



HAND FOOT AND MOUTH DISEASE - A CLINICO EPIDEMIOLOGICAL STUDY IN CHILDREN ATTENDING A TERTIARY CARE HOSPITAL, CHENNAI

Dermatology

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ABSTRACT

BACKGROUND: Hand Foot and Mouth Disease, a viral infection seen predominantly in children is diagnosed globally and is in rising trend every year. Though it is a self limiting condition, complications like meningitis, encephalitis, myocarditis and pulmonary oedema as well as epidemic outbreaks can occur. The disease is characterised by the appearance of maculopapular, papular and/ or vesicular eruptions on the hands, feet and oral cavity. The disease also occurs in adults, mostly in immuno compromised individuals. **AIM:** To study the clinical presentation and demographic characteristics in children below 12 years with Hand Foot and Mouth Disease. **METHOD:** An observational study was conducted among the children below 12 years with Hand Foot and Mouth Disease attending Dermatology OPD in a Tertiary Care Hospital in Chennai between January 2018 to December 2019. **RESULTS:** A total of 45 children were diagnosed and symptomatically treated for Hand Foot and Mouth Disease. 27 were male children and 18 were female children. 15 children were in the age group 1-2 years, followed by 12 children in 2-3 years. The youngest in the study was an one month old male baby and the oldest was 11 years old female child. Male children were affected more than the female children, the ratio being 3:2. Papular type of eruptions were the commonest type of clinical presentation of the disease. Eruptions on the hands and feet occurred more than the combined hands, feet and oral lesions. Most of the children were symptom free. Few had prodromal symptoms like fever, inability to take feed and irritability. The prevalence of HFMD in children was high between the months of September and December in the study period. **CONCLUSION:** Prevalence of Hand Foot and Mouth Disease was seen more among male than female children and in the last four months of both the years in the study. Papular eruptions were the most common clinical presentation followed by papulovesicular type of lesions. Early clinical diagnosis and management of Hand Foot and Mouth Disease will prevent morbidity and severe complications like encephalitis in children. At times of epidemic outbreaks also early diagnosis and management is essential.

KEYWORDS

Hand Foot and Mouth Disease, Coxsackie Virus.

INTRODUCTION

HFMD (Hand Foot and Mouth Disease) is a viral infection seen predominantly in children worldwide⁸. The incidence of the disease is increasing every year. Though it is a self limiting condition, complications like meningitis, encephalitis, myocarditis and pulmonary oedema can occur⁷. The disease commonly affects children below 5 years¹. The disease also occurs in adults, mostly in immuno compromised individuals². The viruses causing this disease are coxsackie virus A16, enterovirus 71, coxsackie virus A6 and A10^{5,9}. The incubation period ranges from 3-6 days¹⁰. The transmission is through fecal-oral route and respiratory secretions¹⁰.

HFMD is a common and mild self limiting infection with spontaneous regression. Prodromal symptoms like low grade fever, irritability and rarely itching precedes the appearance of skin eruptions and oral lesions. The skin eruptions occur mainly on the hands, palms, feet and soles but can also spread to the trunk, gluteal region, knees and elbows. The disease is characterised by the appearance of maculopapular, papular and/ or vesicular eruptions. In the oral cavity, it occurs in the form of vesicles and small painful superficial ulcers on erythematous base on the tongue, buccal mucosa, gums and lips⁸. Children become irritable due to pain in the mouth and inability to feed and eat. There is no specific treatment for HFMD, only symptomatic treatment and reassurance is required². The condition regresses spontaneously after 7 - 10 days due to increase in neutralising antibody level and viral elimination¹².

METHODOLOGY

An observational study was conducted among children below 12 years attending the Dermatology OPD at A.C.S. Medical College and Hospital, Chennai during January 2018 to December 2019. A total number of 45 children were clinically diagnosed as having HFMD.

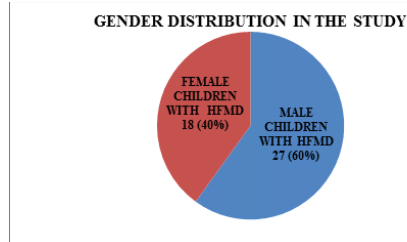
The children with typical skin lesions and site of lesions of HFMD were examined and detailed history of any preceding fever, irritability, inability to eat or drink was obtained from their parents. History of recurrence and any treatment taken was also noted. History of involvement of other family members in the same house, contact with infected adults to other children in the locality or school and history of

any outdoor activities was noted.

