

## Brucellosis Presenting as Leukemoid Reaction and Shock– A Rare Case Report

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### 1. Abstract

Worldwide, Brucellosis remains a major zoonosis. This disease remains a major problem among animals and humans too gets infected through unpasteurized milk or handling products of cattles. Herein we are discussing a case who presented with complaints of fever for one month, shock and leukemoid reaction was found to have brucellosis and responded well with gentamycin and doxycycline.

### 2. Introduction

Brucellae are tiny (0.5 to 0.7 X 0.6 to 1.5 µm, non-motile) non-spore-forming, and slowly growing Gram-negative coccobacilli belongs to the Brucellaceae family. There are various species of brucellosis these are *Brucella suis*, *Brucella abortus*, *Brucella ovis*, *Brucella canis*, *Brucella neotomae* among which *B. melitensis* is the most virulent form of *Brucella* species for humans, responsible for varied clinical signs and symptoms these include intermittent fever, sweats, chills, myalgia, weakness, abortion, endocarditis, osteoarticular complications, depression, anorexia, and low mortality [1]. Due to its non-specific and varied clinical presentation it is labelled as ‘disease of mistakes’ [2].

Worldwide, five hundred thousand new human cases of brucellosis are diagnosed every year, representing the world’s most prevalent bacterial zoonosis [3]. In India, Brucellosis alone has contributed to

loss of thirty million man days and economy decline of twenty-four crores rupees per year [4].

Human get infected through unprotected handling of body fluids or tissues from infected animals, through inhalation of *Brucella*-contaminated aerosols or through consumption of unpasteurized milk and milk products [5].

Leukemoid reaction in brucellosis is very rare, however leukemoid reaction with chikungunya [6] and infectious mononucleosis [7] has been reported in the past. Similarly shock with brucellosis is also a very rare presentation, however a very few case reports have been published in the past [8].

### 3. Case History

A 66-year-old female, known case of hypothyroidism, COPD on regular medication, cattle rearer presented with complaints of fever for 1 month. Fever was of low grade, associated with rigors, sweating, headache, vomiting. It was not associated with diurnal variation or rash and was on and off in nature.

There was no history of dysuria, diarrhoea, sore throat, abdomen pain, joint pain, myalgia, weight loss. On examination - patient was conscious, oriented, dyspneic, with low saturation level (spo2 = 80%), hypotensive (blood pressure was 80/60 mmhg). Rest general examination was normal. On Respiratory examination – percussion

note was dull, vesicular breath sound was absent over both infrascapular regions. No adventitious sounds were heard. Rest systemic examination was normal. Blood investigation haematological and biochemical parameters are shown in (Table 1).

Dengue, scrub serology and typhi dot was negative. General blood picture suggestive of- normocytic, normochromic, neutrophilic leucocytosis, no abnormal cells and parasite seen. Urine routine and microscopy was normal. RT PCR for Covid – 19 was negative. Blood and urine culture were sterile, chest x ray suggestive of bilateral lung consolidation with mild pleural effusion, ultrasound abdomen revealed- cholelithiasis, small left renal cortical cyst. Pleural fluid analysis - TLC- 550 (M 10%, N- 90%), glucose 100 mg/dl, protein 1170,

albumin 1020mg. ADA- 12, no bacteria, PCR for TB, CB NAAT was negative, AFB, gram stain was negative, pleural fluid culture was sterile. ECG- normal, Trop I, CPK- MB was negative, Echocardiography was normal with LVEF-58%. Brucella antibodies (slide agglutination test): positive for Brucella abortus A antigen and Brucella M antigen at titre of >180 on two occasions.

Patient was started on inotropic support, oxygen, fluids, on antibiotic, she responded well with gentamycin, doxycycline and doxycycline was continued for 6 weeks, her subsequent chest x rays showed improvement in lung consolidation patch. Patient till date is on follow up and is doing well.

**Table 1:**

Blood parameters	Normal values	Day of admission	After 3 days	At time of discharge
Hemoglobin	g/dl	11.74	10.3	10.9
TLC DLC	Thou/mm <sup>3</sup>	50.17 N- 88.7%, L- 28%, E- 0.05	9.7 N-65%, L-27% E- 08%	11 N-63%, L-19 %, E- 06%
PCV	%	36.78		
MCV	Fl	89.41		
Platelet count	Thou/mm <sup>3</sup>	210	199	350
ESR	0 -20 mm 1 <sup>st</sup> hour	45	29	
Bilirubin –	Total	0.3-1.3 mg/dl	0.58	0.5
	Direct	0.1-0.4 mg/dl	0.14	0.12
	Indirect	0.2- 0.9 mg/dl	0.44	0.36
SGPT	7-41 IU/L	18	10	13
SGOT	12-38 IU/L	31	29	19
Protein	6.7- 8.6 g/dl	6.51	5.21	5.83
Albumin	3.5-5.5 g/dl	3.31	2.49	2.63
S. Creatinine	0.5-1.2 mg/dl	1.12	0.74	0.71
S. Sodium	136-146 mmol/l	142.6	141.4	137.9
S. Potassium	3.5 – 5 mmol/l	3.34	3.14	3.87
S. TSH	0.34- 4.25 micro IU/ml	0.34		

#### 4. Discussion

Brucellosis, one of the world's neglected zoonotic diseases. It has huge impact on socioeconomic growth of country. Human brucellosis may present as acute or chronic infection with complications [9].

Brucellosis manifestation are similar to various other infection and non-infectious pathology, this may lead to underdiagnosis or mis diagnosis, leading to long term complications, inadequate treatment. Therefore, consideration to diagnose this rare disease is utmost important to reduce public and economic burden of disease. Disease can be suspected early in any patient who works in abattoir, engaged in cattle rearing activities.

Countries like India where tuberculosis is more prevalent, this disease can easily be underdiagnosed. In many patients with undifferentiated fever or with pyrexia of unknown origin doxycycline is usually started empirically either due to limited resources or due to financial constraints, following which patient improves also but this leads to improper diagnosis and inadequate treatment leading to complications and relapse of disease as brucellosis requires at least 6 weeks' treatment with doxycycline, rifampin and gentamycin in complicated cases.

#### 5. Conclusion

Brucella is one of differentials of febrile illness in tropical countries but it is usually underdiagnosed. Thorough proper clinical examination and investigation may help to reduce disease and financial burden.

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