



**"A RETROSPECTIVE STUDY OF PEDIATRIC BRUCELLOSIS FROM A TERTIARY CARE CENTRE IN GUJARAT": CASE SERIES**

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**ABSTRACT**

Brucellosis is a zoonotic disease that is overlooked and misdiagnosed due to its protean and varied laboratory facilities. The disease causes diminution of man power and is of great public health importance. We present a case series and retrospective analysis of five children admitted to tertiary care centre of Gujarat who were diagnosed as having Brucellosis. Their epidemiological characteristics, clinical features, contact history, laboratory parameters were studied. This report creates awareness regarding Brucellosis and its significance in approaching to diagnosis in a case of Pyrexia of Unknown Origin (PUO).

**KEYWORDS :** Pediatrics Brucellosis, Zoonosis, Pyrexia of Unknown Origin (PUO)

**INTRODUCTION**

Brucellosis is caused by a gram-negative, non-spore bearing, and non-motile coccus bacillus. Humans are accidental hosts and acquire the disease from direct contact with an infected animal or consumption of infected unpasteurized dairy products or raw meat, the latter being the major cause of brucellosis in children. [1, 2] Other modes of transmission are contamination of skin abrasions, inhalation of aerosols from animal manure or bacterial culture media and rarely person to person transmission. Breastfeeding may transmit the infection to the infants and sexual transmission has also been reported. It is an occupational disease for the people working with animals and laboratory personnel handling the infective material. [3] Brucellosis is a chronic disease with a risk of disabling consequences, but rarely fatal in humans. Brucellosis requires prolonged antibiotic therapy and involves considerable medical expenses and loss of working hours. It has versatile and wide clinical presentation, ranging from non-specific fever to multisystem involvement like Arthritis, Osteomyelitis, Meningitis, Endocarditis, Hepatic/Splenic abscess, Pancytopenia, and Nephritis. Brucellosis has many other names like Mediterranean fever, Malta fever, Cyprus fever, Gibraltar fever based on geographical areas it is prevalent. It is also called as Undulant fever because of its remittent character of fever and often misdiagnosed as malaria and typhoid because of its varied presentation. [4] One should have a high degree of suspicion in a child presenting with pyrexia and joint pains which remain its most common manifestation. No satisfactory vaccines against humans are available. [5]

**Case series**

A retrospective analysis of Brucellosis cases admitted to the Pediatric department in a tertiary care centre in Gujarat, India was performed. The diagnosis was made by detection of brucella specific IgM antibodies ELISA. IgM antibodies titre greater than 11IU/ml is considered positive. Positive culture though considered as a gold standard positive but it has a limitation of low yield.

A total of 5 cases of brucellosis were identified. Clinical features and laboratory parameters of study population are represented in following tables.

**Table 1: Clinical and Epidemiological parameters of study**

**population**

Case No.	Age (years)	Sex	Residence	Clinical features	Contact history
1	8	Male	Rural	Fever since 12 days Abdomen pain since 6 days	Cattle at home and raw cow milk
2	6	Female	Rural	Fever since 16 days Abdomen pain since 8 days Arthralgia since 10 days	Cattle at home and raw cow milk
3	3	Male	Rural	Fever since 30 days Abdomen pain since 10days Arthralgia since 15 days	Cattle at home and raw cow milk
4	1	Female	Rural	Fever since 20 days Abdomen pain since 6 days	Cattle at home and raw cow milk
5	4	Male	Urban	Fever with Weight loss	Cattle at home and raw milk

**Table 2: Organomegaly and Lymphadenopathy**

Case No.	Organomegaly		Lymphadenopathy
	Hepatomegaly	Splenomegaly	
1	Yes	Yes	No
2	No	Yes	Yes
3	Yes	Yes	No
4	No	Yes	No
5	No	No	Yes

