

HAND, FOOT & MOUTH DISEASE – A Case Report

G.Sivakumar¹, C.Satheesh², V.Srinivas Prasad³, P.R.Ganesh⁴

¹Professor and Head, ³Senior Lecturer, Dept. of Oral Pathology

²Consultant Paediatrician and Neonatologist

⁴Professor and Head, Dept. of Prosthodontics

^{1,3,4}Madha Dental College and Hospital, Kundrathur, Chennai

²Apollo Children Hospital, Chennai

ABSTRACT

Hand, foot & mouth disease (HFMD) is a viral infection caused by intestinal viruses of the picornaviridae family. A strain of Coxsackie virus (A16, A5, A6) is chiefly instrumental for producing this condition. Enterovirus-71 is also significant viral strain involved in this disease.¹ HFMD is usually a mild disease and can often be effectively and competently managed in an outpatient setting. However, some patients, especially those cases associated with EV71 infection, may suffer from rapid deterioration of his/her health. It can be safely construed that awareness of this singularly unusual infection among Dental clinicians is imperative for timely diagnosis and treatment. We are hereby presenting a case report of the aforementioned disease and the subsequent findings to shed more light on the nature of the disease so that efficacious management of the condition can be carried out for the betterment of the human community as a whole.

INTRODUCTION

Hand, foot & mouth disease is a viral infection caused by intestinal viruses of the picornaviridae family.¹ A strain of Coxsackie virus (A16) is chiefly instrumental for producing this condition. Enterovirus-71 is also significant viral strain involved in this disease. Other causative viruses include Coxsackieviruses A5, A7, A9, A10, B2, B5.^{5,6} The virus is spread by direct contact with nose and throat discharges (mucus and saliva) and faeces of infected people. It is moderately contagious. Coughing & sneezing are the most common modes.

A person is contagious when the first symptoms appear and may continue until the blister-like skin lesions disappear. A person is most vulnerable during the first week of illness. The virus has been known to be shed in the stools for up to several weeks. The incubation period is roughly around 3-7 days. It is more common among the children (between six months and five years) and the prevalence is lesser among the adults.

A soreness in mouth and unable to eat is one of most common findings. However, new exposure to the virus increases the risk of contacting the disease. A common misconception is identifying this disease with the foot & mouth (also known as hoof & mouth disease), a separate disease afflicting livestock & swine, bears no relationship except their names.

CASE REPORT

A five year old male child reported to a private clinic complaining of painful ulcers in the oral cavity for 5-6 days. As a consequence, the child was unable to chew/eat properly. On careful evaluation, it was found that the child had mild fever (100 degree Fahrenheit) and felt lethargic. The child also complained of soreness in the mouth and frequent coughing coupled with urticaria of the skin. Apart from these findings, certain characteristic features were also apparent.

Correspondence: *Dr. G Sivakumar; e-mail: gsivaden@yahoo.com*

Case Report

The child exhibited blisters in the hand with sizes ranging from 1-3mm. The blisters were evident in the forearm, little finger and the dorsal surface of the legs below the knee. A big blister was also appreciated in the dorsal surface of the right toe of size 3-5mm. Some ulcers were spotted on the right and the left vestibular mucosa as well. Small, numerous, yellow ulcer like lesions were seen in the labial mucosa surrounded by an erythematous halo. The patient also frequently complained of a burning sensation in the oral cavity for the last week. The duration of the ulcers and the blisters were revealing in itself. In the oral cavity, the ulcers were present for five days whereas in the legs and the hands, the blisters were found to have persisted for eleven days. However, in the big toe; the blister was consolidated and remained for fifteen days. The patient was put on Antihistamines (Cetirizine) to treat the cough and urticaria. He was given a dosage of Paracetamol to reduce the body temperature.



Fig 1: Small blisters seen on the right ankle.



Fig 2: A big blister seen on the dorsal surface of the right toe of size 3-5mm.



Fig 3: A solitary blister seen in the middle phalangeal region of the right, index region.



Fig 4: Yellowish-white ulcer like lesions with surrounding erythematous halo seen over labial mucosa.