RESULTS

A total of 45 children were clinically diagnosed with HFMD. Among the 45 children, 27 were male children (60%) and 18 were female children (40%).

FIG 1:



According to age, predominant age group affected with HFMD was 1 to 2 years, 15 children were diagnosed in this age group (33.33%), and the next predominant age group was 2 to 3 years with 12 children (26.67%) as shown in Table 1 and Fig 2.

Table 1: Total Children affected with HFMD according to Age

Age Group in Years	Number of Children	Percentage %
<1	5	11.11%
1-2	15	33.33%
2-3	12	26.67%
3-4	7	15.56%
4-5	2	4.44%
5-6	1	2.22%
6-7	1	2.22%
7-12	2	4.44%

The total number of children who attended the OPD in the year 2018 were 783 (male children 397, female children 386) and HFMD affected children were 18 (male children 11, female children 7) accounting for 2.30% as shown in Table 2 and Figure 3.

FIG 2:

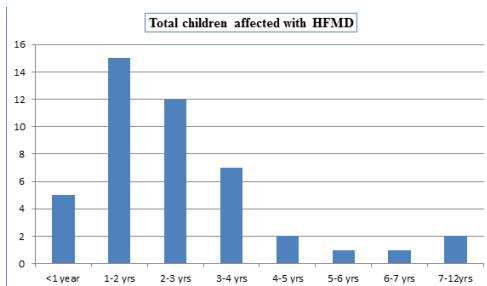
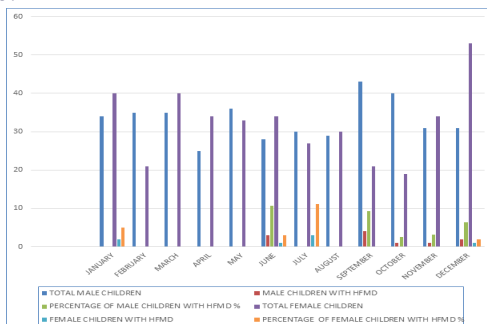


TABLE 2:

YEAR 2018						
Months	Total Male Children	MC With HFMD	Percentage %	Total Female Children	FC With HFMD	Percentage %
January	34	-	-	40	2	5%
February	35	-	-	21	-	-
March	35	-	-	40	-	-
April	25	-	-	34	-	-
May	36	-	-	33	-	-
June	28	3	10.71%	34	1	2.94%
July	30	-	-	27	3	11.11%
August	29	-	-	30	-	-
September	43	4	9.30%	21	-	-
October	40	1	2.5%	19	-	-
November	31	1	3.22%	34	-	-
December	31	2	6.45%	53	1	1.88%
Total	397	11	2.77%	386	7	1.81%

Total Children – 783 (MC 397/FC 386), HFMD affected Children – 18 (MC 11/ FC 7) (2.30%)

FIG 3:



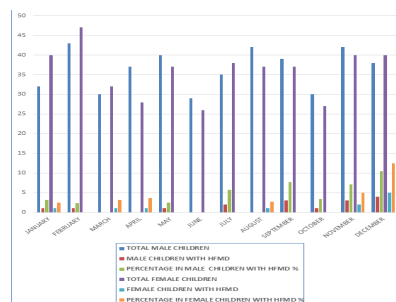
The total number of children who attended the OPD in the year 2019 were 866 (male children 437, female children 429) and HFMD affected children were 27 (male children 16, female children 11) accounting for 3.12% as shown in Table 3 and Figure 4.

