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Original Research Article

Clinico-epidemiological profile and complications of hand foot mouth disease among cases attending tertiary care centre in Northern Kerala, India

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ABSTRACT

Background: Hand-Foot-Mouth Disease (HFMD), has suddenly become more prevalent than ever in Kerala and is reported in almost all districts. Earlier studies showed EnteroVirus-A71 to be the causative agent, but frequent outbreaks are also caused by coxsackievirus A6 and A16. In 2022 there was a surge in the HFMD cases being reported to the institution with few cases requiring hospital admission due to complications.
Methods: Study was a hospital based descriptive study in Government Medical College, Kannur, Kerala, India among Paediatric cases of HFMD, presented to the institution from April to July, 2022. Data was collected by direct interview using a semi structured questionnaire. It was coded and entered in MS Excel and analysed using SPSS 21.
Results: Of the total 50 cases studied, 60% of the cases were in the age group of 1-3 years. Majority (58%) were females, with maximum cases being reported in the month of May. 32% had contact history with 18% being family contacts. Fever (72%), lesions on the hand (86%), foot (92%) and oral cavity (68%) were the most common clinical presentation. Complications developed in 10% of the cases, requiring hospital admission. Most common complication being neurological complication- acute cerebellar ataxia and atypical febrile seizure. A major factor noted among the cases that developed complications was that all were having chronic malnutrition.
Conclusions: Even though majority of the cases had uncomplicated course, 10% cases showed complications. Therefore, awareness should be made regarding chances of complications and its risk factors. Assessment of nutritional status should be done in all cases.

Keywords: Complications, Clinico-epidemiological profile, Hand foot mouth disease

INTRODUCTION

Hand, foot, and mouth disease (HFMD) is common in children under 5 years old. The illness is usually not serious. It spreads quickly at schools and day care centres. It is caused by viruses that belong to the Enterovirus family. Coxsackievirus A16 is typically the most common cause of HFMD. Coxsackievirus A6 can also cause HFMD and the symptoms may be more severe. Enterovirus 71 (EV-A71) has been associated with cases and outbreaks in East and Southeast Asia. Although rare, EV-A71 has been associated with more severe diseases such as encephalitis (swelling of the brain).[1]

The virus can spread to others through an infected person's nose and throat secretions, such as saliva, drool, or nasal mucus, fluid from blisters or scabs, faeces. People with HFMD are usually most contagious during the first week that they are sick. People can sometimes spread the virus to others for days or weeks after symptoms go away or if they have no symptoms at all. Symptoms of HFMD usually include fever, mouth sores, and skin rash. The rash is commonly found on the hands and feet. Most children have mild symptoms for 7 to 10

days.[2] The prognosis for most patients with hand, foot, and mouth disease is excellent. Most patients recover within a few weeks without any residual sequelae. Many of our literatures on the outbreak have shown recovery of the cases without any complications.

However, some patients may develop serious complications. Persistent stomatitis is associated with painful ulcers. The pain can be severe enough to limit food intake, and dehydration can result, especially in young children.[3] Aseptic meningitis can occur, but this is more common with enterovirus 71. This particular virus is associated with a higher rate of neurological involvement compared to coxsackievirus.[3,4] Coxsackievirus can rarely cause interstitial pneumonia, myocarditis, pancreatitis, and pulmonary edema.[5] Some studies indicate that coxsackievirus infections may also be associated with spontaneous abortions.[6]

The prevalence of HFMD also varies with season, weather, countries and other factors. The incidence of HFMD is relatively high in tropical and temperate zones. The majority of HFMD outbreaks are reported in some Asian-Pacific region countries such as China, India, Malaysia. The incidence of HFMD, had obvious seasonal pattern, with a high incidence in May and June. HFMD remains a major challenge to the development of public health.