**Table 3: Laboratory parameters**

Case No.	Hb (gm %)	TLC (cells /cum m)	Lymph h/PM N (%)	PLT (cell s/cu mm)	Creat (mg/dl)	AST (U/L)	ALT (U/L)	ESR (mm/hr)	IgM Brucellosis IU/ml
1.	8.3	4100	41/48	2.1	0.4	40	38	64	31.8
2.	10.9	4600	32/61	2.41	0.6	32	23	13	36

3.	8	6100	53/42	1.8	0.5	24	24	13	28
4.	8.3	9500	60/29	2.2	0.4	35	32	37	22
5.	9.7	10000	52/37	3.8	0.3	33	28	66	34

**Table 4: Laboratory Parameters for Sepsis**

Case No.	CRP	MP by card	Widal Test	Blood Culture	Urine	TB Workup
1.	19.1	Negative	Negative	No growth	NAD	Negative
2.	16.2	Negative	Negative	No growth	NAD	Negative
3.	11.6	Negative	Negative	No growth	NAD	Negative
4.	21.4	Negative	Negative	No growth	NAD	Negative
5.	14.4	Negative	Negative	No growth	NAD	Negative

**Abbreviations:** AST-Aspartate transaminase, ALT-Alanine transaminase, ESR-Erythrocyte Sedimentation Rate, Hb-Hemoglobin, TLC -Total Leukocyte Count, CRP-C reactive protein.

**RESULT**

There were 3 male children and 2 female children in study population. Mean age of patients is 5 years. Most of them 80 % are from rural area (4). All 5 patients had history of drinking raw cow milk and had cattle in their home. Among the patients cases no 3&4 are siblings. All 5 patients had history of fever. 2 patients had fever with arthralgia (40%) and 4 patients had fever with abdomen pain (80%). All 5 patients had significantly elevated IgM-brucella antibodies in ELISA. All 5 children had hemoglobin less than 11, Normal total count. 4 patients (80%) had relative Lymphocytosis. 2 patients had hepatomegaly (40%), 4 had Splenomegaly (80%), 2 had Lymphadenopathy (40%) and none had elevated liver enzymes and 3 patients had elevated ESR (60%). All patients had elevated CRP. Out of the five patients 2 patients (case no 3&4) examined on follow up after 1 month has significant improvement after initiation of therapy.

**DISCUSSION**

Brucellosis is chronic granulomatous zoonosis with worldwide existence and is especially prevalent in Mediterranean region, India, and parts of Mexico and Central and South America. In India, though it is said to account for a loss of about 30 million man days per year, the actual magnitude of the disease seems to be much more due to under reporting or misdiagnosis. [6] As this report is a hospital-based retrospective clinical study, it also cannot measure real incidence and prevalence of the disease. However, the purpose of this case series is to create awareness among the health care providers regarding the disease and its varied presentation. The disease poses a diagnostic challenge, as it is often under-diagnosed due to lack of suspicion and diagnostic facilities despite cattle farming (an important risk factor) being one of the main occupation in rural India. Many children with prolonged pyrexia and failure to thrive are empirically treated with anti-tubercular therapy. [7, 8] It may be worth investigating such children for Brucellosis, as this zoonotic disease can manifest in many & any manner. History of animal exposure is pivotal for clinching the diagnosis. [9] Additional clues include anemia, normal total leukocyte count with relative lymphocytosis, elevated acute phase reactants (ESR and CRP). As the sensitivity of blood culture is inferior when compared to serology, the disease may be missed particularly when the index of suspicion is low. [10, 11] Newer investigations like ELISA and PCR may be reserved for special circumstances like chronic brucellosis, complicated cases, and re-infection.[12] However, management of Brucellosis is not as difficult as establishing the diagnosis. If compliance to the therapy is ensured, the prognosis is excellent with negligible relapse rate. Emphasis should also be laid on prevention of the disease by means of pasteurization of milk and dairy products, maintaining personal hygiene and practicing protective strategies when involved in animal rearing or handling infective laboratory products and eradication of organism from domestic animals. [13]

**CONCLUSION**

Brucellosis should always be considered in the differential diagnosis of Pyrexia of Unknown Origin (PUO) particularly in endemic areas.

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