TABLE 3:

YEAR 2018						
Months	Total Male Children	MC With HFMD	Percentage %	Total Female Children	FC With HFMD	Percentage %
January	32	1	3.12%	40	1	2.5%
February	43	1	2.32%	47	-	-
March	30	-	-	32	1	3.12%
April	37	-	-	28	1	3.57%
May	40	1	2.50%	37	-	-
June	29	-	-	26	-	-
July	35	2	5.71%	38	-	-
August	42	-	-	37	1	2.70%
September	39	3	7.69%	37	-	-
October	30	1	3.33%	27	-	-
November	42	3	7.14%	40	2	5%
December	38	4	10.52%	40	5	12.5%
Total	437	16	2.77%	429	11	2.56%

Total Children – 866 (MC 437/FC 429), HFMD affected Children – 27 (MC 16/ FC 11) (3.12%)

FIG 4:



The total number of male children who attended the OPD in the year 2018 was 397 and in the year 2019 was 437 and the total in 2 years was 834. The male children affected with HFMD in 2018 were 11 and in 2019 were 16 and the total affected was 27 (3.24%).

The total number of female children who attended the OPD in the year 2018 was 386 and in the year 2019 was 429 and the total in 2 years was 815. The female children affected with HFMD in 2018 were 7 and in 2019 were 11 and the total affected was 18 (2.21%).

The total male children who attended OPD in the study period 2018 and 2019 was 834.

The total female children who attended OPD in the study period 2018 and 2019 was 815.

The total male children affected with HFMD in the study period 2018 and 2019 was 27.

The total female children affected with HFMD in the study period 2018 and 2019 was 18.

TABLE 4:

Year	Total Male Children	Male Children With HFMD	Percentage	Total Female Children	Female Children With HFMD	Percentage
2018	397	11	2.77%	386	7	1.81%
2019	437	16	3.66%	429	11	2.56%
Total	834	27	3.24%	815	18	2.21%

TOTAL HFMD CHILDREN IN THE STUDY 45 (27 MC + 18 FC)

TABLE 5:

	2018	2019	TOTAL
Male Children With HFMD	11	16	27
Female Children With HFMD	7	11	18
TOTAL	18	27	45

The total male and female children affected with HFMD in the study period 2018 was 18. The total male and female children affected with HFMD in the study period 2019 was 27.

Out of 27 HFMD affected male children in the study period 2018 and 2019, 19 children (70.37%) were diagnosed in the months between September and December.

Out of 18 HFMD affected female children in the study period 2018 and 2019, 8 children (44.44%) were diagnosed in the months between September and December.

Total children (male and female) with HFMD in the months between September and December in the study period were 27 (60%).

FIG 5:

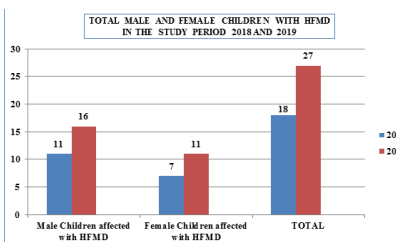


Table 6: Number of HFMD Children according to Months in the Study Period 2018 to 2019

Months	MC With HFMD	MC With HFMD	Total HFMD Male Children	FC With HFMD	FC With HFMD	Total HFMD Female Children
January	-	1	1	2	1	3
February	-	1	1	-	-	-
March	-	-	-	-	1	1
April	-	-	-	-	1	1
May	-	1	1	-	-	-
June	3	-	3	1	-	1
July	-	2	2	3	-	3
August	-	-	-	-	1	1
September	4	3	7	-	-	-
October	1	1	2	-	-	-
November	1	3	4	-	2	2
December	2	4	6	1	5	6
Total	11	16	27	7	11	18
Grand Total	HFMD affected Children - 45 (MC 27, FC 18) HFMD affected Children from Sept to Dec - 27 (MC 19, FC 8)					

The most common clinical presentation of HFMD were papular lesions and were reported in 31 children (68.89%) followed by vesicular lesions in 8 and maculopapular, crusts, oral lesions in 2 each respectively. Combined lesions were seen in 24 children as shown in Table 7.

The most common site of the lesions of HFMD in the study were hands and feet, 43 children having at these sites, followed by other sites palms and soles, oral cavity, knees, elbows and gluteal region as shown in Table 7.

