

# Hand Foot Mouth Disease. A Literature Review and A Clinical Case

Stanimirov P<sup>1</sup>., Gateva N<sup>2</sup>

<sup>1</sup>Associate Professor of the Department of Oral and Maxillo-Facial Surgery, Faculty of Dental Medicine, Medical University - Sofia, Bulgaria

<sup>2</sup>Associate professor, Faculty of Dental Medicine, Medical University, Department of Pediatric Dentistry Sofia, Bulgaria;

**Abstract:** *The disease hand foot mouth (HFMD) is a common viral infection characterized by vesicular stomatitis and skin exanthema on the palms and soles. The disease usually affects small children and is caused by enteroviruses. Oral lesions can be mistaken for aphthous or herpetic ulcers seen in herpetic gingivostomatitis as well as those observed in cases of herpangina. We present a clinical case of a 3 year old boy with single lesions in the oral cavity, with atypical initial manifestation of skin rash on the limbs. **Objective:** To present a clinical case of the disease hand foot mouth of a 3 year old with atypical onset of skin rash and non-manifest involvement of the oral mucosa.*

**Keywords:** hand foot mouthdisease, oral lesions, skin lesions

## 1. Introduction

The disease hand foot mouth (HFMD) is an infectious disease that is caused by enteroviruses and is characterized by fever, vesicle - bullous rash on the palms, soles and aphthous ulcerations in the oral mucosa. HFMD is observed across the board and takes the form of summer or autumn epidemics affecting mostly children. There were also sporadic cases (5, 10). The characteristic location of vesicular exanthema on hands, feet and mouth determines the name of the disease (11).

HFMD is a highly contagious viral infection caused mainly by members of the family Picornaviridae from the genus Enterovirus (5). Representatives of the genus Enterovirus are Echoviruses, Coxsackie A viruses, Coxsackie B viruses, Enteroviruses, Polioviruses, Hepatitis A virus (14). Outbreaks of HFMD are caused mainly by two types of enterovirus type A: coxsackie virus (CV) - A16 (CVA16) or enterovirus 71 (8). In different regions of the world the infection is caused by different species of this family. In Germany, the most frequent cause is Coxsackie A16 virus, with the A6 and A10, while in other European countries, as well as in the USA and Asia the most common is Enterovirus 71 (13). Complications such as pneumonia, meningitis or encephalitis are rare (11).

The transmission is through direct contact or is airborne (9). This is the cause of epidemics mainly among children, concentrated in kindergartens and schools (10). HFMD most often affects children under 10. Incubation period is 3-6 days, and patients are highly contagious until the disappearance of the rash elements – vesicles. Within a few weeks the virus is still transmitted through feces and saliva (1).

The disease can occur with prodromes such as malaise, sore throat, anorexia (5). After the initial phase usually enanthema and erythematous, papular or vesicular skin lesions are observed primarily on palms and soles. Less commonly observed lesions are the ones on the lateral and

dorsal surface of hands and feet, and skin around the mouth (9).

The diagnosis is usually based only on the clinical appearance of the classic manifestation of the disease. It is possible to appoint a viral testing of samples from the nasopharynx and feces, as well as specific tests of blood or spinal fluid, but this is rarely necessary. Atypical course of the disease requires additional laboratory tests (6).

Differential diagnosis in typical course of the disease depends on the presence or absence of skin manifestations. When only the oral mucosa is affected differential diagnosis includes herpangina, orolabial herpes simplex infection and aphthous stomatitis. When there is a strong overt skin manifestation/involvement (greater impairment of the skin) we can consider in the differential diagnostic plan herpetic eczema, chickenpox, disseminated zoster infection and erythema multiforme major (6, 17). The infection leads to development of immunity to the specific virus. There may be a secondary manifestation after infection with a different member of the group of enteroviruses (1).

### Transmission of the disease

Through direct contact from person to person or through body fluids, as well as indirectly via contaminated with the virus surfaces - worktops, handles, toys. The most common way of transmission is via the hands (12). Enteroviruses are very stable and resistant to the action of proteolytic enzymes and lipid-soluble agents, such as ether and chloroform, and the action of acids. In the early days of the infection it may be transmitted aerogenically (15). It must be kept in mind that the virus is excreted over a period of few weeks with feces, thus keeping children away from kindergarten and school only until there is a skin manifestation is not enough to curb the infection. Strict adherence to personal hygiene is required to reduce transmission of infection - in the family and outside of it (1).

Enterovirus infection can be transmitted to the fetus if infection occurs later in pregnancy. This can cause neonatal

meningoencephalitis, thrombocytopenia, disseminated intravascular coagulopathy, cardiomyopathy and hepatitis. Other consequence can be that the progression of the disease is more severe than if the infection occurred after birth (1).

## 2. Treatment

In classical course of the disease symptomatic treatment is advised - paracetamol and oral analgesia if needed (5). Healing occurs within a week (1.6). In severe course of infection antivirals are appointed.

## 3. Clinical Case

We present a clinical case of the HFMD observed in a three year old boy. Parents reported that the first complaints are from unilateral rash presented by acute, small multiple papules of the antecubital fossa of one hand (fig.1). The rash occurred acutely and was considered as a possible allergic dermatitis. At that time the child was clinically healthy, non-febrile and without complaints. The next day the rash appeared symmetrically on the other hand (fig.2). Gradually, over a period of two days the papular exanthema evolved into a vesicular one - rashes on arms, hands and fingers appeared. The clinical picture of the disease gradually unfolded in 3-4 days through the appearance of vesicular rash on the calves, knees, fingers and feet (fig3). Only 2-3 single small aphthous ulcerations occurred in the oral cavity

(fig.4). There was no enanthema of the soft palate and buccal mucosa.



Figure 1: Presence of acute, small multiple papules of the antecubital fossa of hand



Figure 2: Symmetrical rash on the other hand



Figure 3: Vesicular rashes on the knees (A), on the soles (B, C, D)



Figure 4: Single small aphthous ulcerations on the oral mucosa

## 4. Discussion and Conclusion

HFMD is a well known to clinicians infectious disease, the diagnosis is often placed, based on the typical anatomical localization of rashes (4). Besides the typical expression in literature, cases of non-specific rashes are reported such as

engaging calves and trunk (2), eczema herpeticum-like eruption termed "eczema coxsackium" (7), petechiae or purpuric eruption (7), varicelliform (15), delayed desquamation of palms and soles (7). In the present study we observed an initial skin rash in both cubital creases in the beginning with papular and subsequently developing in to papulo-vesicular and vesicular rash that was initially interpreted as dermatitis. Also in the observed case there were only single oral lesions.

## 5. Conclusion

Because it is a highly contagious disease with rare but severe complications, especially in young children, the elderly and immunocompromised patients, early and accurate diagnosis of HFMD is crucial. When the Coxsackie A16 virus is the cause, the disease may have abnormal skin appearance, with involvement of the face and formation of vesicle - bullous lesions on the body.

Although the disease is well known to clinicians there have been many reports of atypical forms and course of the disease. Clinicians should be aware of the various dermatological and oral manifestation. Knowing the clinical manifestation of the disease, and differential diagnosis is essential to prevent wrong diagnosis.

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## Author Profile

**Dr. Natalia Gateva** PhD is Associate Professor, Medical University, Faculty of Dental Medicine, Sofia, Department of Paediatric Dentistry.