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Review Article

ENHANCING HEALTH CARE MANAGEMENT ON HFMD

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ABSTRACT
Hand, foot and mouth disease (HFMD) is a viral disease and mainly infects infants and young children below five years of age. It's caused by *Enterovirus*, most commonly the Coxsackie virus. The viruses that cause HFMD spread through close personal contact, through the air from coughing and the faeces of an infected person. This viral infection is not indigenous to one area in particular but occurs worldwide. The symptoms mainly include fever, sore throat, feeling sick, painful, blister-like lesions on the tongue, gums and inside of the cheeks, a rash on the palms, soles and sometimes the buttocks. Molecular testing is done based on the reverse transcription polymerase chain reaction (RT-PCR). Cases of HFMD are on the rise and clinicians need to know how to make the diagnosis. The majority of patients with coxsackievirus- induced hand, foot, and mouth disease are treated usually as outpatients, but those who have CNS involvement may require admission for close monitoring. Most patients with HFMD fully recover within 7-21 days.

Keywords: HFMD, coxsackievirus, RT-PCR, CNS.

1. INTRODUCTION
Hand, foot, and mouth disease (HFMD) is a highly contagious infection. It is caused by viruses from the *Enterovirus* genus, most commonly the coxsackievirus. HFMD was first reported in New Zealand in 1957 [1, 2]. Coxsackievirus A16 was first identified next year in 1958 in Canada. HFMD has been considered to be a benign disease of self-limiting nature. The term HFMD derives from typical maculopapular or vesicular lesions involving the skin of the hands, feet and oral mucosa. The first major outbreak of HFMD occurred in Sarawak, Malaysia in 1997 in the Asia Pacific region. The largest outbreak of HFMD occurred in eastern part of India in 2007, where about 38 cases of HFMD in and around Kolkata was reported. HFMD occurs in all areas of the world [3, 4]. It usually occurs during the spring, summer and fall months. It often occurs in small outbreaks in nursery schools or kindergartens. Typically, it occurs in children less than five years old but can occasionally occur in adults. HFMD also known as vesicular stomatitis with exanthema in literature. The skin rash generally resolves on its own in about a week. The viruses that cause HFMD are spread through close personal contact, through the air from coughing and the faeces of an infected person. Contaminated objects can also spread the disease, other animals are not involved [5].

2. EPIDEMIOLOGY
This viral infection is not indigenous to one area in particular but occurs worldwide. As children (particularly those younger than seven years of age) tend to be infected at a higher rate than adults you can see outbreaks in daycares, summer camps or within the family. These outbreaks are usually during the summer and early autumn. Hand, foot, and mouth disease occurs at an equal frequency in both genders, but older epidemiological data seem to suggest that the frequency of infection is slightly higher in males. Because the virus is shed in the stools for many weeks, some studies indicate that family members and close contacts are also at risk for developing hand, foot and mouth disease [6, 7].

3. PATHOPHYSIOLOGY
The spread of the human enterovirus is mediated by oral ingestion of the shed virus from the gastrointestinal or upper respiratory tract of infected hosts, or via vesicle fluid or oral secretions. After ingestion, the virus

replicates in the lymphoid tissue of the lower intestine and the pharynx and spreads to the regional lymph nodes. This can be spread to multiple organs including the central nervous system, heart, liver, and skin [8, 9].

4. CAUSES

The most common cause of hand-foot-and-mouth disease is infection from coxsackievirus 16. This coxsackievirus belongs to a group of viruses called nonpolio enteroviruses. Other types of enteroviruses also may cause hand-foot-and-mouth disease. Most people get the coxsackievirus infection - and hand-foot-and-mouth disease-through the mouth. The illness spreads by person-to-person contact with an infected person's: Nose secretions or throat discharge, saliva, fluid from blisters, stool and respiratory droplets sprayed into the air after a cough or sneeze [10, 11].