Table 7:

Type Of HFMD Lesions	No Of Children	Site Of Lesions	No Of Children
Maculopapular	2	Hands	43
Papular	31	Feet	43

Rural children were affected more (62.22%) compared to Urban children (37.78%) as shown in Table 8

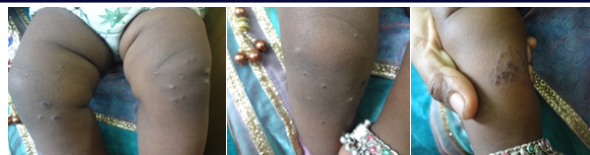
Table 8:

Location	Number of Children	Percentage
Rural	28	62.22%
Urban	17	37.78%
Total	45	100%

Recurrence of HFMD was seen in 5 children (11.11%).

Table 9:

History of Recurrence	Number of Children	Percentage
Present	5	11.11%
Absent	40	88.89%

Clinical Pictures Of Hand Foot And Mouth Disease**FIG 1: Hand Lesions****FIG 2: Lower Limb Lesions****FIG 3: Lower Limb Lesions****FIG 4: Sole Lesions****FIG 5: Knee Lesions****FIG 6: Gluteal Lesions****FIG 7: Knee Lesions****FIG 8: Knee Lesions****FIG 9: Leg Lesions****DISCUSSION:**

Hand Foot and Mouth Disease, a viral infection commonly affecting young children is widespread and causes significant distress and discomfort to the affected children and also to the close family members⁸. HFMD is a self limiting condition occurring worldwide¹¹ and may reach epidemic proportions in areas with over population and poor hygienic conditions^{2,8}. The clinical presentation of HFMD can vary with regard to sex and geographic location.

In our study, diagnosis of HFMD was made clinically based on the typical presentation of the lesions and the sites of the lesions^{1,8,13} after excluding varicella, papular urticaria and insect bite dermatitis similar to as described in the discussion of the study by Kar et al where it is clearly stated that clinical presentation remains the sole diagnostic modality¹³, Vikrant A. Saoji study⁸ and Nilendu Sarma study⁷.

In our study, majority of the children affected with HFMD were in the age group 1 to 2 yrs, 15 children were diagnosed in this age group (33.33%), and the next predominant age group was 2 to 3 years with 12 children (26.67%) which is different from other studies wherein maximum children were in the school going age group³. The probable reason for the higher prevalence in this group could be due to the reason that children in this age group are involved in outdoor activities⁵.

Male to female children ratio was 1.5:1 in our study, which was almost similar to the studies conducted by Devendra Yadav et al³ (1.6:1), Sardana et al⁸ (1.07:1). In almost all studies, the prevalence was higher in male children like our study³.

Papular lesions were the most common clinical presentation in our study (68.89%), 31 children had only papular lesions in the classical sites of HFMD followed by other types of lesions. Combined papular lesions and oral lesions were seen in 24 children (53.33%)^{2,12}.

The most common site of the lesions of HFMD in the study was hands and feet, 43 children having at these sites, followed by other sites palms and soles, oral cavity, knees, elbows and gluteal region. Lesions can occur at other typical sites predominantly without oral ulcerations, as in our study. This has been stated in the introduction paragraph of K. Bhumes Kumare study² and in the study by Katta Nagaraju et al⁵.

Many children (28) (62.22%) were from rural region, few (5) had recurrent infection⁴, may be due to overcrowding, poor hygiene and lack of knowledge about the spread of the infection.

In our study, HFMD was seen more during the months of September to December, about 27 (60%) children were affected during these months. This is in contrast to many studies which stated that HFMD was seen during summer and early autumn^{4,5,14}. In the study by Jiratchaya Puenpa et al⁹, HFMD occurred during the rainy season (June – August). HFMD occurs depending on the geographic area and season variations.

CONCLUSION:

Prevalence of Hand Foot and Mouth Disease was seen more among male than female children and in the last four months of both the years in the study period. The prevalence rate varies with different geographic regions. Papular eruptions were the most common clinical presentation followed by papulo vesicular type of lesions. Most of the children were symptom free and responded well with supportive therapy and reassurance to their parents. Early clinical diagnosis and management of Hand Foot and Mouth Disease is needed to prevent morbidity and severe complications like encephalitis in children. It is also essential at times of epidemic outbreaks. A further detailed study can give a better insight into the epidemiology of the disease.

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