The first ever epidemic of Hand, foot and mouth disease in India was observed in 2003 in the state of Kerala, after which it has been sporadically seen across India as a mild illness. With increasing incidence of epidemics in India, we can expect more cases as well as more severe infections with life threatening complications in the forthcoming years.[7]

Hand-Foot-Mouth Disease (HFMD), has suddenly become more prevalent than ever in Kerala and is reported in almost all districts. Earlier studies showed EnteroVirus-A71 to be the causative agent, but frequent outbreaks are also caused by coxsackievirus A6 and A16. In 2022 there was a surge in the HFMD cases being reported to the institution with few cases requiring hospital admission due to complications.

Objective of the study was to assess the clinico-epidemiological profile of HFMD cases attending tertiary care centre of northern Kerala and to describe the complications of HFMD cases attending tertiary care centre of northern Kerala.

METHODS

Study was conducted in a tertiary care center-Government Medical College, Kannur in Northern Kerala, India. It was a hospital based descriptive study. The study population was paediatric cases of HFMD, presented to GMC Kannur from April to July, 2022. Child satisfying the clinical case definition and who were willing to participate was included in the study. Data was collected by direct interview using a semi structured questionnaire.

Operational definition

Clinical case definition of HFMD

Any child with a) mouth/tongue ulcer, b) maculopapular rashes and/or vesicles on palms or soles, c) with OR without history of fever.[2]

Data collected was coded and entered in MS Excel and analysed using SPSS 21. Results are expressed in frequencies and percentages.

RESULTS

Demographic profile

A total of 50 pediatric HFMD cases were included in the study, of which 58% (29) were females and 42% (21) were males. The 1-3 years age group had the highest proportion of cases, 60% (30). The mean age of the study population was 2.3±1.8 years. The minimum age was 1month and maximum age was 7years (Figure 1 and 2).

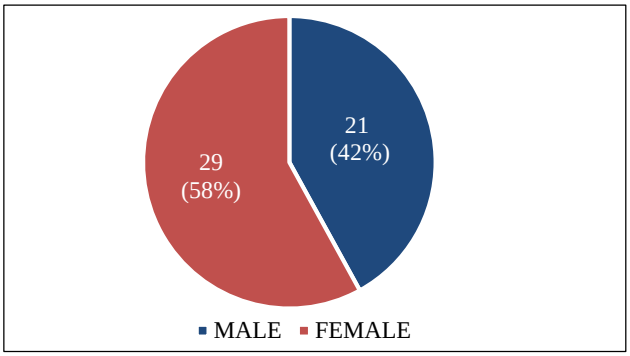

Figure 1: Sex wise distribution of HFMD cases (n=50).

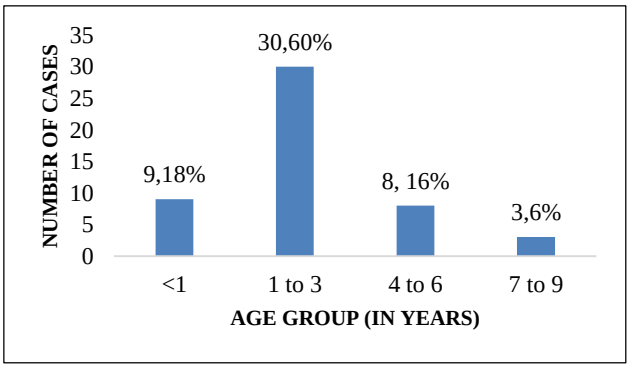

Figure 2: Age wise distribution of HFMD cases (n=50).

Maximum cases occurred in the month of May, 56% (28), followed by 32% (16) cases in the month of June (Figure 3).

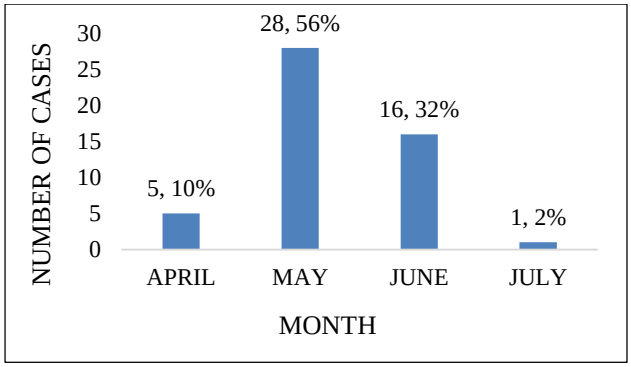

Figure 3: Month wise distribution of HFMD cases (n=50).

