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REVIEW ARTICLE ON HAND-FOOT-MOUTH DISEASE IN CHILDRENS – AN *AYURVEDIC* PERSPECTIVE

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ABSTRACT

Hand-Foot and Mouth disease (HFMD) is very contagious viral infection that causes a blister like rash in children's hands and feet and painful sores in mouth. The disease most often affects babies and children younger than 5 years old. HFMD typically mild and usually clears up on its own within seven to ten days. The condition is characterized by a brief febrile illness accompanied by a typical vesicular rash, involving both exanthems and enanthems. It usually affects more than one member of a family and may at times lead to epidemic outbreaks, especially during the summer and autumn months. The disease is moderately contagious and spreads through direct contact with the mucus, saliva, or feces of an infected person. In rare cases, patients may also develop neurological complications. Overall, it presents as a self-limiting illness marked by one or more episodes of fever followed by the characteristic skin and mucosal lesions.

KEYWORDS: Hand-Foot-Mouth Disease, Coxasackie A16, exanthem, enanthem, Ayurveda.

INTRODUCTION

Hand-Foot-Mouth disease (HFMD) is a communicable disease mostly affects infants and children but can also occur in adolescents and adults. It is rare in adults, though it can still occur. Most adults possess a strong immune system that can effectively fight off the virus;

however, individuals with weakened immunity remain vulnerable. HFMD is most prevalent in children up to 5 years of age and is uncommon beyond 10 years.[1]

HFMD is caused by Enteroviruses of the Picornaviridae family, mainly Coxsackie A16 and Enterovirus 71. It commonly affects children under 10 years and occurs in small outbreaks during summer and autumn. Transmission is mainly fecal–oral, though droplets and rare vertical transmission can occur. The disease is highly contagious among family members and school children, with an incubation period of 3–6 days.[2]

Clinically, HFMD presents with both exanthems (skin eruptions) and enanthems (mucosal eruptions), usually accompanied by one or more episodes of fever.[3] It is very important to differentiate this disease to other similar viral diseases manifest in childhood age. Oral lesion in HFMD can be easily misdiagnosed as aphthous ulcer, chicken pox (varicella) or herpangina. HFMD is confirmed by the skin eruption characteristically manifest on palm and sole.[4]

Early symptoms include fever, often followed by sore throat, loss of appetite, and malaise. Within 1–2 days of fever onset, painful mouth sores may appear, and a rash can develop on the hands, feet, mouth, tongue, cheeks, buttocks, knees, and elbows. The oral lesions quickly ulcerate into multiple small superficial ulcers, typically on the tongue, palate, buccal mucosa, gums, and lips. These ulcers are painful and can make feeding difficult.[5]

SYMPTOMS[6]

- HFMD usually begins with a fever lasting 24–48 hours, followed by poor appetite, malaise, and sore throat.
- After 1–2 days, painful red spots develop on the tongue, gums, and inner cheeks, which blister and ulcerate. Oral lesions begin as erythematous macule that evolves into 2-3mm vesicles on an erythematous base.
- A non-itchy rash appears on the palms, soles, and sometimes the buttocks or genital area. The painful pinkish vesicles are typically on palmer side of hands and sole side of feet is very characteristic in appearance.
- Most cases recover within 7–10 days without complications. Some individuals may have no symptoms, or only a rash or mouth ulcers.

- HFMD caused by EV71 can be more severe, occasionally leading to meningitis or encephalitis, with neurological symptoms such as headache, stiff neck, and back pain, along with respiratory signs.

TRANSMISSION

- HFMD is mainly caused by Coxsackievirus A16 (mild, self-limiting) and Enterovirus 71 (EV71) (can cause severe or fatal complications).
- The virus is highly contagious.
- Nasal/throat secretions, saliva, blister fluid, and stool are the main infective materials.
- Spread occurs through direct contact with these infectious materials.
- Patients are most contagious in the first week, but the virus can remain in stool for weeks, keeping them infectious.
- Children under 5 years are most commonly affected.
- Most adults are immune, but adolescents and adults can still get infected.
- Immunity is virus-specific, so reinfection can occur with a different enterovirus strain.
- HFMD is not transmitted to or from pets or other animals.

DIAGNOSIS[7]

HFMD is diagnosed clinically, with confirmation by RT-PCR on throat swabs, vesicle fluid, rectal swab / stool or CSF. A four-fold antibody rise in paired blood samples also confirms infection.

