CASE REPORT   **OPEN ACCESS**

Brucella melitensis Lurking Threat in Eastern Part of Odisha - A Case Report

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Abstract

Brucellosis is a rising veterinary and human health problem in India. It may manifest with a varied multisystem clinical presentation. In our case patient was a 72 years male with complaint of abdominal pain for 2 months following COVID-19 infection. He was a known case of CAD (coronary artery disease) post PTCA status, on regular follow up & treatment. Patient had post COVID pulmonary fibrosis. When the patient admitted in our hospital with above mentioned complaints, necessary investigations along with blood culture by automated method was sent and patient was started on empirical doxycycline along with other symptomatic treatment. As the patient was not very sick and was reluctant to stay in hospital during the COVID-19 situation, he was discharged on request with a treatment and follow up plan. Blood culture was found to be positive for *Brucella melitensis*. When we got the blood culture report the patient was contacted telephonically and started Rifampicin along with Doxycycline for 6 weeks.

Keywords: Brucellosis, COVID-19, Human Health, Blood Culture, Zoonotic Disease

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INTRODUCTION

Brucellosis is a re-emerging and remaining to be the commonest infectious zoonotic disease, which accounts for more than 5 lakh cases[1] in a year. In spite that brucellosis and its modes of transmission known to us for more than 100 years, still a worldwide issue, specially in developing countries. In India and its neighbour countries, animal and human brucellosis are endemic in some parts till now.[2-5] Worldwide more than 5 lakh brucellosis cases were reported annually.[6]

The disease continues to be a concern in countries like India, where environment favors the infection to spread in human being. Among the Brucella species *Brucella melitensis* is the most virulent & species to worry in India. *Brucella abortus* pathogenic to cattle. Many studies reveal that human brucellosis is not rare in India. Two studies done by Mathur in 1964 and 1968 enlighten that 8.5% seroprevalence of brucellosis in persons who comes interact frequently with not only infected cattle but also goats & sheep. In Gujarat, in 1986 Panjarathinam and Jhala documented. 8.5% occurrence of brucella agglutinins in human cases. The common ways by which Brucella spread from animals to human are through consuming raw dairy products, touching body fluids and blood of infected animals, inhaling contaminated air.

Brucellosis is a multisystem, wide-spectrum disease with non-specific symptoms which occurs within 2 weeks to 3 months after inoculation. The common symptoms and signs are fever, chills, sweats, headaches fatigue, malaise, myalgia, arthralgia, and weight loss.[7] The diagnosing a case is thought-provoking because multiorgan, multisystemic and sometimes resembles infectious and noninfectious diseases.[8] It is invariably misdiagnosed, due to varied and confusing presentation.[9] The patients also having gastrointestinal symptom as abdominal pain (19%),[10] diarrhea (6% - 16%),[11] constipation anorexia, nausea, vomiting.[12] Ileal involvement also seen in brucellosis case.[13-15] Systemic symptoms are more common than gastrointestinal manifestations of brucellosis in human. Doctors should be aware to these rare manifestations as early recognition of brucellosis and proper treatment in time will decrease the morbidity and mortality.

The causative organism Brucellae belongs to α–2 subdivision of proteobacteria. They are Gram-negative, facultative intracellular coccobacilli or short rods, partially acid fast, aerobic, free-living, soil-dwelling organism that mostly infecting dairy animals. In infected hosts, the bacteria located intracellularly, mostly within the reticuloendothelial system.[16] They are positive for oxidase, catalase, urease and nitrate reductase. The genome consists of two circular chromosomes of 2.1 Mb and 1.5 Mb except *B.suis* biovar 3, which bears a single chromosome of 3.1 Mb. There are six species of *Brucella* and 4 of which pathogenic to human. *B. abortus* specially infects cattle, *B. melitensis* infects sheep and goats, *B. suis* pigs and *B. canis* dogs. *B. melitensis* being the species of concern.

Diagnosis of Brucellaeis a challenging one. Blood culture gives definite proof of organism but less sensitive and specific than Lysis centrifugation and blood clot culture techniques re.[17] Other diagnostic methods include Antigen detection, PCR, Antibody detection, Agglutination tests. ELISA Newer rapid assays: Brucella IgM and IgG lateral flow[18] and latex agglutination assays.[19]

Being facultative intracellular, Brucellae are inaccessible to antibiotics. The treatment recommended by the World Health Organization for acute brucellosis in adults is rifampicin 600 to 900 mg and doxycycline 100mg BD for 6wks.[20] The combination of intramuscular streptomycin & tetracycline minimises the relapses.[21]

Case Presentation

A 72 years Male patient presented with abdominal pain for 2 months admitted in gastroenterology department in our hospital. Pain abdomen was the only symptom and the pain was localized to umbilical region, non radiating, not associated with food intake and there was no history fever, vomiting. Patient was a known case of CAD post PTCA status from 2018, on regular follow up & treatment. Patient had history of SARS-CoV-2 infection followed by pulmonary fibrosis. Due to pain abdomen following SARS-CoV-2 infection patient had visited multiple hospitals and had followed different treatments. As he had history of SARS-CoV-2 along with pulmonary fibrosis everywhere he was investigated as a post COVID

