%)</th>
<th>No.of (- Ve) cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>225 (56.5)</td>
<td>92 (55.4)</td>
<td>133 (57.3)</td>
</tr>
<tr>
<td>Urban</td>
<td>173 (43.5)</td>
<td>74 (44.6)</td>
<td>99 (42.7)</td>
</tr>
<tr>
<td>Total</td>
<td>398 (100)</td>
<td>166 (41.7)</td>
<td>232 (58.3)</td>
</tr>
</tbody>
</table>

X² = 0.13
P > 0.05

Table (4) showed that the higher rate of Brucellosis (51.2%) was found in patients who were animal keepers. Finally, our results for monthly distribution of all cases during this study showed that the highest rate of Brucellosis was in July and the lowest rate was in June.

Table (4): The correlation between infection and animal keeping.

<table>
<thead>
<tr>
<th>Animal keeping</th>
<th>Total No. (%)</th>
<th>No.of (+Ve) cases (%)</th>
<th>No.of (-Ve) cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeper</td>
<td>178 (44.7)</td>
<td>85 (51.8)</td>
<td>93 (40.1)</td>
</tr>
<tr>
<td>Non-keeper</td>
<td>220 (55.3)</td>
<td>81 (48.8)</td>
<td>139 (59.9)</td>
</tr>
<tr>
<td>Total</td>
<td>398 (100)</td>
<td>166 (41.7)</td>
<td>232 (58.3)</td>
</tr>
</tbody>
</table>

X² = 4.81
P > 0.05

Discussion:
In the current cross sectional study, it was found that females were more affected than male, because of their major contact with animals and their products as well as work as farmer in rural areas nowadays. This result is quite comparable to that found by Al-Sharbaaf [10], while this result differ from that found by Al–Anezi in Kuwait who found that males were more affected than females [11].

A large proportion of cases were house wives so they are with direct or indirect contact with animals and their products, to a lesser degree other groups included farmers, students, children and employers.

Age groups of (20-30) years old were more affected with brucellosis because of their field activities. The age group (1-10) years old were less affected by brucellosis probably because they are less prone to have contact with animals. This result differ from that of Y.G. Salman and M.A. Kudayer who found that the incidence of Brucellosis was highest among peoples over 30 years old and lowest among (1-5) years old [12].

The present study revealed that, the higher rate of brucellosis was found in rural areas. This may be due the fact that large number of families in the rural area keep animals at or around their houses. In addition to the conception of local dairy products especially home made cheese and row milk.

People keeping their animals at or around their house are most susceptible to brucellosis because they are indirect contact with the sources of infection and their products. The results of the present investigation clarified that, the incidence of brucellosis in family members keeping animals (especially sheep and goats) was much higher than in those who not keep animals. These results are in agreement with those of Y.G. Salman [12].

According to the monthly distribution, this study showed that, the majority of cases were in July. This result is similar to that found by Y. Al-Banna [13] and Y.G. Salman [12].

References:
11-A.A. Al-Aneci, Abstract of the 1st international conference on brucellosis, Mosul University, College of medicine, 1990: 18.
نسبة حدوث حمى مالطا في محافظة صلاح الدين
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الملخص:
شملت الدراسة 398 مريضاً يعانون من أعراض الإصابة بحمى مالطا. أجريت الدراسة في مستشفى تكريت التعليمي في مدينة تكريت خلال الفترة من الأول من حزيران 2004 وحتى الحادي والثلاثين من شهر أب لعام 2004. نسبة حدوث الإصابة بحمى مالطا كانت بمعدل 166 من مجموع الأشخاص الذين تمت دراستهم، 156 من النساء (69,6%)، و50 من الرجال (30,4%)، من بين الحالات الموثقة، نسبة الأعلى للأصابات كانت في الفئة العمرية من 40-60 سنة، أما في الفئة العمرية الأخرى، فتراجعت الأصابات، وذلك بأن النساء الأعلى في الأعمار يعيشون في المناطق الريفية، الذين يقومون بزراعة الحيوانات.

الإحصائيات:
- النساء: 156 (44.4%)
- الرجال: 50 (29.6%)
- الحالة الأعلى للأصابات كانت في الفئة العمرية من 40-60 سنة، بينما كان أدنى في الفئة العمرية من 60-80 سنة.
- نسبة الإصابة بحمى مالطا كانت أعلى عند الذكور (44.4%)، معظم حالات الإصابة عند الذكور وهي

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