

CLASSIC HAND, FOOT, AND MOUTH DISEASE IN A 4-YEAR-OLD GIRL AT AN INDONESIAN DISTRICT HOSPITAL (A Case Report and Focused Narrative Review on Diagnosis and Therapeutic Stewardship)

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ABSTRACT

Background: Hand, foot, and mouth disease (HFMD) is usually diagnosed clinically, yet atypical phenotypes and prescribing pressure may lead to unnecessary investigations or treatments. Case presentation: A previously healthy 4-year-old girl presented to an Indonesian district-hospital emergency department after three days of intermittent low-grade fever, mild upper respiratory symptoms, painful oral ulcers, and a papulovesicular eruption involving both palms and soles. She was alert, afebrile, hemodynamically stable, and without respiratory, neurologic, or moderate-to-severe dehydration signs. Examination showed three small sublingual ulcers and bilateral palmar and plantar papules, vesicles, and superficial erosions. Classic uncomplicated HFMD was diagnosed clinically; herpangina, varicella, and primary herpes simplex gingivostomatitis were considered less likely. No laboratory testing was performed. The clinical record documented topical mupirocin, topical triamcinolone, cetirizine, and inosine pranobex, together with hydration, nutrition, hygiene, surface-cleaning, and return-precaution counselling. Medication strengths, treatment duration, and subsequent outcome after pediatric referral were unavailable. Discussion: The report distinguishes documented real-world prescribing from evidence-based management. Supportive care, weight-based analgesia, hydration assessment, caregiver education, and safety-netting are appropriate for uncomplicated HFMD, whereas antibiotics, corticosteroids, and nonspecific antiviral or immunomodulatory agents require a specific documented indication. Conclusion: The educational contribution of this common case lies in morphology-based diagnosis, transparent reporting of unavailable follow-up, and therapeutic stewardship in a resource-limited district-hospital setting.

Keywords: Case Report, Enterovirus, Hand-Foot-and-Mouth Disease, Pediatric Dermatology, Therapeutic Stewardship.

INTRODUCTION

Hand, foot, and mouth disease (HFMD) is an acute enteroviral infection characterized by an oral enanthem and a vesicular or papulovesicular exanthem that preferentially involves the palms and soles. Children younger than five years carry the greatest disease burden, particularly in the Asia-Pacific region. Coxsackievirus A16 and

enterovirus A71 (EV-A71) remain important causes, while coxsackievirus A6 and A10 increasingly contribute to outbreaks and atypical dermatologic phenotypes (Esposito & Principi, 2018; Huang et al., 2024; Kalam & Balasubramaniam, 2024; Koh et al., 2016; Puenpa et al., 2019).

Indonesian epidemiologic evidence remains limited but is expanding. A 2025 serosurvey of 600 children aged 6-71 months in West Bandung and Bandung found EV-A71 IgG seropositivity in 99.3% of participants, indicating extensive prior exposure (Girsang et al., 2025). More recently, a multicenter investigation of clinically diagnosed HFMD during a Jakarta outbreak reported enterovirus detection in 48.3% of 176 specimens and identified coxsackievirus A6 as the predominant sequenced type; however, this evidence was published as a conference abstract and should be interpreted accordingly (Putri et al., 2026). Together, these findings support the need for better case-based surveillance, specimen collection during suspected outbreaks, and documentation of local transmission patterns.

Classic HFMD is generally diagnosed clinically, but overlap with herpangina, primary herpes simplex gingivostomatitis, varicella, impetigo, erythema multiforme, mpox, and atypical viral exanthems may prompt unnecessary testing or polypharmacy (Esposito & Principi, 2018; Nassef et al., 2015; Saguil et al., 2019). In mild disease, therapeutic stewardship is therefore as important as diagnostic recognition: clinicians should provide supportive care while avoiding interventions that lack a documented indication.