DISCUSSION

The virus is spread by direct contact with nose and throat discharges (mucus and saliva) and faeces of infected people. It is moderately contagious. Coughing & sneezing are the most common modes. Clinically, the onset is characterized by fever, sore throat² and the appearance of papules on the hands, feet, and in the oral cavity, which progress to vesicles. In atopic infants generalized vesicle resemble Kaposi's varicelliform eruption.³ A person is contagious when the first symptoms appear and may continue until the blister-like skin lesions disappear. Infection generally occurs via the fecal-oral route or via contact with skin lesions and oral secretions.^{5,7} Viremia develops, followed by invasion of the skin and mucous membranes.⁷ Widespread apoptosis likely results in the characteristic lesion formation. Symptoms usually subside within 7-10 days. A person is most vulnerable during the first week of illness. The virus has been known to be shed in the stools for up to several weeks. The virus spreads more frequently during summer and autumn months where there is a discernible rise in the number of cases.¹³ The incubation period is roughly around 3-7 days.⁹ Initial viral implantation in the buccal/ileal mucosa is followed by lymph nodes in twenty four hours. Viremia occurs rapidly with spread to the oral mucosa and skin; usually by the seventh day, neutralizing antibody levels increase and the virus is eliminated.

Tiredness is one of the earliest prodromal symptoms. It usually starts 3 to 5 days after contact with an infected person. The first sign of infection may be a mild fever, sometimes with a runny nose or sore throat, tiredness and loss of appetite. The fever usually lasts 1 to 2 days. The initial presentation includes erythematous papules on the palms, feet and in the oral cavity, accompanied by prodromal symptoms such as myalgia, mild fever and abdominal pain. The lesions usually evolve into vesicles, later rupture to form erythematous ulcers and then spontaneously resolve within 1 or 2 weeks. Less commonly the lateral and dorsal surface of hands and feet, and perioral skin can be

Case Report

affected.¹⁷

After the fever has started; small, painful blisters may develop on the a) Gums b) Inside of the mouth c) Tongue.

Body rashes are frequently to be seen, followed by sores with blisters on palms of hand, soles of feet, and sometimes on the lips. The rash is rarely itchy for children, but can be extremely itchy for adults. This is seen a couple of days after the appearance of the small but painful blisters in the oral cavity. It is significant to note that oral lesions have been known to occur without the accompanying cutaneous lesions.¹² Sores or blisters may be present on the buttocks of small children and infants. The spots and blisters usually go away after about a week to 10 days.¹¹ Peeling skin and loss of fingernails or toenails have also been reported, mostly in children, within weeks of having hand, foot and mouth disease. However, it is not known if these are the result of the disease. No definitive link has been found thus far. The skin and nail loss is temporary.

A significant point that has to be remembered is that not all patients may replicate these symptoms. Usually, clinical symptoms are sufficient for correct diagnosis of the disease. However if doubt persists, a throat swab or a stool specimen or scrapings from the vesicular lesions can be taken to identify the Virus which shows intracytoplasmic viral inclusion bodies. There is also significant increase in viral serum antibody titer to Cocksackie virus A16.

The treatment for this particular disease is a bit complicated as there is no cut and dried approach that is applicable for all clinical situations. Individual symptoms, such as fever and pain from the sores, may be eased with the use of analgesics. Infection in older children, adolescents, and adults is typically mild and lasts approximately 1 week, occasionally longer. The blisters will heal if they are left alone. Acetaminophen can be used to control fever. Aspirin is contra-indicated as there is risk of contracting Reye's Syndrome.

Good hygiene during and after infection is very important in preventing hand, foot and mouth disease. The infected individual may be

contagious for several weeks because the virus may remain in the faeces. To help reduce the spread of hand, foot and mouth disease, hands are washed with soap and warm water. Children should be taught to sneeze or cough into a tissue or their inner arm where the elbow flexes. This prevents the spread of airborne droplets. Children are encouraged to throw the tissues directly in the garbage after use and to wash their hands again. Extra care should be taken to wash hands and clean surfaces thoroughly. Common surfaces and shared toys should be cleaned with soap and water and disinfected with a bleach solution. To disinfect surfaces, a bleach solution is made by mixing 15 ml (1 tbsp) of bleach with 1 litre (4¼ cups) of water. A weaker solution of bleach, made by mixing 5 ml (1 tsp) of bleach with 1 litre (4¼ cups) of water, should be used to disinfect toys. Because the mouth sores can be painful, the patient may not want to eat or drink. These sores can be treated with an ointment used for teething. The ointment can be placed on the finger and applied gently to the patient's sores. These products have to be used in moderation. If swallowed frequently, a child's throat could become numb, and this could cause difficulty in swallowing. Only cold, bland, liquids like milk and water should be given. Washing the hands with disinfectant is extremely vital and cannot be stressed enough. Though complications are uncommon, cases of severe pneumonia, cardiomyositis, encephalitis and aseptic meningitis have been reported as a result of viremia but admittedly, these are rare occurrences.^{14,15} Low-level laser therapy has been shown to reduce or shorten the duration of oral ulcers.¹⁶ Reports of fingernail and toenail loss have also emerged within four weeks of contracting the disease but the exact connection of such a finding with the disease in question is still spurious although it was subsequently reported that the toe/finger nail loss is just temporary.

