

**Original Article****Brucellosis in Tercan County of Erzincan**Erdal Bektaş,<sup>1</sup> Yeliz Onar,<sup>1</sup> Elmira Tunç,<sup>1</sup> Züleyha Alper<sup>1</sup><sup>1</sup>Uludağ University Faculty of Medicine, Department of Family Medicine. Bursa / TURKEY**Abstract**

This retrospective study was conducted in Tercan State Hospital with 408 patients who had symptoms implying brucellosis. The patients did not have a history of previous similar diagnosis or a recent physical trauma. The mean age was 53,18±0,53 years (range; 19-79 years), 243 patients (59,5%) were male and, 165 (40,5%) were female. The most frequent clinical signs and symptoms were as follows; night sweating (76%), fatigue (70,2%), fever (63,1%), joint pain (54,8%), abdominal pain (19,2%), myalgia (57,7%), back pain (57,7%) and headache (58,7%). The most frequent symptoms were muscular-skeletal system symptoms (54,8%). Of 408 patients 104 (25,4%) had positive result for standard agglutination test (SAT). Of these 104 patients, 83,5% had occupations with high-risk such as agriculture and breeding confirming the previous epidemiologic data on brucellosis.

**Key Words:** Prevalence, brucellosis, laboratory, standard agglutination test.

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**Introduction**

Brucellosis is a zoonotic disease with high morbidity despite its low mortality rates (1). Brucellosis is one of more than 166 recognized zoonoses, considered by the Food and Agricultural Organization (FAO), the World Health Organization (WHO) and the Office International des Epizooties (OIE) as the most widespread zoonosis globally. In endemic regions brucellosis is recognized to have an important impact on human and animal health, economic development, agricultural trade and even tourism (2).

The first brucellosis cases in Turkey were the soldiers in the First World War (1915) and the diagnosis was made by Noyan, Kural and Akalin (3). The high prevalence of the disease may be related to the misdiagnosis in animals, inadequate screening methods in animals, inadequate knowledge on contamination and prevention, under-reporting or under-applying to

healthcare centers (4). The disease may involve several systems. Muscular-skeletal system signs are predominant (3). The diagnosis can be made by isolating the agent in tissue culture, Rose-Bengal test and Wright test. The Standard Agglutination Test (SAT) is widely used in Turkey (5). Although the Rose-Bengal (RB) test is a rapid, simple, and inexpensive screening test for brucellosis particularly in endemic countries it may give false-positive results due to the presence of specific antibodies persisting after previous exposure. Therefore, a positive RB test requires confirmation. Serum Agglutination Test (SAT) is used and a predetermined cutoff value is applied to increase specificity (6).

Each year 500.000 new cases is reported worldwide, and the figures for our country is as follows; 10.742 cases in 2000, 15.510 cases in 2001, 17.765 cases in 2002 and 10.544 cases in the first half of 2003. The cities where brucellosis is most frequent are cities of East and South east Anatolia such as Diyarbakir, Gaziantep, Kahramanmaras, Sanliurfa, Aksaray, Batman and Sirnak (3). Tercan is a town of Erzincan city with the unique position of neighboring five cities and with a population of 34643 people. The economy is based on agriculture and breeding.

The aim of this study was to find the frequency of brucellosis.

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**Table-1. Socio-economical status of the study group**

		Male		Female	
		N	%*	N	%*
Age	10-29	8	3,2	6	3,6
	30-39	14	5,8	12	7,3
	40-49	80	32,9	48	29,1
	50-59	60	24,7	52	31,5
	60-79	81	33,4	47	28,5
Educational Status	Illiterate	0	0,0	14	8,5
	Primary School**	171	70,4	133	80,6
	Secondary School***	42	17,3	11	6,7
	High School***	28	11,5	7	4,2
	University	2	0,8	0	0,0
Occupation	Farmer	171	70,4	0	0,0
	Blue-collar Worker	26	10,7	0	0,0
	Housewife	0	0,0	157	95,2
	White-collar Worker	28	11,5	8	4,8
	Retired	11	4,5	0	0,0
	Tradesman	7	2,9	0	0,0

\*column percentages, \*\*5 years of education, \*\*\*8 years of education, \*\*\*\*11 years of education

### Material and Method

All patients (n=408) who were admitted to Tercan State Hospital between January 2002 and December 2002; with diffuse joint pain, myalgia, back pain, abdominal pain, fatigue, night sweating and fever were included in the study. The study is performed in the retrospective study. The patients with the previous history of similar symptoms or with pain due to trauma were excluded. The age range was 19-79 years. Of 408 patients, 104 were positive for the standard agglutination test (SAT). White blood cells, hemoglobin, platelet and erythrocyte sedimentation rates were evaluated. The study was approved by the governor of the county and the chief of the hospital.