This article reports a classic pediatric HFMD presentation in an Indonesian district hospital and provides a focused narrative review of diagnosis, differential diagnosis, infection control, complications, and evidence-based treatment. Its contribution is not the rarity of the case, but the structured comparison between what was documented in routine practice and what current evidence supports, together with transparent identification of missing follow-up and epidemiologic data. The report was organized in accordance with the CARE framework (Gagnier et al., 2013)

CASE PRESENTATION

Patient Information and Presenting Concerns

A 4-year-old girl from Rambah, Rokan Hulu Regency, Riau Province, Indonesia, was brought by her parents to the emergency department on 3 August 2025 because of fever, painful oral ulcers, and a rash involving the hands,

feet, and perioral region. Symptoms began three days earlier with intermittent low-grade fever, mild cough, and coryza. Two days after fever onset, small erythematous papules and vesicles appeared on both palms, both soles, and around the lips. Her parents also reported ulcers on the tongue and buccal mucosa, odynophagia, reduced appetite, and irritability.

The patient remained able to drink small amounts. There was no vomiting, diarrhea, seizure, dyspnea, altered consciousness, focal weakness, or reduced urine output. Bowel and bladder function were preserved. She had no previous similar illness, drug or food allergy, chronic disease, hospitalization, or immunodeficiency. Immunizations were reported as complete for age. Several children in the surrounding neighborhood reportedly had similar symptoms, but no exposure mapping, school or childcare history, contact tracing, or formal outbreak investigation was documented; the history therefore suggests possible community clustering rather than a confirmed cluster.

Clinical Findings

At presentation, she appeared mildly fatigued but was alert, with a Glasgow Coma Scale score of 15. Her temperature was 36.5°C, pulse rate 108 beats/min, and respiratory rate 20 breaths/min. Capillary refill time was less than two seconds and skin turgor was preserved. The lips and oral mucosa appeared mildly dry, but there were no sunken eyes or other signs of moderate or severe dehydration. Cardiopulmonary and abdominal examinations were unremarkable.

Oral examination identified three approximately 1 × 1 mm ulcers in the sublingual region. Cutaneous examination showed erythematous papules, vesicles, and superficial erosions on both palms and both plantar surfaces. No pustules, honey-colored crusts, extensive bullae, petechiae, purpura, or eczematous dissemination were documented. Neurologic examination was normal, without meningeal signs, pathologic reflexes, or motor deficit. Her weight was 13.5 kg and height was 98 cm; nutritional status was recorded as normal. No publication-quality lesion-focused photograph was available for inclusion.

Timeline

Table 1. Clinical Timeline

Time	Clinical events	Assessment	Management/outcome
Day -3	Intermittent low-grade fever, mild cough, and coryza began.	Early viral prodrome.	Home care; details unavailable.
Days -2 to -1	Painful oral ulcers and papulovesicular lesions developed on the palms, soles, and perioral skin; oral intake decreased.	Pattern became suggestive of HFMD.	Hospital presentation when symptoms persisted.
Day 0: 3 Aug 2025	Emergency evaluation: afebrile, stable, sublingual ulcers, bilateral palmar and plantar vesicles and erosions, and no neurologic or respiratory red flags.	Classic uncomplicated HFMD diagnosed clinically; herpangina, varicella, and herpes simplex gingivostomatitis considered.	Outpatient prescriptions, caregiver education, and referral to pediatric service for further assessment.
After Day 0	Subsequent pediatric records were not available to the authors.	Clinical resolution and delayed complications could not be assessed.	Outcome and duration of therapy not documented in the available source record.

