



RESPIRATORY SYSTEM INVOLVEMENT IN BRUCELLOSIS: THE RESULTS OF THE KARDELEN STUDY

H. Erdem¹, A. Inan², N. Elaldi³, L. Gorenek¹, R. Tekin⁴, S. Gulsun⁵, C. Ataman-Hatipoglu⁶, N. Beeching⁷, O. Deveci⁴,
Pulmonary brucellosis study group⁸

¹GATA Haydarpaşa, Istanbul, Turkey ; ² Haydarpaşa Numune Training and Research Hospital, Istanbul, Turkey ; ³Cumhuriyet University School of Medicine, Sivas, Turkey ; ⁴ Dicle University School of Medicine, Diyarbakir, Turkey ; ⁵Diyarbakir Training and Research Hospital, Diyarbakir, Turkey ; ⁶ Ankara Training and Research Hospital, Ankara, Turkey ; ⁷Infectious Diseases and Tropical Medicine, Liverpool School of Tropical Medicine, Ankara, United Kingdom ; ⁸Pulmonary brucellosis study group, Pulmonary brucellosis study group, Istanbul, Turkey

INTRODUCTION

Pulmonary involvement is a rare complication of brucellosis. We describe the largest series to date, to our knowledge, of patients with pulmonary brucellosis.

MATERIAL AND METHODS

This 10-year, retrospective, descriptive study involved 27 centers in Turkey, including all patients with brucellosis with confirmed respiratory system involvement. SPSS for Windows v.16.5 (SPSS Inc., Chicago, IL), Chi-square, Fisher's Exact tests, Student's *t* test and Mann-Whitney U test were used for statistical analysis.

RESULTS

Of 133 patients (67 men), 123 (92.5%) had acute infection (defined as ≤ 2 months), with an overall mean \pm SD duration of symptoms of 33.9 ± 8.5 days. The radiologic pattern of pulmonary disease was consolidation/lobar pneumonia in 91 patients (68.4%) and pleural effusion in 41 patients (30.8%), including 30 (22.5%) with both.

Table 2. Laboratory findings of brucellosis cases with pulmonary involvement on admission (n=133)

	Mean \pm SD (range)	Normal
White blood cells, ($\times 10^3/L$)	6329 \pm 3220 (1050-27930)	4000-11000
Hemoglobin, (g/dL)	12.3 \pm 2.1 (6-16.8)	14-18 (m), 12-16 (f)
Platelet, ($\times 10^3/L$)	229875 \pm 121963 (27000-610000)	150000-450000
Erythrocyte sedimentation rate, (mm/hr)	36.5 \pm 25.2 (1-119)	≤ 15 (m), ≤ 20 (f)
C-reactive protein, (mg/L)	8.6 \pm 7.2 (0.1-31.8)	0-8
Alanine aminotransferase, (IU/L)	47.9 \pm 34.1 (8-166)	17-63
Aspartate aminotransferase, (IU/L)	50.5 \pm 41.9 (11-254)	15-41
Alkaline phosphatase, (IU/L) (n=109)	138 \pm 157 (10-1497)	41-133
Creatine phosphokinase, (IU/L) (n=92)	122 \pm 144 (14-888)	60-400
Lactate dehydrogenase, (IU/L) (n=89)	376 \pm 274 (69-1253)	140-280
Creatinin, (IU/L)	0.85 \pm 0.27 (0.2-2.1)	0.7-1.2

m: Male, f: Female

Table 2. Chest X-ray and thorax computerized tomography (CT) imaging findings *

Radiological findings	Chest X-ray, (n=133)	Thorax CT, (n=92)
Consolidation (n=84)	77 (57.9)	58 (63)
Interstitial or patchy infiltration (n=32)	29 (21.8)	27 (29.3)
Parenchymal nodules (n=10)	9 (6.8)	10 (10.9)
Abscess (n=1)	1 (0.8)	1 (1.1)
Cavity (n=1)	1 (0.8)	1 (1.1)
Pleural effusion (n=44)	38 (28.6)	38 (41.3)
Bilateral (n=27)	15 (11.3)	25 (27.2)
Unilateral (n=17)	23 (17.3)	12 (13)
Localization		
Limited to the 1-2 lobes (n=74)	73 (54.9)	43 (46.7)
>2 lobes (n=17)	14 (10.5)	14 (15.2)
Bilateral infiltration (n=46)	38 (28.6)	35 (38)

*Data expressed as n (%).

Moreover, 23 patients (17.3%) had bronchitis (one with coexistent pneumonia), and 10 (7.5%) had nodular lung lesions (one with coexistent pneumonia and effusion). Blood culture results were positive in 56 of 119 patients, and all other cases were serologically confirmed. None of 60 sputum specimens and two of 19 pleural fluid samples (10.5%) yielded positive culture results for brucellosis. Other features of brucellosis, such as osteoarticular complications, were detected in 61 patients (45.9%); 59 (44.4%) had raised liver transaminase levels, and 59 (44.4%) had thrombocytopenia. Fifteen patients (11.3%) required management in an ICU for an average of 3.8 ± 2.2 days. All patients responded to standard combination antimicrobial therapy for brucellosis with no deaths, although treatment regimens required modification in seven patients.

CONCLUSIONS

Brucellosis with pulmonary involvement is rare but has a good prognosis following treatment with appropriate antibiotics. Many clues in the exposure history, presenting clinical features, and baseline blood tests should alert the clinician to consider brucellosis.