Data was installed and analyzed using SPSS-15.0 for Windows (SPSS, Chicago, IL). Numeric data were expressed as arithmetical means  $\pm$  standard deviations (SD) and in numbers and percentages.  $\chi^2$  statistics were used to determine the relationship between sex and educational status. A p value of less than 0.05 was considered significant.

### Results

Of 408 patients, 243 (59.5%) were male and 165 (40.5%) were female and the mean age was:  $53.18 \pm 0.53$  SD years (range:19-79 years). The sociodemographic details were presented in Table-1. Of 104 SAT positive patients, 83.5% (n=87) of SAT positive people were dealing with agriculture or breeding or were housewives. The males had higher educational status than the females and the majority (92.5%) of the females were housewives (p<0.001). SAT positive cases were hospitalized for treatment: 19 patients were hospitalized for five days, 58 for seven days, 14 for 10 days, nine were 14 days and four patients were hospitalized for 20 days.

**Table-2. Laboratory findings in the SAT positive patient group**

		N	%
WBC	<5200 /mm <sup>3</sup>	2	1,9
	>12400 /mm <sup>3</sup>	15	14,4
Platelet	<150000 /mm <sup>3</sup>	4	3,8
	>350000 /mm <sup>3</sup>	10	9,6
Hemoglobin	M <13,5 g/dl	29	27,9
	F <12,0 g/dl	21	20,2

WBC: White Blood Cell, M: male, F: female

The laboratory findings of 104 SAT positive patients were evaluated according to normal ranges and presented in Table-2 (7). The relationship between clinical symptoms and signs and laboratory results were presented in Table-3. Night sweating was positive in 64.6% of females and 35.4% of male patients. The high frequency (54.8%) of muscular-skeletal symptoms was remarkable. The patients were hospitalized for a period of five to 20 days and were treated with parenteral streptomycin and oral tetracycline. The total treatment period was planned to be 20 days.

### Discussion

Brucellosis has not been eradicated in Turkey yet, whereas it was eradicated in the developed countries. The disease is a zoonosis and transmitted through milk and dairy products and can be seen in all age groups (8,9). It was more frequently seen between 20-60 years of age (10). The previous studies in Turkey found that it was more frequently seen between 15-35 years (11), 20-30 years (12) and 10-30 years of age (13). In

our study, we found to be more frequent between 40-59 years of age. The previous studies showed a frequency of 8.5%-26.7% (5,14-18). Our result (25.4%) was consistent with literature. The frequency in animals was declared as 16.7% and the frequency of animals without immunization was 12.4% (19).

**Table-3. Symptoms and signs of SAT positive patient group**

	N	%
Fever (> 38,5° C)	65	63,1
Night sweating	79	76
Fatigue	73	70,2
Joint pain	57	54,8
Abdominal pain	20	19,2
Headache	61	58,7
Back pain	60	57,7
Myalgia	60	57,7

The most common symptoms were reported as night sweating (69%), fever (43.8%), fatigue (65.8%), joint pain (20.7%), myalgia (56%), headache (28.4%), back pain (22.3%), (16,17,19) and our results were similar. Night sweating was more common in females (64,6%) than males (35,4%) in our study suggesting to be possibly related with menopause. The most affected system was muscular-skeletal system in the previous studies in Turkey (14%-54,8%) and our results were consistent (19-22). There is no pathognomonic hematological laboratory result. Brucellosis is a preventable infectious disease in Turkey. Brucellosis is negatively affecting the breeding business and human health, resulting an economical loss and health problems. Particularly the breeders should be properly informed about this zoonosis, preventive and therapeutic health services should be more effectively delivered and more academic studies should be performed.

The limitations of the study were being retrospective, including only hospitalized patients and not having detailed information on SAT negative patients.

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