SJIF Impact Factor: 6.711

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 9.
Issue: 10
Page N. 304-307
Year: 2025

Review Article

www.wjahr.com

REVIEW ARTICLE ON HAND-FOOT AND MOUTH DISEASE IN CHILDRENS

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Article Received date: 18 August 2025 **Article Revised date:** 07 September 2025 **Article Accepted date:** 28 September 2025

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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. It is a common viral illness of infants and children and is extremely uncommon in adults; however, still a possibility. Most adults have strong enough immune systems to defend the virus, but those with immune deficiencies are very susceptible. It is often confused with foot-and-mouth (also called hoof-and-mouth) disease, a disease of cattle, sheep, and swine; however, the two diseases are not related—they are caused by different viruses. The best methods to prevent the spread of hand-foot-and-mouth disease are hand washing and disinfecting potentially contaminated surfaces and fomites. This article aims to presents a brief summary and review of the etiology, clinical features, diagnosis, prognosis, and evidence for the care of patients with hand-foot-and-mouth disease.

KEYWORDS: Hand-Foot and Mouth disease (HFMD), Epidemiology, clinical features, Prevention, Treatment.

INTRODUCTION

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. It is caused by viruses of the genus Enteroviruses belonging to family Picornaviridae, including polio, ECHO, coxackie virus and enteroviruses.

The most common cause of HMFD are coxackie virus A16 and enterovirus, often in preschool children and transmission is by direct contact with an affected patient or infected fomites.[1]

Enterovirus are mostly spread by the fecal-oral route, and interactions with infected saliva, vesicular fluids, and fomites, as well as contaminated hands, play a significant part in this process. Additionally, enteroviruses are resistant to detergents and acidic pH and grow best at a temperature of 37 deg. The viruses may thus be able to persist hands for a considerable amount of time. According to research, washing hands before meals significantly lowers the chance of developing HFDM. According to a different study, aiming out bedding more than three times per month considerably raises the risk of HFMD by 4.55 times compared to less than three times per month.[2] According to research done in Vietnam, there is a direct association between rising temperatures and humidity levels and an increase in the prevalence of HFMD.

Epidemiology

- Hand-foot-and-mouth disease was first described after an outbreak in Canada in the 1950s.[3]
- It is caused by picornaviruses, specifically human enteroviruses and coxsackieviruses.[4]
- The most common viruses that cause hand-foot-and-mouth disease are enteroviruses 71 and coxsackievirus A16.
- Coxsackievirus A6 can cause severe disease manifestations with atypical lesions such as vesicles, bullae, and scabs on the trunk, extremities, and face.

- Spring to fall seasonal outbreaks of hand-foot-and-mouth disease are typical in North America and temperate zones.[5,6]
- Most cases occur in patients younger than 10 years[1], and the largest incidence is within the first five years of life.[7]
- Health care professionals working with children are at risk of contracting hand-foot-and-mouth disease, and males and females are equally affected.[3]

Recorded Outbreaks[8]

Individual cases and outbreaks of HFMD occur worldwide. In temperate climates, cases occur more often in summer and early autumn. Since 1997, outbreaks of HFMD caused by Enterovirus 71 have been reported in Asia and Australia.

- In 1997, 34 children died in an outbreak in Sarawak, Malaysia.
- In 1998, there was an outbreak in Taiwan, affecting mainly children. There were 405 cases with severe complications, and 78 children died. The total number of cases is estimated to have been 1.5 million.
- In 2006, 7 people died in an outbreak in Kuching, Sarawak (according to the New Straits Times, March 14).
- In 2007, April 15–21: 688 reported cases in Singapore.
- In 2007, May 30: Over 30 reported cases in the Maldives

In 2008, an outbreak in China, beginning in March in Fuyang, Anhui, led to 25,000 Infections and 42 deaths by May 13th. Similar outbreaks were reported in Singapore (more than 2,600 cases as on April 20th, 2008), Vietnam (2,300 cases, 11 deaths), and Mongolia (1,600 cases).

