Across-Sectional Study of Brucellosis in Patients Admitted to Baquba to General Hospital

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ABSTRACT:

BACKGROUND:

BrucellosisIs a very common disease in Iraq the manifestations of the disease are different from one persom to the other in which the clinical diagnosis needs a thorugh study and documented precise investigations

OBJECTIVE:

To describe selected possible for acquiring brucellosis in Diala governorate and compare the relative frequency of selected clinical features between pediatric and adult age groups.

PATIENTS AND METHODS:

A cross sectional study was done on a sample of 108 patients with an established diagnosis of Brucellosis admitted to Baquba General Hospital during the period extending from May 2001 to June 2003.

RESULTS:

Males constituted about two thirds of the study sample (65.7%) About a fifty (20.4%) of the study sample were in the pediatric age group (<16 years of age). Raw milk or unpasteurized cheese and raw liver was among the risky for acquiring the infection reported by 67% and 58% of the study sample respectively. Animal contact (Agricultural activities) was reported by 59.3%. Among pediatric age group, the most frequent clinical features were: Spinal tenderness, abdominal pain, arthralgia, sweating aches lack of energy and arthritis. While among adults: Arthralgia, headache, aches, sweating, lack of energy, spinal tenderness, chills, fever, loss of appetite and arthritis were among the most frequently reported symptoms. Hepatosplenomegally is rarely reported and epididymoorchitis is a frequent complication of brucellosis in children

CONCLUSION:

This result showed a male preponderanc in comparison to female Patients and this probably due to occupational exposure

KEYWORDS: Brucellosis, Iraq

INTRODUCTION:

Brucellosis is a common medical problem. Its clinical features are not disease specific. Brucellosis has many synonyms derived from geographical regions in which the disease occur, especially from the character of its fever. Brucellosis is a primary venereal disease of animals[1]. Brucellosis is commonly caused by Brucella melitensis, and Brucella abortis. The disease is systemic illness with protean manifestation, its clinical features therefore an in depth characterization to aid the clinician in diagnosis. Iraq is considered as an endemic area for brucellosis, which makes any clinical study of this infection disease a valuable input[2].

OBJECTIVE:

1- Describe selected risk factor acquiring the disease in Diala govermorate.

2- Describe selected demographic data for inpatients.

3- Compare the relative frequency of selected clinical features between pediatric and adult age group.

PATIENTS AND METHODS:

A cross-sectional study was done on a sample of 108 patients with an established diagnosis of Brucellosis admitted to Baquba General Hospital during the period extending from May 2001 to June 2003. The diagnosis of Brucellosis depended on a detailed clinical examination and positive serological tests for brucellosis, namely a positive Rose-Bengal test at a titer of at least 1:320 and IFAT test for brucellosis.

The information were obtained by direct personal interview in private setting and recorded in a questionnaire format. The data collected include: age, sex, family history, dietary habits together with a list of signs and symptoms of suspected brucellosis.

All patients were given the following treatment protocol: streptomycin + Rifampcin 600ml for one month followed by rifampcin 600mg daily + Doxycyclin 100mg twice daily for another month.

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Statistical analyses were done on a computer station using SPSS ver10. Frequency distributions were done first. The difference in relative frequency of selected clinical features between the 2 age groups was tested for statistical significance using the Chi-square test, or fisher's exact when the conditions for a valid chi-square test were not met.

RESULTS:

The results presented in this chapter were based on the analysis of 108 in patients with an established diagnosis of Brucellosis. Males constituted about two thirds of the study sample (65.7%).with a male to female ratio of 2:1. About a fifth (20.4%) of the study sample were in the pediatric age group (<16 years of age), 61.1% were young adults (16-49 years of age) and 18.5% were older adults (50 + years of age), table 1. No difference in gender distribution was observed between pediatric and adult age groups, table2.

Among the food items that were suspected as a vehicle for obtaining the infectious microorganisms and frequently reported to be consumed by the participants in the study sample were raw milk or unpasteurized cheese and raw liver reported by 67% and 58%of the study sample respectively. Animal contact

(Agricultural activities) was reported by 95.3%. A positive family history of Brucellosis was obtained in 30.6% of study subjects, tuble3.

As shown in table4, the general features were more frequently reported in adults compared to children, With the exception of lymphadenopathy which was only observed in children. The differences observed were in general statistically significant with the exception of some of the subjective symptoms like, Lack of energy, loss of appetite, sleep disturbances, Ill appearance and pallor.