5. SIGNS AND SYMPTOMS

Hand-foot-and-mouth disease may cause all of the following symptoms or only some of them. They include: Fever, sore throat, feeling sick, painful, blister-like lesions on the tongue, gums and inside of the cheeks, a rash on the palms, soles and sometimes the buttocks. The rash is not itchy, but sometimes it has blisters. Depending on skin tone, the rash may appear red, white, gray, or only show as tiny bumps, fussiness in infants and toddlers and loss of appetite [12].

The usual period from initial infection to the time symptoms appear (incubation period) is 3 to 6 days. Children may get a fever and develop a sore throat. They sometimes lose their appetites and don't feel well. One or two days after the fever begins, painful sores may develop in the front of the mouth or throat. A rash on the hands and feet and sometimes on the buttocks may also appear. Sores that develop in the back of the mouth and throat may suggest a related viral illness called herpangina. Other features of herpangina include a sudden high fever and, in some instances, seizure. In rare cases, sores develop on the hands, feet or other parts of the body [13, 14].

Fig. 1: Symptoms of hand, foot and mouth disease

6. DIAGNOSIS

A diagnosis usually can be made by the presenting signs and symptoms alone. If the diagnosis is unclear, a throat swab or stool specimen may be taken to identify the virus by culture [15, 16]. The common incubation period (the time between infection and onset of symptoms) ranges from three to six days. Hand foot mouth disease is a clinical diagnosis, there is no need for performing diagnostic tests, however molecular testing can be done to identify the serotype of enterovirus. Molecular Testing is done based on the reverse transcription polymerase chain reaction (RT-PCR). The detection of the serotype is by amplification of the 5'-untranslated region of the viral RNA. Early detection of HFMD is important in preventing an outbreak in the pediatric population [17, 18].

7. TREATMENT

There's no specific treatment for hand-foot-and-mouth disease. Symptoms of hand-foot-and-mouth disease usually clear up in 7 to 10 days. A topical oral anesthetic may help relieve the pain of mouth sores. Over-the-counter pain medications other than aspirin, such as acetaminophen (Tylenol, others) or ibuprofen (Advil, Motrin IB, others), may help relieve general discomfort. HFMD is a mild illness that resolves within a week. There is no specific treatment and usually none is required [19].

Use paracetamol as directed for fever and any discomfort. Offer plenty of fluids, but avoid orange juice, which is acidic and may cause pain with mouth ulcers. Allow blisters to dry naturally. Do not pierce blisters, as the fluid within them is infectious. If a child with HFMD complains of severe headache, if fever persists, of if there are any worrying symptoms, consult your doctor immediately. A minority of individuals with hand, foot and mouth disease may require hospital admission due to complications such as inflammation of the brain, inflammation of the meninges, or acute flaccid paralysis. Non-neurologic complications such as inflammation of the heart, fluid in the lungs, or bleeding into the lungs may also occur [20, 21].

8. PREVENTION

Protective habits mainly include hand washing and disinfecting surfaces in play areas. Wash your hands often with soap and water for at least 20 seconds. If soap and water are not available, use an alcohol-based hand sanitizer. Clean and disinfect frequently touched surfaces and shared items, including toys and doorknobs. Avoid touching eyes, nose and mouth with unwashed hands. Always wash your hands- after changing diapers, after using the toilet, after blowing your nose, coughing, or sneezing and before and after caring for someone who is sick [22, 23].

9. CONCLUSION

Hand, foot and mouth disease, that was once considered a disease of cattle, has been emerging as a common human childhood disease in the last few years. It is a viral disease characterized by a brief febrile illness and typical vesicular rashes. Though in most of the cases, it is nonfatal, in rare cases, patients may also develop neurological complications. All dentists, pediatricians and dermatologists should be aware of the clinical features of this disease and possible complications.

Prevention of further spread of the disease is the only way to control a disease from becoming a large outbreak. As the organisms are enterovirus, they spread through faeco-oral route. Strict implementation of basic protocols like monitoring cleanliness of the hands, utensils and drinking water and avoiding direct contact with affected people can be rewarding. Restriction of the affected children from attending school or other outdoor activities is a very simple but effective strategy. The outcomes for most patients with HFMD are excellent, with full recovery occurring within 7-21 days.

Conflict of interest

None declared

10. REFERENCES

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