Situation in India

- An outbreak of papulovescicular lesions on skin and oral mucosa of children occurred in Calicut, India from October to November 200, affecting 81 children and was investigated by NICD team. All children recovered within 1-2 weeks. (Indian Journal of Pediatrics 2005: vol 72: Issue 1)
- In 2006, after an outbreak of Chikungunya in southern and some western parts of India, cases of HFMD were also reported.

Route of Infection[9]

Infection is spread from person to person by direct contact with infectious virus which is found in the nose and throat secretions, saliva, blister fluid, and stool of infected persons. The virus is most often spread by persons with unwashed, virus contaminated hands and by contact with virus contaminated surfaces. Infected persons are most contagious during the first week of the illness. They can still pass the infection to other people even though he/she appears well. Some persons who are infected and excreting the virus, including most adults, may have no symptoms. HFMD is not transmitted to/from pets or other animals.

Transmission

• Humans are the only carrier for hand-foot-and-mouth disease–causing viruses. The disease is spread by fecal-oral, oral-oral, and respiratory droplet contact.

• The patient is most infectious during the first week of illness[9]; however, an active virus may be present in the stool for up to four to eight weeks. Therefore, the household transmission rate for hand-foot-and-mouth disease Enterovirus 71 is 52% to 84%.

• Incubation range is estimated to be three to six days.[10]

• Lack of access to clean water partially explains the burden of disease in the developing world and Asia, where hand-foot-and-mouth disease is a significant public health threat.

Clinical Features[11]

- Fever
- Sore throat
- Ulcers in the throat, mouth and tongue
- Headache
- A Papulovescicular skin rash with vesicles (small blisters, 3-7 mm) on hands, feet and diaper area. The vesicles are typically on the palmer side of the hands.
- The sole side of the feet and are very characteristic in appearance.
- loss of appetite
- The skin rash develops over 1 to 2 days, with flat or raised red spots and sometimes with blisters. The skin rash does not itch and is usually on the palms of the hands and soles of the feet. It may also appear on the buttocks or genitalia. A person with HFMD may have only the rash or only the mouth sores.

Complications[11]

It includes temporary loss of toe nails or finger nails about 4 weeks after onset of disease. Rare Complications includes aseptic meningitis, encephalitis, polio like paralysis, myocarditis and respiratory distress syndrome.

Figure 1: Showing the vesicular rash in hand-foot-and-mouth disease.

Prevention of hand foot and mouth disease[12]

• Be sure to keep yourself clean.
• Playing in the sand should be avoided.
• Make sure your bed has been cleaned.
• Prior to and after eating, wash your hands.
• After using the toilets and playing in the sand, wash your hands.
• Avoid sharing utensils and cups with sick people since they may spread the disease *via* their saliva, blister fluid, and faces.
• Never wear someone else's contaminated clothing.
• Correct waste disposal

Counseling for hand foot and mouth disease:

• Gently using soap to wash your hands, and then rinse them with water
• Be sure to hydrate yourself. Avoid eat food that has been stored in the refrigerator.
• Don't rub an infected area.
• Avoid giving your kid citrus fruits like oranges and lemons, as well as its juice, since they irritate the child's mouth.
• Take a gentle, warm bath, dry off with a towel, and then apply lotion.
• Never wear someone else's contaminated clothing.
• The child's diet should contain very little salt until the lesions have healed.

DIAGNOSIS[13]

The clinical presentation and physical examination were used in our study to make the diagnosis of HFMD. No skin biopsy was performed on any children who had HFMD.

TREATMENT[14]

Management is supportive and directed toward the relief of pain, lowering of fever, and adequate oral hydration because of the self-limiting nature of hand-foot-and-mouth disease.

- Fever should be treated with antipyretics.
- Pain can be relieved with acetaminophen, ibuprofen, or other over-the-counter pain relievers.
- Mouthwashes or sprays that numb pain can be used to lessen mouth pain.
- Fluid intake should be emphasized to prevent dehydration. If moderate-to-severe dehydration develops, intra venous fluids can be administered.
- HFMD is a viral disease that is self limiting and takes its own time to subside; many doctors do not prescribe medicine for this illness, unless the infection is severe. Infection in older children, adolescents, and adults is normally very mild and lasts around 3 days or sometimes less.
- Only a very small section of people with infection require hospital admission, mainly as a result of neurological complications (encephalitis, meningitis, or acute flaccid Paralysis) or pulmonary edema/pulmonary hemorrhage.