Diagnostic Assessment

The diagnosis was based on the characteristic sequence of a brief febrile prodrome followed by painful oral ulceration and a papulovesicular eruption on the palms and soles. The absence of high fever, neurologic abnormalities, respiratory compromise, extensive bullous disease, purpura, bacterial crusting, or clinically important dehydration supported uncomplicated classic HFMD. No laboratory tests were documented. In a typical mild case, this is reasonable because virologic confirmation rarely alters immediate management (Centers for Disease Control and Prevention [CDC], 2024; Esposito & Principi, 2018; Nassef et al., 2015). Nevertheless, the reported similar illness among neighborhood children would have made basic epidemiologic verification and, if a cluster were confirmed, targeted reverse-transcription polymerase chain reaction testing useful for surveillance.

Herpangina was less likely because it usually produces lesions predominantly in the posterior oropharynx without the characteristic acral exanthem. Varicella was less likely because

the eruption was not generalized or centripetal and lesions at multiple stages were not described. Primary herpes simplex gingivostomatitis was also less likely because diffuse gingivitis, extensive anterior oral vesiculation, high fever, and prominent cervical lymphadenopathy were absent (Nassef et al., 2015; Saguil et al., 2019).

Therapeutic Intervention

The source clinical record documented topical mupirocin 2% for the skin lesions, topical triamcinolone acetonide for oral lesions, cetirizine at one-half tablet once daily, and inosine pranobex syrup at one teaspoon once daily. The strengths of the cetirizine tablet and inosine pranobex formulation, the exact quantity administered, treatment duration, and adherence were not recorded; dose appropriateness in mg/kg therefore could not be evaluated. The parents were counselled that HFMD is generally self-limiting and were advised to maintain fluid and nutritional intake, wash hands, avoid shared eating utensils, practise respiratory hygiene, clean contaminated objects and surfaces, and return for warning signs.

Table 2. Stewardship Appraisal of Documented Management

Documented intervention	Evidence-based appraisal
Hydration, nutrition, hygiene, surface cleaning, and return precautions	Consistent with recommended supportive care and infection-control counselling for uncomplicated HFMD.
Topical mupirocin 2%	Not routinely indicated for clean viral vesicles or erosions. Reserve for clinically evident bacterial superinfection, which was not documented.

Documented intervention	Evidence-based appraisal
Topical triamcinolone for oral lesions	Topical corticosteroids are not standard routine treatment for classic HFMD and should not substitute for hydration and analgesia. Any use requires an individualized indication and careful oral-safety assessment.
Cetirizine	May be considered for clinically important pruritus, but pruritus was not documented in this case and the tablet strength was unavailable.
Inosine pranobex	Routine use is not supported by major contemporary guidance or reviews for uncomplicated HFMD; no established disease-modifying benefit was documented.

Follow-up and Outcome

After emergency-department assessment, the patient was referred to the pediatric service for further evaluation. Subsequent records were not available to the authors. Consequently, the time to fever and lesion resolution, oral intake recovery, adherence, adverse drug effects, readmission, neurologic deterioration, and delayed nail changes could not be determined. This absence of outcome data is reported explicitly rather than inferred.

Patient and Caregiver Perspective

A formal patient or caregiver perspective was not documented in the available clinical record.

FOCUSED NARRATIVE REVIEW

Search Approach

A focused narrative search was performed in PubMed/MEDLINE and Google Scholar and supplemented by guidance from the World Health Organization and the CDC. Search terms combined “hand foot mouth disease,” “enterovirus A71,” “coxsackievirus A6,” “coxsackievirus A10,” “atypical HFMD,” “pediatric dermatology,” “diagnosis,” “management,” “complications,” “therapeutic stewardship,” and “vaccine.”

Priority was given to systematic reviews, international guidance, epidemiologic studies, and clinically relevant pediatric and dermatology literature published through 15 July 2026. Indonesian studies were specifically sought to contextualize local epidemiology. This was a focused narrative review rather than a systematic review or meta-analysis; no formal risk-of-bias assessment or exhaustive screening workflow was performed.