Regarding system involvement, cough was more frequently reported by adults (20.9% compared to 13.6% in children), the different however was not significant statistically. Pneumonia was diagnosed in 3 adults only (3.5%). GIT symptoms were significantly more frequent in pediatric age group, especially abdominal pain (72.7% compared to 19.8% in adults). Organomegally

(hepatosplenomegally) was rarely documented (one child and 2 adults) and no different were observed between pediatric and adult age groups. Arthtalgia (including back pain) was a significantly more frequent complaint for adults (83.7% compared to 59.1% in pediatrics), while no statistically significant difference in relative frequency of arthritis was observed between adults and children. Spinal tenderness was more frequent reported in children (81.8% compared to 54.7% in adults). Testicular pain was significantly more frequent in pediatrics (18.2% compared to 2.3% in adults), table4.

Among pediatric age group, seven clinical features were reported by more than half of the study sample, these are in order of descending frequency: spinal tenderness, Abdominal pain, arthralgia, sweating, aches of energy and arthritis. Five of the studied clinical features were not observed among children, these are: pneumoniua, diarrhea, jaundice, hepatomegally and CNS abnormalities, figure 1. While among adults 10 clinical features were reported in over 50% of study subjects, these are in order decreasing frequency: arthralgia, headache, aches, sweating, lack of energy, spinal tenderness, chills, fever, loss of appetite and arthritis. Three of the studied clinical features were not observed among adults, these are: lymphadenopathy, jaundice and CNS abnormalities, figure 2.

DISCUSSION:

The present study showed a male preponderance, which was applicable to both pediatric and adult age group (male to female ratio of 2:1). This is different from older reports in Eastern Mediterranean area which showed an equal sex distribution, where as it is closer to western countries in which the male preponderance is attributed to occupational exposure[3]. Occupational exposure may have played an important role in the present study since it was shown that a history of animal contact was obtained in 59.3% of patients. Diala governorate depends to a noticeable extent on agricultural activities.

Pediatric age group constituted a noticeable proportion of cases (20.4%) in the present study. Yinnon et al, 1993, reported that children constituted 44% of 73 patients with a diagnosis of Brucellosis admitted at two jerusalim hospitals[3]. Benjamin et al, 1992, showed that Brucellosis is a common childhood problem in southern Saudi Arabia as in the case in other countries of the Middle East [4].

Consumption of raw milk or unpasteurized (home made) cheese and raw liver was reported by about two thirds of study participants. This ricky behavior was implicated as a mode acquiring the infection by other literatures [5,6,7].

Another support to the role of risky food habits or direct animal contact as a source of infection is the presence of positive family history of Brucellosis in 30.6%, since family members tend to share food habits or participate in similar animal contact activities.

In the present study the most frequently elicited clinical features among pediatric age group were: Spinal tenderness, abdominal pain, arthralgia, sweating, aches, lack of energy and arthritis. The high frequency of fever, Aches, Malaise and arthritis

as also reported by other literatures [4,8,9,10,11]. Abdominal pain was reported with a lesser frequency than observed in the present study[3,4,8]. Hepatosplenomegally on the other hand was rarely documented in the present study as opposed to the higher frequency of reporting this sign in other literatures (which may be as high as 45% for heptomegally and 50% for splenomegally) [4,9,11]. One possible explanation for this underreporting of Organomegally in the present study in the use of imaging techniques (such as Ultrasound) in screening for hepatospenomegally which is a much more sensitive technique than clinical examination alone. Lymphadenopathy although not so frequently elicited more obvious in pediatric age group than adults. This observation was also reported by yinnon et al, 1993[3].

In adults the most common clinical features were: arthralgia, headache, aches, sweating, lack of energy, spinal tenderness, chills, fever, loss of appetite and arthritis. A study on 500 adults with an established diagnosis of brucellosis due to brucella melitensis reported comparable results [12,13]. In both the present study and the previously mentioned literature arthralgia (including backache) was reported by over 80% of patents while arthritis was reported by around 40% of subjects. The some observation of low frequency of reporting hepatosplenomegally among children in the present study is also applicable to adults. Other studies reported a higher frequency, splenomegally 21% and hepatomegally 10.3% reported by Qasim NA et al, 1994[13] and 25 to 32% for hepato-splenomegally in madkour MM et al [12].

No CNS abnormalities were reported in the present study. Al-araji et al, 1998, pointed out the importance of neurological complications of Brucellosis in 4 Iraqi patients[14]. Murrell et al, 1990, even implicated neurobrucellosis in the etiology of multiple sclerosis [15].