Differential Diagnosis

Differential diagnosis includes diseases that feature Maculopapular or papulovescicular Rashes and/or oral lesions.

- Aphthous ulcers and herpetic gingivostomatitis are typically limited to the oral cavity or surrounding skin.[15]
- Herpes and varicella rashes have characteristic vesicles and erythema.[16]
- Atopic dermatitis is usually recurrent and has typical age-related distribution of lesions.[17]
- Scabies is intensely pruritic and associated with a linear distribution of lesions attributed to mite burrows.[18]

DISCUSSION

Hand, foot, and mouth infections are most common viral in infants and children, that causes fever, mouth sores, and skin rash. It can spread quickly at schools and day care centers. Most people get better on their own in 7 to 10 days. Recurrence may happen but prevention with proper hygiene should follow to avoid.

CONCLUSION

Hand, foot, and mouth infections are very contagious and usually not serious but children's should take care proper hygiene to avoid recurrence. Parents should not send affected children's to school or day care should be proper hydrated and proper medications.

REFERENCES

1. Vinod k Paul, Arvind Bagga, GHAI Essential Pediatrics, 8th edition, page.no. 219.
2. Miranda A, et al. A large-scale outbreak of hand, foot and mouth disease, France, as at 28 September 2021. Eurosurveillance, 2021; 26(43): 2100978.
3. Nassef C, Ziemer C, Morrell DS. Hand-foot-and-mouth disease: a new look at a classic viral rash. *Curr Opin Pediatric*, 2015; 27(4): 486-491.
4. Repass GL, Palmer WC, Stancampiano FF. Hand, foot, and mouth disease: identifying and Managing an acute viral syndrome. *Cleve Clin J Med*, 2014; 81(9): 537-543.
5. Centers for Disease Control and Prevention. Hand foot, and mouth disease (HFMD). Accessed January 14, 2019. https:// www.cdc.gov/hand-foot-mouth.
6. Koh WM, Bogich T, Siegel K, et al. The epidemiology of hand, foot and mouth disease in Asia: a systematic review and analysis. *Pediatr Infect Dis J*., 2016; 35(10): e285-e300.
7. Ramdass P, Mullick S, Farber HF. Viral skin diseases. *Prim Care*, 2015; 42(4): 517-567.
8. CD Alert, Monthly Newsletter of National Institute of Communicable Diseases, Directorate General of Health Services, Government of India, july 2008; 12: 3.
9. Centers for Disease Control and Prevention. Hand, foot, and mouth disease (HFMD), Accessed January 14, 2019. https:// www.cdc.gov/hand-foot-mouth.
10. Koh WM, Bogich T, Siegel K, et al. The epidemiology of hand, foot and mouth disease in Asia: a systematic review and analysis. *Pediatr Infect Dis J*., 2016; 35(10): e285-e300.
11. Vinod k Paul, Arvind Bagga, GHAI Essential Pediatrics, 8th edition, 220.
12. Hand Foot and Mouth Disease-A Case Study and Patient Counseling, Int J Med Res Health Sci, 2025; 14(02): 1-6.
13. Kimmis BD, et al. Hand-foot-and-mouth disease caused by coxsackievirus A6 on the rise, 2018; 102: 353-356.
14. Sarma N. Hand, foot, and mouth disease: Current scenario and Indian perspective. *Indian Journal of Dermatology, Venereology and Leprology*, 2013; 79(2): 165-175.
15. Lehman JS, Rogers RS III. Acute oral ulcers. *Clin Dermatol*, 2016; 34(4): 470-474.
16. Usatine RP, Tinitigan R. Nongenital herpes simplex virus. *Am Fam Physician*, 2010; 82(9): 1075-1082. Accessed July 26, 2019. https://www.aafp.org/afp/2010/1101/p1075.html
17. Allmon A, Deane K, Martin KL. Common skin rashes in children. *Am Fam Physician*, 2015; 92(3): 211-216. Accessed July 26, 2019. https://www.aafp.org/afp/2015/0801/p211
18. Tarbox M, Walker K, Tan M. Scabies. *JAMA*, 2018; 320(6): 612.