J Skin Stem Cell. 2020 December; 7(4):e115573. doi: 10.5812/jssc.115573.

Published online 2021 August 3. **Brief Report**

Nail Changes following Hand-Foot-Mouth Disease in North India

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Received 2021 May 29; **Revised** 2021 July 04; **Accepted** 2021 July 26.

Abstract

Hand-foot-mouth disease (HFMD) is common, but nail changes have not been well described. We described nail changes in HFMD. Nail changes following (HFMD) in two outpatient clinics were assessed over two years. Out of 524 cases of HFMD, 40 patients (7.6%) presented with nail problems, 29 cases had onychomadesis, and 11 cases had Beau's lines. The median age of the subjects was 36 (15 - 126) months, and slight male preponderance (23:17) was seen. HFMD is a common disease having delayed nail changes also. So identification of and preventive strategies are required to limit complications.

Keywords: Beau's Lines, Hand Foot Mouth Disease, Nail, Onychomadesis, Children

1. Background

Hand-foot-mouth disease (HFMD) is common, but nail changes have not been well described. We described nail changes in HFMD.

2. Methods

Nail changes observed following HFMD in two outpatient clinics were assessed over the period of two years.

3. Results

Here, we reported cases referring to two outpatient clinics over a period of 2 years. Out of 524 clinically diagnosed cases of HFMD, 40 children (7.6%) had nail changes following HFMD, 29 cases had onychomadesis, and 11 patients had beau's lines (Figure 1 and Table 1). The median age of the subjects was 36 (15 - 126) months, and a male preponderance was observed (23:17). Out of 40 cases, 18 cases were identified retrospectively by their records and history, and the rest 22 cases were identified in the follow-up for HFMD. The onset of nail changes was 32.7 $\pm$ 52 days (range 22 - 42 days) after the onset of fever, according to the reports by caregivers and most cases recovered completely after 3 - 4 months. The number of patients showed a decrease compared to the previous year. Most cases were given symptomatic treatment and assurance while few of them required antibiotics and antifungal treatment due to the suspicion of secondary infection.

4. Discussion

Most children with HFMD had self-limiting clinical signs with a short incubation period of 3 - 6 days (1). The main clinical features were erythematous, papulovesicular rash over palms, soles, buttocks, knees, elbows, oral mucosa with or without pruritus, and pain (2). The disease began with a fever, sore throat, cough, malaise, and a decrease in appetite. After these symptoms, the rash was developed in the mouth, palms, soles, sometimes on buttocks and genitals as a papule, blisters, and later progressed to an ulcer.

Nail and cutaneous changes appear after healing HFMD. Onychomadesis is a condition without any inflammation (3). It causes separation of the nail plate from nail matrix with or without further falling of nails. The exact etiology for this occurrence is not known; however, it may be due to viral infections that affect the nail growth temporarily, and as a child is recovered from the illness, he may be recovered completely without residual changes. Nail changes are also seen in other conditions, like Kawasaki disease, measles, periungual dermatitis, traumatic nails, epidermolysis bullosa, and also after the use of certain drugs. Chiu et al. (4) reported that the major cause of onychomadesis is the damage of nail matrix by certain novel and virulent viruses, mostly coxsackievirus (CV) A6, and direct injury by HFMD to nail matrix was rated as a minor cause. Osterback et al. (cited in Chiu et al.) found CVA6 in nails of a case with onychomadesis after HFMD. They concluded that onychomadesis was caused due to damage of

Table 1. Characteristics of Children with Hand Foot-Mouth Disease (HFMD) with Nail Changes

Case Number	Age, mo	Sex	Latency, d	Clinical Findings	Onset of Nail Changes (Month, Year)	Treatment
1	23	Female	27	Onychomadesis	Jan 2019	Symptomatic
2	36	Male	30	Onychomadesis	Jan 2019	Symptomatic
3	28	Male	29	Onychomadesis	Feb 2019	Symptomatic
4	36	Female	28	Onychomadesis	Mar 2019	Symptomatic
5	16	Male	33	Onychomadesis	Apr 2019	Symptomatic
6	20	Male	32	Onychomadesis	May 2019	Symptomatic
7	48	Male	29	Onychomadesis	May 2019	Symptomatic
8	54	Male	23	Onychomadesis	Jun 2019	Symptomatic
9	42	Female	40	Onychomadesis	Jun 2019	Antibiotics
10	36	Male	30	Beau's lines	Jul 2019	Symptomatic
11	24	Male	33	Onychomadesis	Jul 2019	Symptomatic
12	18	Female	36	Onychomadesis	Jul 2019	Symptomatic
13	84	Female	22	Beau's lines	Aug 2019	Symptomatic
14	126	Male	28	Beau's lines	Aug 2019	Symptomatic
15	96	Male	33	Onychomadesis	Sep 2019	Symptomatic
16	90	Female	31	Onychomadesis	Sep 2019	Symptomatic
17	60	Male	41	Onychomadesis	Sep 2019	Antifungal
18	16	Female	38	Beau's lines	Sep 2019	Symptomatic
19	18	Male	35	Onychomadesis	Sep 2019	Symptomatic
20	72	Female	37	Onychomadesis	Sep 2019	Symptomatic
21	48	Male	42	Onychomadesis	Sep 2019	Symptomatic
22	36	Male	35	Onychomadesis	Oct 2019	Symptomatic
23	24	Female	33	Beau's lines	Oct 2019	Symptomatic
24	36	Female	22	Onychomadesis	Oct 2019	Symptomatic
25	18	Male	35	Onychomadesis	Oct 2019	Symptomatic
26	30	Female	40	Beau's lines	Oct 2019	Symptomatic
27	42	Male	35	Beau's lines	Oct 2019	Symptomatic
28	15	Female	28	Onychomadesis	Oct 2019	Symptomatic
29	32	Female	42	Beau's lines	Oct 2019	Antifungal
30	48	Male	35	Onychomadesis	Oct 2019	Symptomatic
31	60	Female	30	Onychomadesis	Oct 2019	Symptomatic
32	36	Male	35	Onychomadesis	Nov 2019	Symptomatic
33	30	Female	28	Beau's lines	Nov 2019	Symptomatic
34	24	Male	30	Onychomadesis	Nov 2019	Symptomatic
35	36	Male	42	Onychomadesis	Sep,2020	Symptomatic
36	18	Female	34	Onychomadesis	Oct 2020	Symptomatic
37	30	Male	35	Beau's lines	Oct 2020	Symptomatic
38	48	Female	30	Onychomadesis	Oct 2020	Symptomatic
39	60	Male	32	Beau's lines	Oct 2020	Symptomatic
40	30	Male	30	Onychomadesis	Nov 2020	Symptomatic

