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ORAL MUCOSAL CANDIDIASIS IN CHILDREN: CLINICAL COURSE, DIAGNOSIS AND TREATMENT

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Abstract:
Oral mucosal candidiasis is one of the most common fungal infections in pediatric practice. The disease is predominantly caused by Candida albicans, although other Candida species are increasingly recognized as important pathogens. Oral candidiasis affects newborns, infants, and immunocompromised children more frequently, leading to discomfort, feeding difficulties, and reduced quality of life. The clinical manifestations vary from pseudomembranous and erythematous forms to chronic hyperplastic lesions. Early diagnosis and appropriate treatment are essential to prevent complications and recurrence. This review analyzes current data on the epidemiology, clinical course, diagnostic approaches, and treatment strategies for oral candidiasis in children. Particular attention is paid to risk factors, laboratory diagnostic methods, and modern antifungal therapies. The findings emphasize the importance of comprehensive management, including antifungal treatment, correction of predisposing factors, and maintenance of oral hygiene.

Keywords: Oral candidiasis, pediatric dentistry, Candida albicans, oral mucosa, fungal infection, diagnosis, antifungal therapy, children.

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INTRODUCTION

Oral candidiasis is an opportunistic fungal infection caused primarily by yeasts of the genus Candida. Among them, Candida albicans accounts for approximately 70–90% of reported cases. Candida species are normal commensals of the oral cavity; however, under favorable conditions they can transform into pathogenic forms and invade mucosal tissues.

Children constitute a particularly vulnerable population due to the immaturity of the immune system, frequent exposure to antibiotics, and nutritional deficiencies. The prevalence of oral candidiasis is especially high among neonates, infants, children receiving corticosteroid therapy, and patients with congenital or acquired immunodeficiency disorders.

The pathogenesis of oral candidiasis involves a complex interaction between fungal virulence factors and host defense mechanisms. Candida species possess the ability to adhere to epithelial surfaces, form biofilms, and produce hydrolytic enzymes that facilitate tissue invasion. Local and systemic factors such as poor oral hygiene, prolonged antibiotic therapy, xerostomia, malnutrition, endocrine disorders, and immunosuppression contribute significantly to disease development.

The growing incidence of antifungal resistance and the emergence of non-albicans Candida species have increased the importance of accurate diagnosis and evidence-based treatment strategies in pediatric dentistry and pediatric medicine.

MATERIALS AND METHODS

This review is based on an analysis of contemporary scientific publications, clinical guidelines, and peer-reviewed studies published in international and regional medical journals. Literature related to the epidemiology, clinical manifestations, diagnosis, and treatment of pediatric oral candidiasis was reviewed using databases including PubMed, Scopus, Web of Science, and regional scientific publications from Central Asia and Uzbekistan.

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RESULT AND DISCUSSIONS

Clinical Course of Oral Candidiasis in Children. The clinical manifestations of oral candidiasis depend on the child's age, immune status, and underlying predisposing factors.

Acute Pseudomembranous Candidiasis. Acute pseudomembranous candidiasis, commonly known as thrush, is the most prevalent form in infants and young children. It is characterized by white or creamy plaques on the tongue, palate, buccal mucosa, and oropharynx. These plaques can often be removed, leaving an erythematous or slightly bleeding surface underneath.
Affected infants may present with irritability, feeding difficulties, and decreased appetite. In severe cases, lesions may extend to the pharynx and esophagus.

Acute Erythematous Candidiasis. This form is characterized by red, inflamed mucosal surfaces accompanied by burning sensations and discomfort. It is frequently associated with recent antibiotic therapy, which disrupts the normal oral microbiota and promotes fungal overgrowth.

Chronic Hyperplastic Candidiasis. Although uncommon in children, chronic hyperplastic candidiasis may occur in patients with persistent immunodeficiency. The lesions appear as white plaques firmly attached to the mucosa and cannot be easily removed.

