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Evaluation of occurrence of hand, foot and mouth disease: A clinical study hand, foot and mouth disease

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Abstract

Background: Hand, foot and mouth disease is characterized by rashes or vesicular lesions mainly on the hands, feet and mouth. The present study was conducted to determine hand, foot and mouth disease in known population.

Materials & Methods: The present study was conducted in the department of Dermatology. It comprised of 24 patients of both genders with complaint of papulovesicular eruptions throughout the body. A detailed history and clinical examination was carried out, and routine hematological and biochemical tests were done.

Results: Out of 24 patients, 12 were in boys and 12 in girls. Age group 0-5 years had 10 boys and 11 girls while 5-10 years had 2 boys and 1 girl. Fever was present in 20, eruptions of hands in 24, eruptions of mouth in 18, eruptions of legs in 17, eruptions of buttocks in 11, cough in 15, and abdominal pain in 6 and anorexia in 8. The difference was non-significant ($P > 0.05$).

Conclusion: Authors reported 24 cases of Hand, foot and mouth disease. Most commonly involved site was hand and mouth.

Keywords: Hand, foot, mouth disease

Introduction

Hand, foot and mouth disease (HFMD) is characterized by rashes or vesicular lesions mainly on the hands, feet and mouth. ^[1] It usually affects children, and is most commonly caused by Enterovirus-A (EV-A) species, including Coxsackievirus-A16 (CV-A16) and Enterovirus-71 (EV-71). Usually, HFMD caused due to CV-A16 is less severe disease as compared to that caused by EV-71. However, severe complications, including deaths have been reported rarely. ^[2]

HFMD is an enteroviral disease, caused most commonly by Enterovirus 71 (EV71) and coxsackievirus A16 (CVA16). Other strains such as CVA4- 10, CVA24, CVB2- 5, and echovirus 18 (Echo18) can also rarely cause HFMD. Enteroviruses (Picornaviridae family) can be classified into coxsackie Group A (Types 1–22, 24), coxsackie Group B (Types 1–6), echoviruses (Types 1–7, 9, 11–27, 29–34), and enteroviruses. ^[3]

Pathogenesis of HFMD is yet elusive. The presence of proinflammatory mediators such as interleukin (IL)- 4, IL- 5, IL- 22, IL- 23, IL- 2, tumor necrosis factor- α , IL- 1b, IL-6 and high mobility group box 1 have been suggested to mediate a key role. ^[4] Reverse-transcription nested PCR are performed to screen for the presence of Enterovirus targeting 5'noncoding region (5'-NCR). Positive specimens are selected for cDNA sequencing. Molecular evolutionary genetic analysis is done using MEGA 6 software. Phylogenetic tree is constructed using the neighbor-joining method with bootstrap testing of 1000 replicates to estimate the stability of the phylogenetic tree. ^[5] The present study was conducted to determine hand, foot and mouth disease in known population.

Materials & Methods

The present study was conducted in the department of Dermatology. It comprised of 24 patients of both genders with complaint of papulovesicular eruptions throughout the body. The study was approved from institutional ethical committee. All participants were informed regarding the study and written consent was obtained from parents.

Information such as name, age, gender etc. was recorded. A detailed history and clinical

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examination was carried out, and routine hematological and biochemical tests were done. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was

Considered significant.

Results

Table 1: Distribution of patients

Total- 24		
Age group (Years)	Boys	Girls
0-5	10	11
5-10	2	1

Table I, graph I shows that out of 24 patients, 12 were in boys and 12 in girls. Age group 0-5 years had 10 boys and

11 girls while 5-10 years had 2 boys and 1 girl.

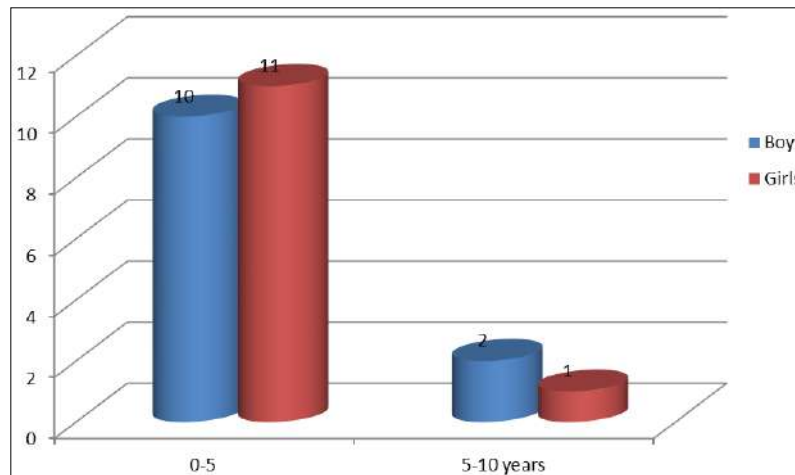


Fig 1: Distribution of patients

Table 2: Clinical features

Features	Number	P value
Fever	20	0.07
Eruptions of hands	24	
Eruptions of Mouths	18	
Eruptions of Legs	17	
Eruptions of Buttocks	11	
Cough	15	
Abdominal pain	6	
Anorexia	8	

Table II, graph II shows that fever was present in 20, eruptions of hands in 24, eruptions of mouth in 18, eruptions of legs in 17, eruptions of buttocks in 11, cough in 15,

abdominal pain in 6 and anorexia in 8. The difference was non- significant (P> 0.05).

