An outbreak of hand–foot–mouth disease: A report from the hills of northern India

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INTRODUCTION

Hand–foot–mouth disease (HFMD) is a febrile exanthematous illness of childhood, which is commonly caused by enteroviruses. It is characterized by prodromal symptoms followed by crops of vesicular lesions appearing in the oral cavity, hands and feet, which heal without leaving any scars. HFMD occurs as outbreaks and has been reported from all over the world. The first outbreak in India was reported in 2004 from Kozhikode, Kerala. We report our experience with an outbreak of HFMD in Dehradun, the capital of Uttarakhand, a hill state of India. The objective was to study the clinical features and their distribution in the present outbreak.

METHODS

Our hospital serves as a tertiary care, teaching and referral hospital in the city of Dehradun. There are two independent units in our Department of Paediatrics. Consecutive children (<18 years of age) presenting to our unit between August 2013 and October 2013 either with prodromal features such as fever, anorexia, vomiting or with skin rash were evaluated for possible HFMD. Data were recorded in a pre-defined form after obtaining written informed consent from either of the parents. The diagnosis of HFMD was made on clinical grounds. Children presenting with a vesicular skin rash, with or without prodromal features in the absence of any other plausible aetiology were considered to be suffering from HFMD. Owing to technical and financial constraints, virological investigations were not done to identify the aetiologic agent. Necessary laboratory investigations were done for clinical management. Appropriate investigations were done to exclude enteric fever, malaria and dengue in individual children at the discretion of the treating physician. Children positive for any other aetiology were excluded from the study.

RESULTS

Thirty-three children were enrolled during the study period. All were residents of Dehradun city: 18 boys and 15 girls with an age range of 1–17 years had a median prodrome of 6 (range 4–10) days. Twenty-eight children had received appropriate immunization.

The majority of children were <5 years of age (25/33; 75.8%) and all children were <10 years of age except for one 17-year-old. A detailed interview of the parents of affected children regarding the source of exposure revealed a history of possible contact in school (10/33; 30.3%) or at home (5/33; 15%). Prodrome was present in a majority of children (31/33; 94%) and was mild in severity (25/31; 80.6%). The most common prodromal symptoms were fever and cough (Table I). Fever was mostly low to moderate, continuous, and not associated with chills or rigor. None of the children had diarrhoea.

The rash evolved rapidly from small maculopapular lesions to vesicular eruptions with an erythematous halo. The sites of involvement of the oral mucosa were inner surfaces of the lips, under surface of tongue, soft and hard palates, tonsillar pillars, and buccal mucosa. All children had vesicular skin lesions (Fig. 1) on their hands and feet (33) whereas the majority had a painful oral ulcer as well (28/33; 85%). The palmer surfaces of the hands and soles were involved. Rashes were also seen on the knee (27/33; 82%) and buttocks (13/33; 39%). Only one child had

<table>
<thead>
<tr>
<th>Symptom</th>
<th>n (%)</th>
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<tbody>
<tr>
<td>Fever</td>
<td>31 (94)</td>
</tr>
<tr>
<td>Cough</td>
<td>24 (73)</td>
</tr>
<tr>
<td>Malaise</td>
<td>18 (54)</td>
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<tr>
<td>Irritability</td>
<td>12 (36)</td>
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<tr>
<td>Anorexia</td>
<td>5 (15)</td>
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<tr>
<td>Abdominal pain</td>
<td>2 (6)</td>
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<tr>
<td>Vomiting</td>
<td>1 (3)</td>
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</tbody>
</table>

TABLE I. Prodromal symptoms in children with hand–foot–mouth disease (n=33)
lesions on the trunk and back. Skin rash was associated with itching in 8 (24.2%) children.

Laboratory investigations (haemogram, erythrocyte sedimentation rate, creatinine) were normal in all children except for slight leucocytosis in 5. All children were managed with symptomatic medications and supportive measures. Skin lesions healed in 4–7 days with post-inflammatory hypopigmentation or hyperpigmentation but without any scarring. None of the children had any complications, particularly neurological or cardiopulmonary, or adverse outcome till 6 weeks of follow-up.

DISCUSSION

HFMD is an acute febrile illness that commonly affects children <5 years of age. It occurs as small and large outbreaks all over the world, more commonly in the WHO western pacific region countries such as China, Japan, Korea, Singapore, Vietnam and Malaysia. Most of the major epidemics have been caused by two members of the genus Enteroviruses of family Picornaviridae, namely Enterovirus 71 and Coxsackie virus A16, which may differ slightly in their clinical course. Classically, children present with non-specific constitutional symptoms, followed by the appearance of a papulovesicular rash in a peculiar distribution involving the hands, feet and mouth. Lesions in the oral cavity resemble aphthous ulcers. Other mucosal surfaces in the body are not involved.

In India, HFMD was first reported from Kozhikode and later from several other cities. As in previous reports, we also encountered the outbreak during August to October. The typical clinical features are enough to make a correct diagnosis, particularly in an outbreak setting. Virological investigation has no role in patient management but might be of use in atypical clinical presentations. As in other outbreaks reported from India, we also made the diagnosis only on clinical grounds.

Similar to previous Indian reports, more than 75% of children were <5 years of age. The disease uncommonly affects children beyond 12 years of age as evidenced by a single person of the age of 17 years in our study. Most of our children had fever at presentation, followed by cough and malaise. Diarrhoea and other gastrointestinal symptoms were uncommon in our study. As the aetiological agent of HFMD multiplies in the respiratory as well as in gastrointestinal tract mucosa, the predominant symptom complex in a given outbreak may be decided by the viral agent, its strain, and affinity for a specific mucosal lining of the body. All our patients had hand and foot involvement, and a majority (85%) had involvement of the oral mucosa too. Other studies have also reported a high prevalence of involvement of the oral mucosa.

HFMD is mostly a self-limiting illness that needs supportive care. In a small proportion of children, it might progress to neurological involvement. Outbreaks in India have not reported any neurological or cardiopulmonary complications. We did not notice any complication in 6 weeks of follow-up. This could be due to the small number of cases in this outbreak, relatively milder clinical disease, or probable involvement of Coxsackie virus A16.

India is prone to HFMD outbreaks because of poor hygienic conditions, inadequate access to sanitation facilities, overcrowding, and a higher proportion of young people. In the absence of any effective vaccine or antiviral therapy, primary prevention is imperative to prevent an outbreak of HFMD. Similar to poliomyelitis, another disease caused by enterically transmitted virus, we need to establish a surveillance system, case reporting network, accredited laboratories for viral detection, and containment of outbreaks.

Fig 1. Vesicular skin lesions over (a) the palms (b) soles and (c) dorsum of the foot
Our study has limitations. First, we misdiagnosed a few initial cases; second, under-reporting of cases is a possibility as we have not enrolled children who would have attended other departments of our hospital and other physicians in the city; third, we have not made any attempt to identify the virus. However, this report of 33 patients with HFMD, seen over a short period of time at a single referral centre, substantiates the possibility of a much larger outbreak.

REFERENCES