A cardiac murmer was report in 9.1% of children and 4.7% of adults. Al-sharaf et al, 1988, suggested that cardiac complications are seen when there is rheumatic disease in the some patient [16].

In the present study. Testicular pain or epidemoorchitis was more frequently reported among children (26.7% compared to 3.6% among adults). Athanasios et al, 2002, concluded that epididymoorchitis due to Brucellosis was associated wiyh a young age group compared to other types of testicular inflammation [17].

Arthralgia (including back pain) was a more frequent complaint for adults (83.7% compared to 59.1% in pediatrics), while no significant difference in reporting arthritis was observed between adults and children. Spinal tenderness was more frequently reported in children (81.8% compared to 54.7% in adults). These differences could be attributed to the different between adults and children in perception of symptoms. Another explanation for the differences observed in reporting clinical features between adults and children especially with regard to general symptoms like malaise, anorexia, headache and chills could be attributed to the short duration of the disease in children at the time of presentation [3].

Table 1: Frequency distribution of the study sample by age and sex.

		N	%
1.	Gender		
	Female	37	34.3
	Male	71	65.7
2.	Age in years		
	Pediatric(<16)	22	20.4
	Young adults (16-49)	66	61.1
	Older adults (50+)	20	18.5
	Total	108	1oo

Table 2: Difference in gender composition between the 2 age groups.

	Age in Years			
	Pediatric(<16)		Adults(16 +)	
	N	%	N	%
Gender				
Female	7	31.8	30	34.9
Male	15	68.2	56	65.1
Total	22	100	86	100

Table 3: The relative frequency of reporting possible risk factors.

History and mode of transmission	N=108	%
Animal contact	64	59.3
Raw milk and un-pasteurized cheese ingestion	72	66.7
Raw liver ingestion	63	58.3
Positive family history of brucellosis	33	30.6

Table 4: Comparing the relative frequency of selected clinical features of Brucellosis between 2 age groups.

		Pediatric (<16)		Adults 16 +		
		N=22	%	N=86	%	P
A)	General features	17	77.3	82	95.3	0.01
	Fever	4	18.2	44	51.2	0.005
	Chills	3	13.6	46	53.5	0.001
	Sweating	12	54.5	65	75.6	0.05
	Aches	12	54.5	66	76.7	0.04
	Lock of energy	12	54.5	63	73.3	0.09[NS]
	Headache	10	45.5	68	79.1	0.002
	Loss of appetite	7	31.8	44	51.2	0.1[NS]
	Weight loss	1	4.5	20	23.3	0.04
	Sleep disturbance	5	22.7	31	36	0.24[NS]
	lll appearance	6	27.3	12	14	0.12[NS]
	Pallor	3	13.6	15	17.4	0.5[NS]
	Lymphadenopathy	2	9.1	0	0	0.04
B)	System involvement	21	95.5	85	98.8	0.4[NS]
1.	Resporatory system	3	13.6	18	20.9	0.33[NS]
	Cough	3	13.6	18	20.9	0.3[NS]
	Pneumonia	0	0	3	3.5	0.5[NS]
2.	GIT	17	77.3	38	44.2	0.005
	Constipation	2	9.1	19	22.1	0.14[NS]
	Abdominal pain	16	72.7	17	19.8	<0.001
	Diarrhea	0	0	4	4.7	0.4[NS]
3.	Organomegally	1	4.5	2	2.3	0.5[NS]
	Splenomegally	1	4.5	1	1.2	0.4[NS]
	Hepatomegally	0	0	1	1.2	0.8[NS]
4.	Joint and bone	21	95.5	84	97.7	0.5[NS]
	Arthralgia(including backpain)	13	59.1	72	83.7	0.02
	Arthritis	12	54.5	42	48.8	0.4[NS]
	Spinal tenderness	18	81.8	47	54.7	0.02
5.	Skin rash	1	4.5	5	5.8	0.6[NS]
6.	Cardiac mummer	2	9.1	4	4.7	0.4[NS]
7.	Testicular pain*	4	26.7	2	3.6	0.01

Note: None of the patients had jaundice or CNS abnormalities *****Among 15 male children and 56 adult males.