Angular Cheilitis. Angular cheilitis is characterized by erythema, fissuring, and soreness at the corners of the mouth. Candida infection often coexists with bacterial pathogens, particularly Staphylococcus aureus.

Risk Factors. Numerous factors contribute to the development of oral candidiasis in pediatric patients:

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- Immature immune system in newborns and infants;
- Broad-spectrum antibiotic therapy;
- Corticosteroid inhaler use;
- Poor oral hygiene;
- Malnutrition and vitamin deficiencies;
- Diabetes mellitus;
- Congenital immunodeficiency disorders;
- Human immunodeficiency virus (HIV) infection;
- Xerostomia;
- Prolonged hospitalization and intensive care treatment.

Several studies indicate that prolonged antibiotic exposure significantly increases oral Candida colonization in children by disrupting the balance of the oral microbiome.

Diagnosis. The diagnosis of oral candidiasis is generally based on clinical examination supported by laboratory investigations when necessary.

Clinical Examination. A thorough oral examination remains the cornerstone of diagnosis. The clinician should evaluate lesion morphology, distribution, duration, and associated symptoms.

Microscopic Examination. Direct microscopy using potassium hydroxide (KOH) preparations can demonstrate budding yeast cells and pseudohyphae, providing rapid diagnostic confirmation.

Culture Methods. Culture on Sabouraud dextrose agar remains an important diagnostic tool for species identification. Chromogenic media facilitate differentiation between Candida species.

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Molecular Diagnostics. Polymerase chain reaction (PCR) assays provide highly sensitive and specific identification of Candida species. These methods are particularly valuable in recurrent or treatment-resistant infections.

Differential Diagnosis. Conditions requiring differentiation include:

- Oral leukoplakia;
- Lichen planus;
- Geographic tongue;
- Viral stomatitis;
- Traumatic lesions;
- Aphthous ulcers.

Treatment. Effective management requires both eradication of fungal infection and elimination of predisposing factors.

Topical Antifungal Therapy. Topical agents are considered first-line treatment for uncomplicated pediatric oral candidiasis.

Commonly used medications include:

- Nystatin oral suspension;
- Clotrimazole troches;
- Miconazole oral gel.

Nystatin remains widely used due to its favorable safety profile and minimal systemic absorption.

Systemic Antifungal Therapy. Systemic therapy is indicated for severe, recurrent, or refractory infections.

Common agents include:

- Fluconazole;
- Itraconazole;

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- Voriconazole (selected cases).

Fluconazole demonstrates excellent efficacy and remains the preferred systemic treatment in many pediatric protocols.

Prevention. Preventive strategies include:

- Maintenance of oral hygiene;
- Rational antibiotic prescribing;
- Steroid inhaler mouth rinsing after use;
- Adequate nutritional support;
- Early treatment of underlying systemic diseases;
- Regular dental examinations.

Parental education plays a crucial role in preventing recurrence, particularly in infants and children with chronic medical conditions.

Discussion

Recent evidence highlights the increasing prevalence of non-albicans Candida species and growing antifungal resistance. This trend underscores the importance of species-level identification in recurrent infections. Advances in molecular diagnostics allow earlier detection and targeted therapy, improving clinical outcomes.

Comprehensive treatment approaches combining antifungal medication, risk-factor modification, and preventive measures provide the highest rates of therapeutic success. Collaboration among pediatricians, dentists, infectious disease specialists, and caregivers is essential for effective management.

CONCLUSION

Oral mucosal candidiasis remains one of the most common fungal infections in childhood. The disease demonstrates a wide spectrum of clinical manifestations ranging from mild pseudomembranous lesions to chronic and recurrent infections

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in immunocompromised patients. Early recognition, accurate diagnosis, and appropriate antifungal therapy are critical for successful treatment. Modern diagnostic techniques and evidence-based therapeutic approaches have improved outcomes; however, prevention and control of predisposing factors remain fundamental components of patient care. Continued research is required to address emerging antifungal resistance and optimize pediatric treatment protocols.

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