

Hand Foot and Mouth Disease

A Generalized Overview

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Hand foot mouth disease (HFMD) is a common viral illness of childhood that can occasionally affect adults. It can be easily recognized from other viral infections by its typical distribution of the exanthema over the hands and feet and oral enanthem¹.

HFMD is caused by a virus in the non-polio enterovirus family. These viruses can present in a wide variety of presentations other than hand foot mouth disease (**Figure 1 A, B and C**). Other conditions that have been attributed to these viruses



Figure 1 A, B and C. Hand foot and mouth disease

are meningitis, herpangina, acute gastroenteritis, and nonspecific exanthema other than hand foot mouth disease. The coxsackievirus serotype A16 and enterovirus serotype 71 are the most common virus of the non-polio enterovirus family to cause HFMD². Most recently much attention has been placed on the enterovirus EV71. While most patient affected with this serotype has a mild and typical disease course, there has been increasing rate of severe sequela involving the central nervous system or pulmonary edema³. The World Health Organization reports that countries in the Western Pacific Region are experiencing a widespread epidemic of the EV71⁴. The infection typically presents in the warmer climates. Regions with seasons have the HFMD during the summer and fall, while tropical areas infections can occur year-round.

HFMD symptoms have many similar features with other viral illness. Patients of HFMD often have the low-grade fever, sore throat, and malaise. In infants and toddlers, irritability and loss of appetite may occur. HFMD is unique by its unique location of the rash affecting the hand, foot, and mouth. The exanthema of HFMD disease itself can be described in multiple morphologies: vesicular, macular or macular popular⁵. The distribution of the erythematous rash classically covers the palms of the hands and/ or soles of the feet. In some case, the exanthema affects the buttocks, knees or elbows. The rash is nonpruritic

and may or may not be painful. Also, patients develop oral enanthem which are painful erythematous blisters of oral mucous more commonly the tongue and buccal mucosal. Patient affected by the HFMD may have the characteristic rash and not the oral enanthem and vice versa. Typically the fever, sore throat, and malaise are the first symptoms of the infection followed by the oral mucosal involvement in 1 to 2 days after the onset of the fever. The rash over the hands and feet can develop within 1 to 2 days after that. The total duration of illness varies from 7 to 10 days.

More recently there has been more atypical infection associated with HFMD disease. The coxsackievirus A6 has been linked to the atypical presentation of HFMD. The rashes vary in appearance and may be more extensive leading to vesiculobullous lesions, bullae, erosions, ulcerations and eschar formation⁶. One to 3 weeks after the infection, the patient may experience palmar and plantar desquamation. Another feature that may occur is onychomadesis, nail dystrophy about 1 to 2 month after the infection. In Western Pacific Region where they are currently facing epidemic levels of HFMD caused by enterovirus EV71, there are seeing high rates of severe illness and complications. Patients are experiencing central nervous system complications like rhombencephalitis, acute flaccid paralysis, and aseptic meningitis⁷. Some patients may develop further automatic nervous system dysregulation and eventual cardiopulmonary failure⁸.

Diagnosis of the disease is made clinically. Characteristic history and physical exam of fever, sore throat and malaise with the rash of the hand, foot and mouth will provide enough information to make the diagnosis. Laboratory confirmation is not necessary. If the presentation is atypical or presentation is another various disease, it may be beneficial to send the confirmation test. Rapid diagnosis tests are available if needed in either real time PCR or indirect immunofluorescence assay.

Since HFMD is due to a virus, it is a self-limiting disease. Typically the infection lasts from 7 to 10 days. Treatment is usually centered around supportive care, pain management, and disease prevention.

Patient with this disease often experiences oral discomfort with any intake of liquids or solids. Because of this, dehydration is a primary concern for infants and toddlers are most at risk. Assessing the current patient hydration status and severity of the disease can determine the likelihood of dehydration for the future. Oral rehydration solution should be the first line for rehydration. If the patient does not tolerate or refuse to take fluids by mouth, then intravenous hydration should be started, and hospitalization may be required.

Pain management is another facet of managing the patient with hand foot mouth disease. Oral lesions are fairly painful. Most patients can be managed with non-narcotics like acetaminophen and ibuprofen as needed. Occasionally narcotics may be required to be given. If the patient is unable to tolerate medications by mouth, intravenous pain medications should be considered.

The primary reason most patients hospitalized for HFMD is dehydration associated with the painful mouth lesions. Topical medication for the oral mucositis can be considered, but the evidence for the use of topical medications are inadequate and mostly anecdotal. One large study looking at topical lidocaine

for treatment of mucositis should no benefit from the control group⁹. Advising the family to try cool to cold liquids and foods may help soothe the mouth pain. Examples are frost snacks and cold milk. Avoiding salty, acidic, or spicy foods or liquids is advised.

In regions with enterovirus EV71 causing HFMD, patient with severe disease with neurological or cardiopulmonary disease often receive a trial of intravenous immunoglobulin (IVIG). The anecdotal data indicates if IVIG is given early that overall outcomes are improved¹⁰.

Prevention is another aspect to needs addressed. Enterovirus is a highly contagious disease that is transmitted by oral ingestion of the virus. Infected people shed this virus most of the mucous surfaces and secretions. Commonly nasal secretions, saliva, stool, respiratory droplets and fluid from the blister can spread the virus. If the patient is hospitalized, droplet and contact precautions should be used to control the spread of the virus. Good hygiene should be used to repress the spread at home. Hand washing, disinfect common areas and not sharing objects placed in mucosal areas. Withholding patient with HFM from school, work, and daycare is strongly advised. Infected people are considered contagious until the fever has subsided, and the mouth sores are healed and should be able to return to daily activities afterward

Hand foot mouth disease is a common pediatric illness caused by various members of the non-polio enterovirus family. The presentation of the illness of the classic rash on the palms of the hands and soles of the feet with oral ulceration of the tongue and buccal mucosa will confirm the diagnosis. General this disease is a self-limiting that requires supportive care, pain management, and prevention measures. There are serotypes of this infection in Western Pacific Region that has been identified that can lead to more severe and life-threatening disease.

References

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