Table. Laboratory examinations

Hemogram		Lipid profile	
Hb	12.8 gm/dl	Triglyceride	115 mg/dl
TRBC	5,130,000 /µl	VLDL	90 mg/dl
TLC	10,090 /µl	LDL	29 mg/dl
TPC	1,73,000 /µl	HDL	38 mg/dl
DC [N/L/M/E/B](in %)	67.5/25/5.3/1.9/0.3	Total cholesterol	23 mg/dl
RFT		**Viral markers**	
S. Urea	11 mg/dl	Anti HCV	NR
S. Creatinine	0.66 mg/dl	HIV	NR
S. Na+	127 mEq/L	HBsAg	NR
S. K+	3.8 mEq/L	HBeAg	NR
LFT		**Enzyme**	
S.Bilirubin (Total)	0.26 mg/dl	S. Lipase	62.0 IU/l
S.Bilirubin (Direct)	0.14 mg/dl	S. Amylase	203.00 IU/L
AST/SGOT	14.50 IU/L		
ALT/SGPT	8.20 IU/L	FBS	114 mg/dl
ALP	108.00 IU/L	TSH	5.31 micro Iu / ml
S. Protein (Total)	6.79 gm/dl	S. Calcium	8.21 mg/dl
S. Albumin	4.08 gm/dl	URINE (R/M)	NAD
S. Globulin	2.71 gm/dl		

N.B-Hb-Haemoglobin, TRBC-Total red blood cell count, TLC-Total leucocyte count, TPC-Total platelet count, DC-Differential count, N-Neutrophile, L-Lymphpcyte, M-Monocyte, E-Eosinophile, B-Basophile, RFT-Renal function test, Na-sodium, K-potassium, LFT-Liver function test, AST-Aspartate transaminase, ALT-Alanine transaminase, SGOT-Serum glutamic oxaloacetic transaminase, SGPT-Serum glutamic pyruvic transaminase, ALP-Alkaline phosphatase, VLDL-Very low density lipoprotein, LDL-Low density lipoprotein, HDL-High density lipoprotein, HCV-Hepatitis c virus, HIV-Human immunodeficiency virus, HBsAg-Hepatitis b surface antigen, HBeAg-Hepatitis b envelop antigen. FBS-Fasting blood sugar, TSH-Thyroid stimulating hormone, NR-Nonreactive, NAD-No abnormality detected.

case with complications. Due to nonresolution of symptoms after 2 months when the patient admitted in our hospital, he was investigated broadly with all necessary investigations along with blood culture. Patient was started with empirical antibiotic along with doxycycline and other symptomatic treatment and was reluctant for prolonged hospitalization due to the COVID scenario. So, he was discharged on request with a proper treatment and follow-up plan. Blood culture sample was flagged positive by BACT/ALERT and was subcultured on blood agar and MacConkey agar. Colony from blood agar was put in VITEK 2 for identification and sensitivity which was came positive for *Brucella melitensis*. After getting the culture report patient was contacted telephonically and prescribed p.o. rifampicin OD with doxycycline BD for 6 weeks. As brucellosis is notifiable disease it was also informed to the concerned authority as per protocol. Patient was found to be recovered on subsequent follow up. Other test reports are as follows (Table).

USG abdomen & pelvis revealed mild fatty liver, bilateral isoechoic kidneys & prostatomegaly. Patient was started on iv fluids, iv antibiotics and other supportive measures. Cardiology opinion was taken for CAD post PTCA status & advise followed, CT abdomen angiogram revealed diffuse atherosclerotic wall calcification in abdominal aorta extending into bilateral common & internal iliac arteries. Cardiology review was taken & advised for continuation of anti-platelets. USG abdomen & pelvis: mild fatty liver, b/l isoechoic kidneys & prostatomegaly CECT abdomen angiogram: diffuse atherosclerotic wall calcification in abdominal aorta extending into b/l common & internal iliac arteries.

DISCUSSION

With global distribution, Brucellosis is an important re-emerging zoonotic disease. As cattle are an important reservoir, transmission from these animals have raised important epidemiological issues. In developing countries, it is still a serious community problem due to drinking of unpasteurised animal product and relapsing nature of the disease when proper treatment is followed. *melitensis* recently accounts for most recorded brucellosis cases worldwide. The manifestation may be a multiorgan or a multisystemic and sometimes it is asymptomatic or mimic several infectious and noninfectious diseases.[8,22] So, for its diversity range of spectrum, diagnosis of brucellosis can be challenging. Most of the time lack of proper history, alertness of clinicians, routine serological surveillance in endemic areas is the burden for determining the actual prevalence of human brucellosis. Clinician expand their differential diagnosis about the diseases and diagnose with newer rapid, sensitive, and specific testing methodologies, appropriate regimen is need to overcome the morbidity and mortality of brucellosis. In our case uncommon and mild clinical symptoms, doubtful history of exposure to animals or consuming animal products along with post SARS-CoV-2 infection state of the patient lead to a diagnostic dilemma. In spite of misleading factors in this COVID pandemic era a high level of suspicion is always necessary for accurate and early diagnosis of brucellosis. Gastrointestinal manifestations also one of the presenting symptoms of the diseases. So proper teamwork of clinicians and microbiologist are essential for early correct diagnose and treatment regimen of protean human brucellosis.[23]

CONCLUSION

Being a mimicker of a number of diseases due to its multisystem involvement, clinicians should keep in mind a differential diagnosis of Brucellosis while encountering a case of pain abdomen as early diagnosis and treatment is the key to decrease the morbidity.

DATA AVAILABILITY

All datasets generated or analyzed during this study are included in the manuscript.

ETHICS STATEMENT

Not available.

INFORMED CONSENT

Written informed consent was obtained from the participants before enrolling in the study.

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