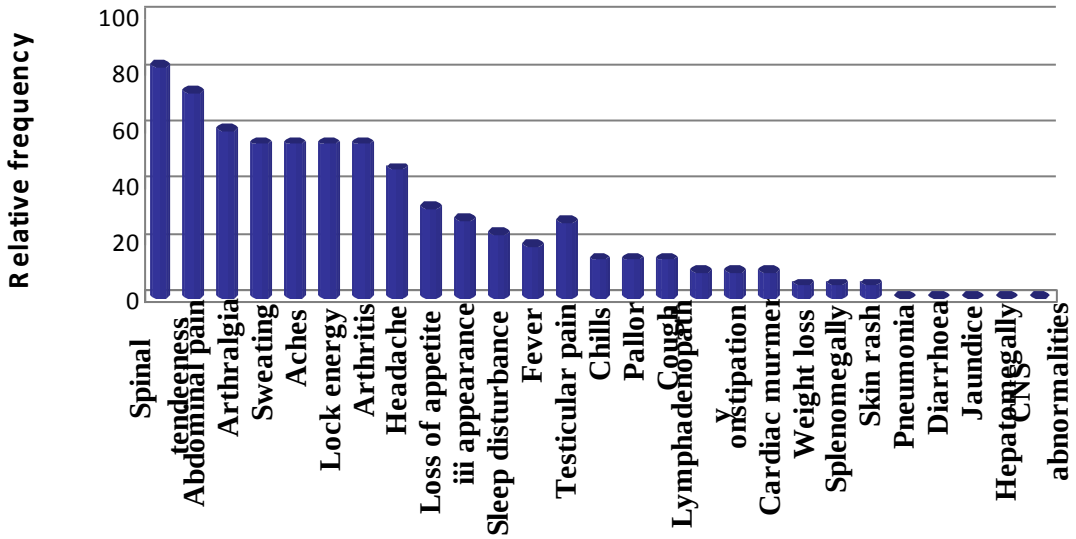

Figure 1: The relative frequency of selected clinical features of Brucellosis ordered from the least common among the pediatric age group (<16). (n=22)

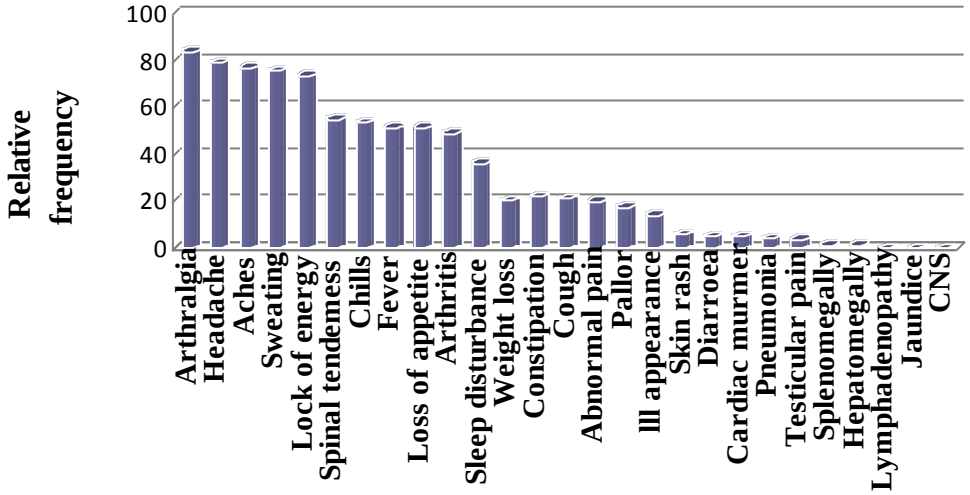

Figure 2: The relative frequency of selected clinical features of Brucellosis ordered from the least common among adults (16+ years). (n=86)

CONCLUSION:

1. Occupational exposure (animal contact) is an important risk factor in Diala governorate because of agricultural activities.
2. Pediatric age group is a vulnerable target for Brucellosis.
3. Consumption of raw milk or unpasterurized (home made) cheese and raw liver is a frequently reported risky behavior which predisposes to Brucellosis.
4. Hepatosplenomegally is rarely reported and one should not wait for this sign to suspect a possible diagnosis of Brucellosis on clinical grounds.
5. Epididymoorchitis is a frequent complication of Brucellosis in children
6. A mong pediatric age group, the most frequent clinical features were: Spinal tenderness, abdominal pain, arthralgia, sweating, aches, lack of energy and arthritis. While among adults: Arthralgia, headache, Aches, sweating, lack of energy, spinal tenderness, chills, fever, loss of appetite and arthritis were among the most frequently reported symptoms.

A (KAP) study is needed to evaluate the knowledge about Brucellosis and means of its transmission in Iraqi community(especially rural areas), before advising health education as a preventive measure[7]. Other innovative measures to screen for Brucellosis in animals are needed to control this zoonosis, like tank milk screening to detecting infected herds [18].

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