the nail matrix by the replication of CVA6 (4). In this study, we observed nail changes in 7.6% of children of outpatient clinics diagnosed clinically as cases of HFMD. Nag et al. (5) followed up patients with HFMD and found nail changes in one-third of cases. Clementz and Mancini (6) noticed temporal association of nail changes following HFMD. In 2020, fewer cases were observed than the previous year, which may be due to the closure of schools; thus, parents were more engaged about the hygiene of their children. Moreover, in spite of a large number of HFMD cases and related complications, currently, neither treatment nor vaccination is available. During the COVID-19 pandemic, the number of RT-PCR apparatus increased; thus, the exact etiological diagnosis can be made. Also, it is necessary to develop preventive strategies, including the development of vaccines for the HFMD to avoid dreaded complications in

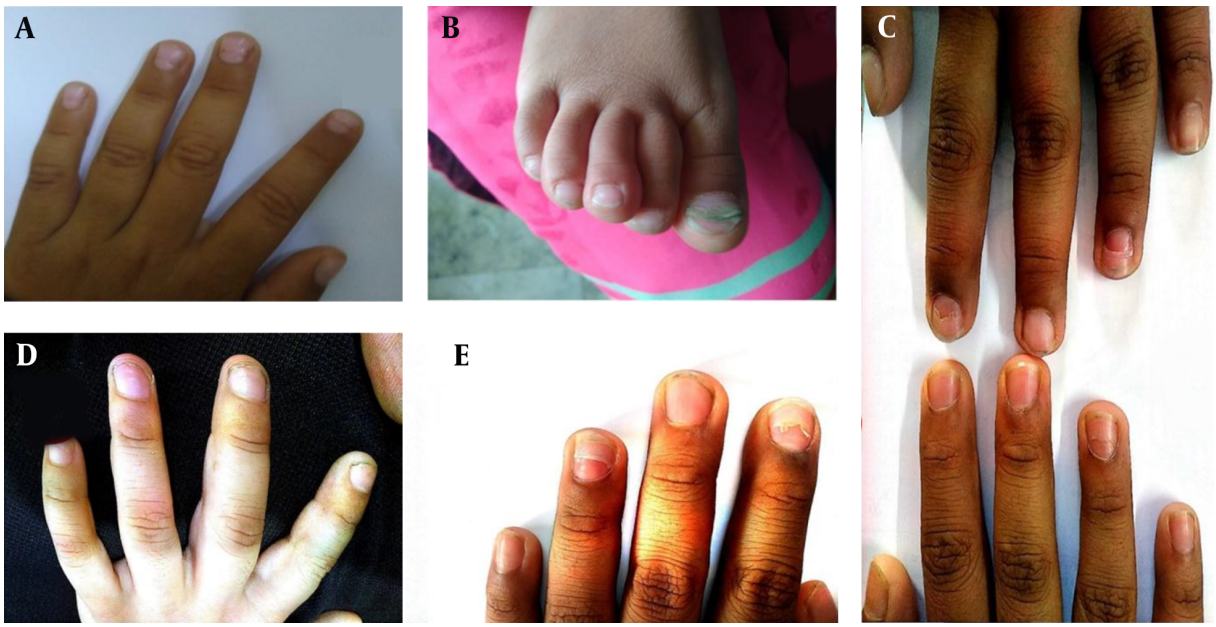

Figure 1. Nail changes following Hand foot-mouth disease (HFMD). A, A 15-month-old female with right upper limb nails showing onychomadesis and Beau's lines; B, An 18-month-old male with great toenail with onychomadesis; C, A 54-month-old male with onychomadesis in both upper limb nails; D, A 24- month-old female with nail plate break in upper limb; E, A 60-month-old male with onychomadesis.

children. Our study had some limitations. We assessed outpatient cases only, and the diagnosis was based on clinical findings, and the etiological agent was not isolated.

Conclusion: It can be concluded that physicians should be familiarized with HFMD and related complications to avoid unnecessary treatment of this condition as fungal or bacterial infections, and parents can be counseled accordingly.

Footnotes

Authors' Contribution: RC gave the clinical concept for this paper and was the overall guarantor. RC and VA: involved in clinical care and procured patient details. VA and SG drafted the initial manuscript, and all authors were involved in the revision and final drafting. RC and SG Critical revision.

Conflict of Interests: The authors declared no conflict of interest.

Funding/Support: This study was not supported by any organization.

Informed Consent: Written informed consent was obtained.

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