CONCLUSION

As was mentioned earlier, it can be surmised that Hand, Foot & Mouth disease is an unusual viral infection which requires precise diagnosis and rapid infection control measures. Although considered to be a mild disease, various outbreaks have been reported throughout the world with considerable mortality rates so it would be prudent not to take the condition lightly and set up preventive and control measures as quickly as possible to minimize chances of mortality and other health complications. We hope that further evaluation and analysis of the symptoms and case reports will further our knowledge and consequently, help in better and more effective management of the disease as the future beckons.

REFERENCES

1. Hand,foot and mouth disease. http://en.wikipedia.org/wiki/Hand,_foot_and_mouth_disease.
2. Hand - foot - and - mouth disease <http://www.mayoclinic.com/health/hand-foot-and-mouth-disease/DS00599>.
3. Sterling JC, Kurtz JB. Viral infections. In: Rook, Wilkinson, Ebling. Text book of Dermatology 6 ed,Blackwell Science, Vol.2, 1998: p1086.
4. Bernice R Krafchik. Viralexanths. In: Harper J, Oranje A, Prose N.Textbook of Paediatric Dermatology, 1 ed,vol.1, Blackwell Science 2000: p345.http://en.wikipedia.org/wiki/Hand,_foot_and_mouth_disease.
5. Shin JU, Oh SH, Lee JH. A Case of Hand-foot-mouth Disease in an Immunocompetent Adult. Ann Dermatol 2010;22:216-8.
6. Robinson CR, Doane FW, Rhodes AJ. Report of an outbreak of febrile illness with pharyngeal lesions and exanthema: Toronto, summer 1957; Isolation of group A Coxsackie virus. Can Med Assoc J 1958;79:615-21.
7. Wolff K, Goldsmith LA, Katz SI, Gilchrest BA, Paller AS, Leffell DJ. Fitzpatrick's dermatology in general medicine. 7th ed. New York: McGraw-Hill; 2008. p. 1867-9.
8. Suhaimi, Nur Dianah. "HFMD: 1,000 cases a week is unusual, says doc ". Singapore: The Sunday Times (Straits Times). (2008 April 20) p. 1-2.
9. Brads Graham. Hand foot mouth disease. <http://www.emedicine.medscape.com/article/1132264-overview.>].
10. Jayakumar Thomas. Hand-foot and mouth disease-an overview. e-Journal Indian Soc Teledermatology 2009;3(4):1-5
11. Kushner D, Caldwell BD. Hand-foot-and-mouth disease. J Am Pediatr Med Assoc 1996; 86:257-9.
12. McKinney RV. Hand, foot, and mouth disease: A viral disease of importance to dentists. J Am Dent Assoc 1975;91:122-7.
13. Faulkner CF, Godbolt AM, DeAmbrosio B, Triscott J. Hand, foot and mouth disease in an immunocompromised adult treated with acyclovir. Australas J Dermatol 2003;44:203-6.
14. Higgins PG, Warin RP. Hand, foot, and mouth disease. A clinically recognizable virus infection seen mainly in children. Clin Pediatr (Phila) 1967;6:373-6.
15. Wright HT Jr, Landing BH, Lennette EH, McAllister AR. Fatal infection in an infant associated with Coxsackie virus group A, type 16. N Engl J Med 1963;268:1041-4.
16. Toida M, Watanabe F, Goto K, Shibata T. Usefulness of low level laser for control of painful stomatitis in patients with hand-foot-and-mouth disease. J Clin Laser Med Surg 2003;21:363-7.
17. Miller GD, Tindall JP: Hand-foot-and-mouth disease. JAMA 1968;203:827-830.