FEATURES OF BRUCELLOSIS IN CHILDREN

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Abstract. Brucellosis, a zoonotic infection caused by Brucella species, poses unique challenges in pediatric populations due to its atypical presentation and diagnostic complexities. This review examines the epidemiology, clinical features, diagnostic methods, treatment strategies, and prevention of brucellosis in children. Common symptoms in children include fever, musculoskeletal pain, and hepatosplenomegaly, often leading to delayed diagnosis. Tailored diagnostic approaches, such as serological tests and culture, combined with age-appropriate antibiotic regimens, are critical for effective management. Preventive measures, including public health education and veterinary control, are essential to reduce disease burden in endemic regions.

Keywords: Brucellosis, pediatric, zoonotic infection, clinical manifestations, diagnosis, treatment, children, Brucella.

Introduction. Brucellosis, caused by gram-negative Brucella bacteria, is a zoonotic disease prevalent in endemic regions like the Mediterranean, Middle East, and parts of Asia and Africa. Children in these areas are a vulnerable group, presenting distinct clinical and diagnostic challenges compared to adults [1]. This review synthesizes current knowledge on the epidemiology, clinical manifestations, diagnosis, treatment, complications, and prevention of

brucellosis in children, emphasizing the need for tailored approaches in pediatric care.

Epidemiology. Brucellosis in children is primarily transmitted through consumption of unpasteurized dairy products, contact with infected animals, or, rarely, vertical transmission [2]. In endemic regions, children may constitute 10–20% of cases, particularly in rural settings with livestock exposure. Risk factors include ingestion of raw milk and poor hygiene practices in agricultural communities [1]. Underreporting is common due to limited diagnostic awareness and access to healthcare in these areas.

Clinical Manifestations. The clinical presentation of brucellosis in children is often nonspecific, complicating timely diagnosis. Key symptoms include:Fever: Persistent or intermittent fever is present in over 90% of cases, often low-grade or undulant [3,8].Musculoskeletal Symptoms: Arthralgia, myalgia, or arthritis, particularly in large joints (e.g., knees, hips), occurs in 30–50% of cases [3].Hepatosplenomegaly: Liver and spleen enlargement is more frequent in children than adults, detectable during physical examination [2,9].Severe Manifestations: Rare complications, such as meningitis, endocarditis, or osteomyelitis, may occur in untreated cases [4].

Atypical Symptoms: Fatigue, weight loss, and night sweats are common, contributing to diagnostic delays [3,8].Children generally experience milder disease than adults but are at risk of chronic or relapsing infections if untreated [4,10].

Diagnosis. Diagnosing brucellosis in children is challenging due to nonspecific symptoms and limited diagnostic resources in endemic areas. Key methods include:Serological Tests: The standard agglutination test (SAT) with a titer ≥1:160 or enzyme-linked immunosorbent assay (ELISA) detects anti-Brucella antibodies, though false positives may occur [5].Culture: Blood or bone marrow

cultures are the gold standard but have low sensitivity (50–70%) and require prolonged incubation [5].Polymerase Chain Reaction (PCR): PCR offers high sensitivity and specificity but is rarely available in resource-limited settings [6].Clinical Correlation: A history of exposure to unpasteurized dairy or infected animals, combined with clinical findings, supports diagnosis [2].Serological results in children may be weaker than in adults, requiring repeat testing in suspected cases [5].

Treatment. Treatment of pediatric brucellosis must account for age, disease severity, and drug safety. The World Health Organization recommends combination therapy to prevent relapse [7]. Standard regimens are:Children Over 8 Years: Doxycycline (2–4 mg/kg/day) plus rifampicin (15–20 mg/kg/day) for 6 weeks [7].Children Under 8 Years: Trimethoprim-sulfamethoxazole (TMP-SMX, 10 mg/kg/day of trimethoprim) with rifampicin to avoid doxycycline-related risks to teeth and bones [7].Severe Cases: Gentamicin (5 mg/kg/day) may be added for 7–14 days in cases like neurobrucellosis or endocarditis [4].Relapse rates in children are 5–10%, lower than in adults, but increase with monotherapy or inadequate treatment duration [7]. Follow-up is crucial to ensure adherence and monitor complications.

Complications. Untreated brucellosis in children can lead to serious complications, including:Osteoarticular Involvement: Chronic arthritis or osteomyelitis, especially in the spine, may cause long-term disability [3].Neurobrucellosis: Meningitis or encephalitis, though rare, carries high morbidity [4].Endocarditis: Rare but life-threatening, requiring prolonged treatment [4].Early intervention significantly reduces complication risks, highlighting the importance of prompt diagnosis [4].

Prevention. Preventing pediatric brucellosis requires multifaceted strategies:Public Health Education: Educating communities about risks of unpasteurized dairy and animal contact [1].Veterinary Measures: Livestock

vaccination and culling infected animals reduce transmission [2].Surveillance: Screening in high-risk areas facilitates early detection [6].School-based programs can enhance awareness and promote safe practices among children in endemic regions [1].

Conclusion. Brucellosis in children is a complex zoonotic disease with nonspecific symptoms, diagnostic challenges, and unique treatment considerations. Clinicians in endemic areas must maintain vigilance to ensure early diagnosis and effective management. Research into rapid diagnostics and optimized pediatric treatment regimens is needed. Public health and veterinary interventions are critical to reducing the disease burden in children.

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