



ORAL SIGNPOSTS IN MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN: A DIAGNOSTIC WINDOW INTO MIS-C- A REVIEW

Pediatrics

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ABSTRACT

Multisystem Inflammatory Syndrome in Children (MIS-C) is a severe, post-infectious complication associated with SARS-CoV-2, characterized by systemic inflammation and multi-organ involvement. Among its clinical spectrum, oral and mucocutaneous manifestations are increasingly recognized as key diagnostic features. This article discusses the origin, distribution, recurring spread and various treatment modalities.

KEYWORDS

MIS-C, SARS-CoV-2, Oral Manifestations, Mucocutaneous Signs, Strawberry Tongue, Cracked Lips.

INTRODUCTION

Multisystem Inflammatory Syndrome in Children (MIS-C) is a rare but serious condition that emerged in the context of the COVID-19 pandemic. It is characterized by systemic inflammation and multiorgan involvement, occurring typically 2–6 weeks following SARS-CoV-2 infection. First recognized in April 2020, MIS-C shares overlapping features with Kawasaki disease, toxic shock syndrome, and macrophage activation syndrome. Increasing evidence has indicated that the oral cavity can serve as an early site of clinical manifestation in MIS-C, which is significant for timely diagnosis and management.

Pathophysiology and Immunophysiology

MIS-C involves an exaggerated immune response, possibly driven by post-viral immune dysregulation. Elevated cytokines, particularly IL-6, IL-1 β , and TNF- α , are implicated in systemic and mucocutaneous inflammation. The vascular inflammation and endothelial dysfunction are believed to affect mucous membranes, including the oral cavity, leading to a variety of signs and symptoms.

Oral Manifestations in MIS-C

Although MIS-C affects multiple organs, mucocutaneous involvement—including oral changes—is observed in a substantial proportion of cases. According to Feldstein et al. (2020), about 70% of MIS-C patients exhibit mucocutaneous symptoms.

Common Oral Findings

1. Strawberry Tongue: Similar to Kawasaki disease, strawberry tongue (erythematous tongue with prominent papillae) is frequently reported.
2. Lip Changes: Cracked, dry, red, or swollen lips are common. These findings are indicative of vascular inflammation and epithelial involvement.
3. Oral Ulcerations: Some patients develop aphthous-like ulcers on the tongue, buccal mucosa, or palate. These may be painful and interfere with feeding.
4. Erythematous Oral Mucosa: Diffuse redness and inflammation of the gingiva and oral mucosa have been documented.
5. Desquamative Changes: Shedding of mucosal layers, especially in the labial and gingival regions, has been observed in severe cases.

Prevalence in Clinical Studies

- Whittaker et al. (2020) in a multicentric UK study reported mucocutaneous findings in 74% of MIS-C cases, with oral involvement including red cracked lips and tongue erythema.
- Cabrero-Hernández et al. (2020) in Spain documented red, fissured lips and erythematous tongue in 60% of children with MIS-C.
- Verdoni et al. (2020) in Italy noted that mucosal involvement in MIS-C could mimic Kawasaki-like presentation, particularly in patients under 5 years.

Differential Diagnosis

The oral findings in MIS-C can mimic several other pediatric conditions, notably:

- Kawasaki Disease- Overlapping features include strawberry tongue and cracked lips.
- Herpetic Gingivostomatitis: Can present similarly with ulcers but usually has a distinct virologic etiology.
- Hand-Foot-and-Mouth Disease: Involves vesicular eruptions with systemic viral prodrome.

Diagnostic and Clinical Significance

- The recognition of oral manifestations is clinically significant because:
- They may precede systemic signs like fever, GI upset, and cardiac symptoms.
- Early detection allows prompt initiation of immunomodulatory therapy (e.g., IVIG, corticosteroids), which is crucial to reduce morbidity.
- Dental and pediatric professionals can play a frontline role in early identification and referral.

Management and Prognosis

- Oral manifestations in MIS-C typically resolve with systemic treatment. Symptomatic relief can be provided using: Mild topical corticosteroids (in case of ulcers).
- Antiseptic mouthwashes (chlorhexidine) to prevent secondary infection.
- Adequate hydration and soft diet.

Gaps in Literature and Research

While mucocutaneous features are commonly documented, there is limited literature focusing specifically on detailed oral manifestations in MIS-C. Longitudinal studies and oral health assessments in post-MIS-C follow-up are essential to understand:

- Long-term oral sequelae
- Impact of systemic therapy on oral tissues
- Role of dentists in multidisciplinary MIS-C teams

CONCLUSION

Oral manifestations are common and sometimes early features of MIS-C. These include strawberry tongue, cracked lips, and mucosal erythema, and can resemble Kawasaki disease. Pediatric dentists and healthcare professionals must be aware of these signs to aid early diagnosis and improve outcomes in affected children.

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