COMPLICATIONS

- Temporary nail shedding may occur about 4 weeks after disease onset.
- Rare complications: aseptic meningitis, polio-like paralysis, myocarditis, respiratory distress.
- After lesions dry, scaling lasts 3–4 weeks and resolves without scars.
- Occasionally, secondary infection or impetiginization may occur.[8]

AYURVEDIC PERSPECTIVE[9]

Ayurvedically, HFMD occurs mainly in *pitta* (autumn) and *kapha* (spring) aggravation seasons and involves *Rasa–Rakta dhatu* vitiation with *Vata–Pitta* dominance. *Rasavaha/Raktavaha srotasa* are affected and eruptions arise from *Rasa–Rakta* involvement, pain from *Vata*, and redness with fever from *Pitta*.

We can explain the course of disease in terms of *dosha* predominance as follows – Table No. 1.

Course of Disease	***Dosha* Predominance**	***Dushya***	**Symptoms**
Initial Phase	*Vata-pitta* predominance	*Rasa, Rakta,*	Fever followed bysore mouth / *V+P mukhpak* and eruption of skin mainly sole and palm
End Illness	Mainly V*ata*	Mainly *Rasa*	Hardening of eruption and scaling of eruption

DIFFERENTIAL DIAGNOSIS

The differential diagnosis for HFMD should include conditions that present with maculopapular or vesicular rashes with or without oral lesions. These conditions include.

- Erythema multiforme
- Herpangina
- Herpes simplex
- Herpes zoster
- Kawasaki disease
- Toxic epidermal necrolysis
- Viral pharyngitis
- Rocky Mountain spotted fever
- Varicella zoster infection (chickenpox)
- Steven-Johnson syndrome
- Monkeypox - In the context of an ongoing outbreak, it becomes important to consider the difficulty in clinically differentiating between monkeypox and HFMD.[10]

MANAGEMENT

Currently, there is no pharmacological intervention or vaccine available for HFMD. In most cases, HFMD is a self-limiting illness, with the majority of children recovering spontaneously with symptomatic treatment as.

1. Ensure adequate fluid intake to prevent dehydration. Cold liquids are generally preferable.
2. Spicy or acidic substances may cause discomfort.
3. Fever may be treated with antipyretics.
4. Mouthwashes or sprays that numb pain can be used to lessen mouth pain.[11]

In *Ayurveda*, herbs to pacify *pitta, rakta* and *vata* are *madhur* and *tikta rasa dravyas* like,

- *Yastimadhu* (*Glycerrhizaglabra*)
- *Anantmool*(*Hemidesmusindicus*)
- *Shatavari*(*Asparagusracemsus*)
- *Nagarmotha* (*Cyperusrotundus*)
- *Guduchi* (*Tinosporacordifolia*),
- *Vasa* (*Adhatodaindica*)
- *Shirish* (*Albizzialebbeck*)

are useful in this disease have properties like *deepan, pachan, jawaghna, raktaprasadan, vishagna, rasayana* and *rasadhatugata, amapachan* to relieve the symptoms of this disease.[12]

Locally on skin eruptions *shatadhautghrita, coconut oil* and orally as well as locally *mahatiktakghrita* has been used in this disease.[13]

Aloe vera leaves pulp has faster wound healing capacity also protects affected surface from getting infected by microbes. Aloe Vera is reported to enhance collagen turnover rate in wound tissue.[14]

PREVENTION AND CONTROL[15]

1. Establish and Strengthen Surveillance

- Implement a strong monitoring system to identify and track outbreaks of HFMD.
- Early detection helps prevent the spread and ensures timely intervention.

2. Educational Campaigns on Good Personal Hygiene

- Promote hygiene practices to reduce viral transmission.
- Education can include information on proper hand washing, sanitation, and the importance of avoiding close contact with infected individuals.

3. Frequent Hand washing

- Hand hygiene is the most effective preventive measure.
- Ensure proper hand washing with soap and water, especially:

Before preparing food or eating.

Before feeding infants.

After using the toilet or changing diapers.

After touching any blister or sore related to HFMD.

Hand sanitizers with at least 60% alcohol can be used when soap and water are unavailable.

4. Stay Home When Sick

- Children with HFMD should not attend schools, nurseries, or any gatherings until they recover completely.
- This reduces the risk of spreading the virus to others, especially in crowded settings.

5. Monitor Sick Children's Condition

- Caregivers should closely monitor children's health.
- Seek medical attention immediately if the child has:

Persistent high fever.

Reduced alertness or unusual behavior.

Deteriorating overall health, especially if dehydration or complications develop.

By following these preventive steps, the transmission of HFMD can be effectively controlled, and the risk of severe complications or death can be minimized.

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