Etiology and Evolving Clinical Spectrum

HFMD is caused by non-polio enteroviruses. Coxsackievirus A16 and EV-A71 have historically predominated, but coxsackievirus A6 and A10 have become increasingly important in many regions (Esposito & Principi, 2018; Huang et al., 2024; Kalam & Balasubramaniam, 2024; Puenpa et al., 2019). EV-A71 is disproportionately associated with severe neurologic and cardiopulmonary complications, including brainstem encephalitis, autonomic dysregulation, acute flaccid paralysis, and neurogenic pulmonary edema (Koh et al., 2016; Solomon et al., 2010). Coxsackievirus A6 is associated with broader, more polymorphic cutaneous disease, including widespread vesiculobullous lesions, eczema coxsackium, purpuric eruptions, Gianotti-Crosti-like patterns, and delayed onychomadesis (Cheng et al., 2022; Lott et al., 2013; Mathes et al., 2013; Starkey et al., 2024).

The present patient had a classic rather than atypical phenotype: limited oral ulceration and symmetric acral papulovesicles without generalized bullae, purpura, eczema accentuation, or documented delayed nail findings. Viral typing was not required for immediate treatment, but it would have been epidemiologically informative if the reported neighborhood illnesses had been verified as a cluster.

Clinical Diagnosis and Indications for Testing

Classic HFMD is principally a clinical diagnosis. The combination of a short febrile prodrome, painful oral lesions, and acral vesicles is highly characteristic. Laboratory confirmation is most useful when disease is atypical, severe, neurologic, prolonged, immunocompromised, outbreak-associated, or difficult to distinguish from varicella-zoster virus, herpes simplex virus,

mpox, bullous impetigo, or another vesiculobullous disorder (CDC, 2024; Esposito & Principi, 2018; Nassef et al., 2015). Reverse-transcription polymerase chain reaction is preferred over viral culture because it is faster and more sensitive. Vesicle fluid, throat swabs, and stool may be sampled according to timing and the surveillance or diagnostic question.

Evidence-based Management and Therapeutic Stewardship

Uncomplicated HFMD is self-limiting, and treatment is supportive. Priorities are oral hydration, weight-based paracetamol or ibuprofen for pain and fever, soft or cool foods and fluids, and monitoring for dehydration or neurologic deterioration. Aspirin should not be given to children, and oral lidocaine is generally avoided because of toxicity risk and uncertain benefit (CDC, 2024; World Health Organization Regional Office for the Western Pacific [WHO WPRO], 2011).

No antiviral agent has established efficacy for routine uncomplicated HFMD. Contemporary guidance does not support nonspecific antiviral or immunomodulatory therapy such as inosine pranobex (CDC, 2024; Esposito & Principi, 2018; Huang et al., 2024; WHO WPRO, 2011). Antibiotics, including topical mupirocin, should be reserved for clinically evident bacterial superinfection, such as expanding erythema, purulence, honey-colored crusting, focal tenderness, or systemic signs. Topical or systemic corticosteroids are not standard routine treatment for classic HFMD. Antihistamines may be reasonable when clinically important pruritus is actually present, but they do not alter the viral course.

A practical district-hospital stewardship sequence is therefore: confirm the morphology and distribution; assess hydration and neurologic or cardiopulmonary red flags; provide weight-based symptom relief and caregiver education; and document a specific indication before adding an antimicrobial, corticosteroid, antihistamine, antiviral, or immunomodulatory agent. This sequence reduces avoidable treatment without withholding escalation from patients with severe or atypical disease.

Caregivers should receive explicit return precautions. Warning signs include inability to maintain hydration, reduced urine output, persistent or high fever, recurrent vomiting, marked lethargy or irritability, myoclonic jerks, limb weakness, ataxia, seizures, tachypnea, respiratory distress, poor perfusion, or altered consciousness (Koh et al., 2016; Solomon et al., 2010).