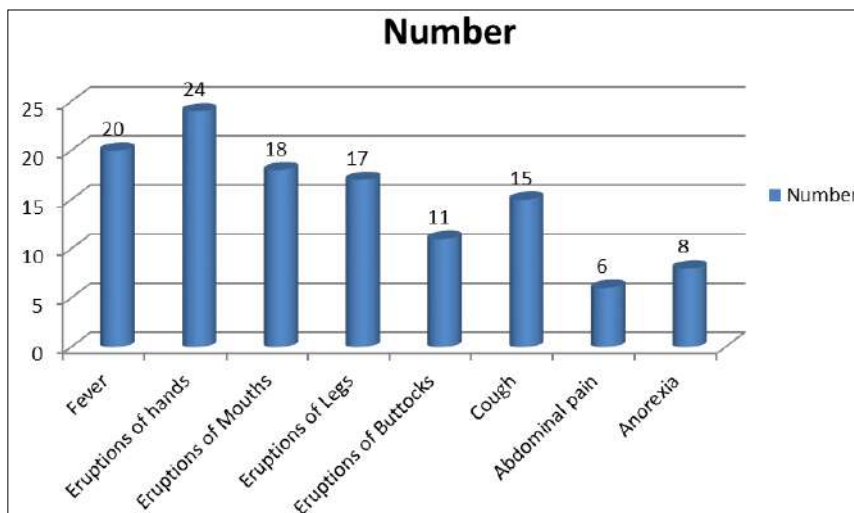


Fig 2: Clinical features

Discussion

Molecular detection of the prevalent viral strain is crucial. This infection is a new entrant in India despite its presence for many decades in many other neighboring Southeast Asian countries where it has started manifesting with great virulence. Unfortunately, only few Indian studies have attempted for virological analysis.^[6] Various strains have been detected from the HFMD cases in India during the last few years. There are no effective antiviral drugs or vaccines against this infection. However, many vaccines including inactivated virus vaccines, attenuated live virus vaccines, subunit vaccines, DNA vaccines, and virus-like particle vaccines have been tried. Inactivated virus vaccines are considered advantageous and promising. Virological analysis of the cases of HFMD has been infrequently done.^[7] The present study was conducted to determine hand, foot and mouth disease in known population.

In this study, out of 24 patients, 12 were in boys and 12 in girls. Age group 0-5 years had 10 boys and 11 girls while 5-10 years had 2 boys and 1 girl. One past Indian study reported the presence of CVA16 from Karnataka among 50% of the positive cases (2 out of 4 cases). CVA16 was also reported previously from cases of HFMD in Andaman is land.^[8]

We found that fever was present in 20, eruptions of hands in 24, eruptions of mouth in 18, eruptions of legs in 17, eruptions of buttocks in 11, cough in 15, abdominal pain in 6 and anorexia in 8. Another recent study that collected samples from different regions on India reported the presence of CVA16 (61.7%), CVA6 (34.04%), CVA4, and Echo12 (4.3%) among the 94 positive samples.^[9]

Mao *et al.*^[10] investigated an outbreak of Hand, foot and mouth disease (HFMD) in Andaman Islands during 2013. Epidemiological, clinical data and samples were collected from HFMD patients who attended selected hospitals. Of the 246 suspected patients, most were affected in August 2013 (92/246, 37.4%). Fever (71.2%) associated with typical HFMD rashes (100%) were the most common presenting symptoms and rashes were mostly distributed on hands (100%), legs (92%), mouth (77%), and buttocks (52.8%). All cases were reported as mild and recovered completely without any complications. Enterovirus was detected in 63 cases (50.4%).

Sarma *et al.*^[11] conducted a study to document the clinical and etiological aspect, the changing patterns and clinic-virological correlation. A total of 62 samples of throat swab were collected from affected children over 3 successive years in Kolkata, West Bengal, India. Five cases had a previous history of HFMD during the last 1–5 years. Fever was usually of mild degree (highest 102°C). There was no apparent correlation between fever of >100°C and a positive test. There was no correlation of viral strain and clinical severity. A test positive for the Viral RNA was noted among 64.51% (40/62) cases. Multiple strains were characteristically present in each year. CVA6, EV71 were found in 2013, CVA6, EV71 in 2014, and CVA6, CVA16 in 2015.

Kim *et al.*^[12] found that Enterovirus 71 (EV71) is the causative agent of HFMD, particularly in male children under the age of 3. Some common symptoms including fever, rash, and malfunctioning of respiratory, circulatory, and neurologic systems were observed in all studied patients. However, circulatory failure was the most important cause of death for these patients. Furthermore,

increases in the peripheral white blood cell count (>15 × 10⁹/L) and the blood sugar level (>8.3 mmol/L) are among the important reference indices for serious cases. Hence, on time provision of respiratory and circulatory supports enhance the efficiency of a comprehensive treatment strategy.

Conclusion

Authors reported 24 cases of Hand, mouth and foot disease. Most commonly involved site was hand and mouth.

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