Clinical profile of the HFMD cases

Fever (72%, 36), lesions on the hand (86%, 43), foot (92%, 46) and oral cavity (68%, 34) were the most common clinical presentation. Lesions were also present on the chest, trunk, buttocks and genitals in some cases. Breathlessness, cough and diarrhoea were the other symptoms which the patients had. In 46% (23) cases symptoms lasted for 7 days. 32% (16) had contact history with 18% being family contacts (Figure 4, 5).

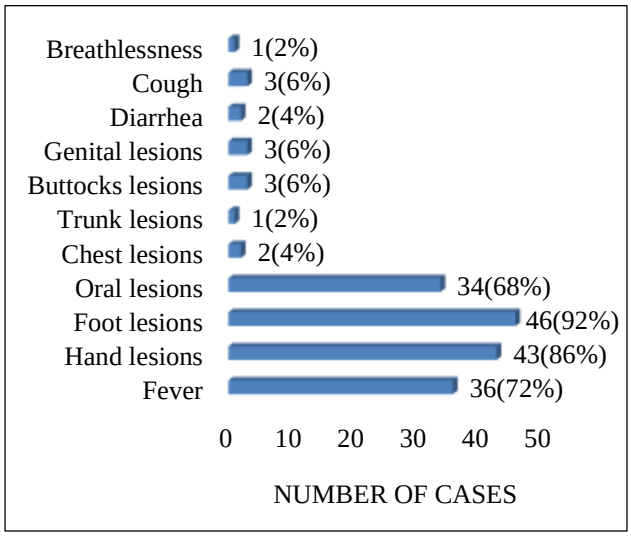

Figure 4: Clinical profile of the HFMD cases (not mutually exclusive).

Complications

A 10% (5) of the cases developed complications requiring hospital admission. Most common complication being neurological complication- acute cerebellar ataxia and atypical febrile seizure. Others complications were septicaemia and complicated oral lesions. A major factor noted among the cases that developed complications was that all were having chronic malnutrition.

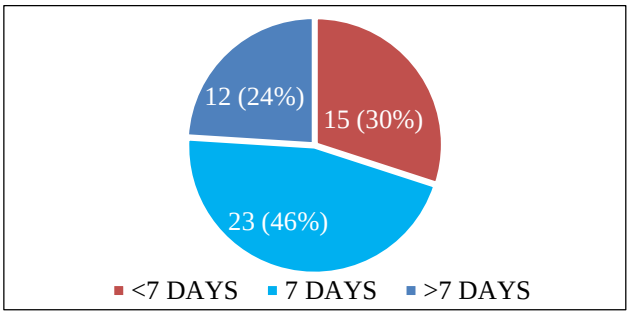

Figure 5: Duration of symptoms (n=50).

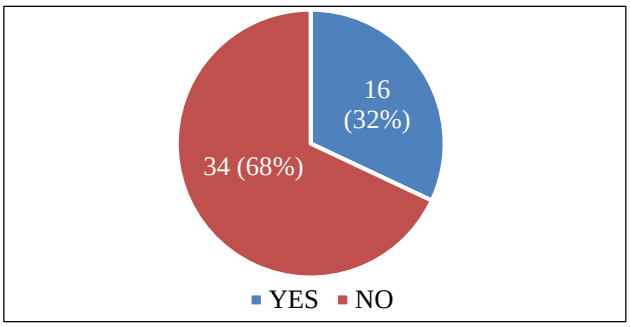

Figure 6: History of contact with HFMD (n=50).

