

## Four Cases of Onychomadesis after Hand-Foot-Mouth Disease

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Dear Editor:

Hand-foot-mouth disease (HFMD) is a common illness of children, characterized by fever and vesicular eruptions on the hands, feet, and mouth. Variable strains of viruses are known to be related, such as coxsackievirus A5, A6, A7, A9, A10, A16 (most common), B1, B2, B3, B5; echo-

viruses E3, E4, E9; and enterovirus 71<sup>1,2</sup>. Onychomadesis is defined as proximal nail plate separation from the nail matrix and nail bed caused by a temporary arrest in nail matrix activity, and may present as a Beau's line. We report on four Korean children who developed onychomadesis about 4 weeks after HFMD. The children pre-



**Fig. 1.** (A) Three-year-old boy with onychomadesis on the left middle, right index, and right ring fingernails. (B) Four-year-old girl with prominent Beau's lines on the left index and middle fingernails. (C) Third patient with onychomadesis on the left index fingernail. (D) Eighteen-month-old girl with onychomadesis on both toenails.

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**Table 1.** Characteristics of cases of onychomadesis after hand-foot-mouth disease

Case	Sex/age	Site	Onset	Clinical findings	Treatment
1	Male/3 years	R2, 4F, L3F	November	Onychomadesis	Antibacterial ointment
2	Female/4 years	L2, 3F	July	Beau's line	Observation
3	Male/19 months	L2F	October	Onychomadesis	Observation
4	Female/18 months	R1T, L1T	September	Onychomadesis	Observation

sented with transverse Beau's line or onychomadesis on the fingernails or toenails (Fig. 1). They all had HFMD about a month ago, and their information is briefly summarized in Table 1. All patients had no history of trauma and periungual dermatitis, and the affected nails were not of the fingers involved in HFMD. Some were given antibiotic ointment, whereas spontaneous regression was expected in others. The affected nails eventually shed completely without deformity in the new nails. Conditions that can cause onychomadesis include severe systemic diseases, nutritional deficiencies, trauma, periungual dermatitis, chemotherapy, fever, drug ingestion, and infection<sup>1</sup>. Nail matrix arrest with fever, infection, systemic disease, or drug exposure can be explained by inflammation in the periungual and matrix regions, inhibition of cellular proliferation, alteration in the quality of manufactured nail plate, and nerve injury or dysfunction<sup>2</sup>. The mechanism of onychomadesis after HFMD is not fully understood. However, viral infection is responsible for onychomadesis, as a temporal latency exists between HFMD and onychomadesis. Bettoli et al.<sup>3</sup> reported that inflammation secondary to viral infection around the nail matrix may be induced directly by viruses or indirectly by virus-specific immunocomplexes and consequent distal embolism, and Cabrerizo et al.<sup>4</sup> suggested that virus replication directly damage the nail matrix, based on the presence of coxsackievirus 6 in shed nails. Because fingernails with onychomadesis are not always of the fingers affected by HFMD, as in our cases, an indirect effect of viral infection on the nail matrix is more plausible. Onychomadesis can also occur on toenails; however, it is less frequent even when vesicles were present on the feet previously. Whether this is due to less frequent detection or a different mechanism is not known. As previously

mentioned, many different types of viruses are known to be associated. Furthermore, more than one viral strain may be involved in nail matrix arrest<sup>1</sup>. In reality, onychomadesis cases after HFMD are underestimated because onychomadesis spontaneously regresses, and the interval between HFMD and onychomadesis is about a month. In all cases, the onset of onychomadesis was about a month or two later than the peak prevalence of HFMD (May-August 2013)<sup>5</sup>. By reporting these cases for the first time in Korea, we emphasize the importance of recognizing the association between HFMD and onychomadesis especially when children with onychomadesis present a month after an HFMD outbreak, to avoid unnecessary overtreatment and to reassure the patient's parents.

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