Transmission Prevention and Return to Childcare

HFMD spreads through respiratory secretions, saliva, vesicle fluid, contaminated objects, and the fecal-oral route. Handwashing with soap and water, cleaning frequently touched surfaces and toys, avoiding shared utensils, and limiting close contact while the child is febrile or unwell are central preventive measures. Viral shedding may continue after clinical recovery, so prolonged exclusion from childcare cannot eliminate transmission. Children can generally return when afebrile, clinically well enough to participate, and without uncontrolled drooling, subject to local public-health policy (WHO WPRO, 2011).

Complications, Prognosis, and Vaccination

Most children recover within 7-10 days. The most common clinically important complication is dehydration caused by painful oral lesions. Rare severe complications are more strongly associated with EV-A71 and include aseptic meningitis, encephalitis, acute flaccid paralysis, myocarditis, autonomic instability, and pulmonary edema (Koh et al., 2016; Solomon et al., 2010). Delayed desquamation, Beau lines, and onychomadesis may occur several weeks after coxsackievirus A6-associated disease and should be explained to caregivers to prevent unnecessary alarm (Cheng et al., 2022; Chiu et al., 2019; Starkey et al., 2024).

Inactivated EV-A71 vaccines are used in mainland China and reduce EV-A71-associated HFMD and severe disease, but they do not provide broad protection against all HFMD-causing enteroviruses. A widely available multivalent vaccine has not yet been established (Huang et al., 2024; Li et al., 2023). Prevention therefore

remains dependent on hygiene, surveillance, early recognition of severe disease, and context-specific outbreak control.

DISCUSSION

This case demonstrates a classic HFMD phenotype in a preschool child: a brief febrile prodrome followed by painful oral ulceration and symmetric palmar and plantar vesicles. The distribution and morphology provided sufficient diagnostic specificity to justify a clinical diagnosis without routine laboratory testing. The absence of high fever, recurrent vomiting, neurologic signs, respiratory compromise, poor perfusion, or substantial dehydration supported outpatient management.

The main educational value lies less in rarity than in the disciplined recognition of a common exanthem and the avoidance of unnecessary therapy. Common diseases are often treated inconsistently because clinicians and caregivers feel compelled to prescribe several agents despite a self-limiting course. In this case, the record documented mupirocin, triamcinolone, cetirizine, and inosine pranobex, although no bacterial superinfection or severe inflammatory complication was described. Current evidence supports hydration, weight-based analgesia, and safety-netting as the core intervention. (CDC and Prevention, 2024; Huang et al., 2024; Saguil et al., 2019; World Health Organization Regional Office for the Western Pacific, 2011)

A second clinically relevant feature was the history of similar illness among neighborhood children. This observation raises the possibility of a local cluster, but no contact tracing, school or childcare exposure history, specimen collection, or public-health notification was documented. A basic epidemiologic investigation would strengthen future reports from resource-limited or district-hospital settings and, when feasible, targeted molecular typing to clarify circulating serotypes.

The report has several limitations. Viral etiology was not confirmed; medication doses and duration were incompletely recorded; the available photograph was not lesion-focused and did not directly identify the child; follow-up outcomes and delayed nail findings were not

documented because assessment just until emergency room, and then the patient was transferred to pediatric for next assesment; and the suspected community cluster was not investigated. These limitations do not invalidate the clinical diagnosis, but they materially reduce publication readiness and must be addressed wherever the source data permit.

CONCLUSION

Classic HFMD can usually be diagnosed from the temporal sequence, morphology, and distribution of oral and acral lesions. In uncomplicated pediatric disease, management should prioritize hydration assessment, weight-based analgesia, caregiver education, infection-control measures, and explicit return precautions. The central lesson of this case is that routine prescribing should be distinguished from evidence-supported care: antimicrobials, corticosteroids, antihistamines, and nonspecific antiviral or immunomodulatory agents should not be used without a documented indication. Transparent acknowledgement of absent follow-up and incomplete epidemiologic investigation strengthens, rather than weakens, the credibility of a case report.

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