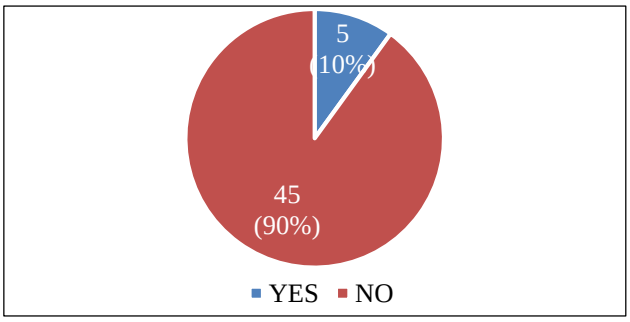

Figure 7: HFMD cases with complications (N=50).

Table 1: Complications developed by the cases and its details.

Complication	Number of cases	Complication developed after how many days of symptom onset	Number of days admitted in hospital	Nutritional status of child
Cerebellar ataxia	2	After 1 week	9 days	Grade 1 PEM*
		After 5 days	8 days	Grade 2 PEM
Atypical febrile seizure	1	After 2 days	8 days	Grade 1 stunting
Septicemia secondary to HFMD	1	After 1 week	11 days	SAM*
Complicated oral lesions	1	After 3 days	4 days	Grade 1 stunting

*PEM- Protein Energy Malnutrition, *SAM- Severe Acute Malnutrition.

Continued.

DISCUSSION

HFMD, an endemic but highly contagious viral disease among children is emerging as a public health concern with the first outbreak in 2022 at Kollam, Kerala. In this study, Majority (60%) of the cases were in the age group of 1-3 years of age with maximum cases reported in the month of May. The findings of which is consistent to that seen in a study by Ang et al.[8] Even though HFMD affects children and young adults, the lower age findings in this study can be attributed to the weaker immunity and decreased chances of hand hygiene practiced by the children of that age.[9] The peak in the cases in the month of May (56%) is due to the favourable conditions for the reproduction of the viral pathogens.[10] Temperature, humidity, rainfall, and other climatic conditions can promote the reproduction, survival, and transmission of HFMD pathogens to a certain extent, leading to the prevalence and outbreak of HFMD in the population.[11]

The most common clinical presentation among the children in the study was fever (72%) and lesions on the hand, foot and oral cavity (86%, 92% and 68%). In few cases lesions were also present on the chest, trunk, buttocks and genital region. Breathlessness, cough and diarrhoea were the other symptoms which the patients had.

In 46% (23) cases symptoms lasted for only 7 days. 32% (16) had contact history with 18% being family contacts.

Complications developed in 10% (5) of the cases requiring hospital admission. Most common complication being neurological complication which was acute cerebellar ataxia (presented with swaying and falling forwards while walking; on examination-nystagmus, past pointing, Romberg's test were positive) and atypical febrile seizure. Others complications were septicaemia and complicated oral lesions. There have been outbreaks of HFMD in large parts of India; however, no reports of complications can be found in many of the medical literatures.[7,12,13]

A major factor noted among the cases that developed complications was that all were having chronic malnutrition. Malnutrition in itself is a risk factor and disease. Therefore, children with malnutrition should be given extra care and treatment to overcome it. Nutritional status of all the children should be assessed in all cases. Studies on risk factor profile is also very much limited in literatures. Therefore more future studies that emphasize on risk factor profile is required to find its association with attack rates.[14]

Normally there is no enteric viral flora in human beings. Usually, only one type of enterovirus multiplies in an individual at any given point of time. Polio vaccination has eliminated polio viruses from the gut thereby increasing the chances of the coxsackievirus and enteroviral infections. It is possible that the emergence of HFMD in India may be related to the mass polio vaccination. Coxsackievirus A16 is more common and has a benign course, whereas enterovirus 71 is rare and is associated with a serious outcome.[12]

CONCLUSION

Even though majority of the cases had uncomplicated course, 10% cases showed complications. Therefore, awareness should be made regarding chances of complications and its risk factors. Assessment of nutritional status should be done in all cases. Avoiding contact with cases, maintaining good personal hygiene and surveillance are probably the most effective preventive measures. Health care providers training and mass awareness programmes among public is also important.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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