


Onychomadesis as a Rare Complication of Hand, Foot, and Mouth Disease: Case Report

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ABSTRACT

Introduction: Onychomadesis is a rare nail disorder characterized by the separation of the nail plate from the nail matrix, which may result in nail shedding. It has been reported as a late complication of hand, foot, and mouth disease (HFMD), a common viral infection in children that is usually self-limited but may present with various complications. **Case:** A 4-year-old boy had developed whitish transverse lines on his fingernails and toenails, followed by separation of the nail from the nail matrix. Two months prior to the nail changes, the patient experienced fever accompanied by papulovesicular rashes around the mouth, hands, and feet, as well as aphthous lesions in the oral cavity consistent with HFMD infection. At the time of the nail involvement, there was no pain, inflammation, or signs of secondary infection. **Discussion:** Based on the clinical history and physical findings, a diagnosis of onychomadesis as a late complication of HFMD was established. Onychomadesis is known to occur weeks to months after HFMD and is generally self-limited without the need for specific therapy. **Conclusion:** Onychomadesis may occur as a late complication of HFMD in children. The condition is benign, does not require special treatment, and is expected to resolve completely within 6 weeks.

Keywords: Case report, hand, foot and mouth disease, HFMD, onychomadesis.

ABSTRAK

Pendahuluan: Onikomadesis merupakan kelainan kuku yang jarang terjadi, ditandai dengan terpisahnya lempeng kuku dari matriks kuku, sehingga dapat menyebabkan kerontokan kuku. Kondisi ini telah dilaporkan sebagai komplikasi lanjut penyakit tangan, kaki, dan mulut (*hand, foot, and mouth disease*/HFMD), yaitu infeksi virus yang umum terjadi pada anak dan biasanya bersifat *self-limited*, namun dapat disertai berbagai komplikasi**. Kasus:** Seorang anak laki-laki berusia 4 tahun mengalami munculnya garis-garis transversal berwarna keputihan pada kuku jari tangan dan kaki, yang kemudian diikuti dengan terlepasnya kuku dari matriks kuku. Dua bulan sebelum terjadinya perubahan kuku, pasien mengalami demam yang disertai ruam papulovesikuler di sekitar mulut, tangan, dan kaki, serta lesi aftosa di rongga mulut yang sesuai dengan gambaran klinis HFMD. Pada saat keterlibatan kuku terjadi, tidak ditemukan nyeri, tanda peradangan, ataupun tanda infeksi sekunder. **Pembahasan:** Berdasarkan riwayat klinis dan temuan pemeriksaan fisik, ditegakkan diagnosis onikomadesis sebagai komplikasi lanjut HFMD. Onikomadesis diketahui dapat muncul beberapa minggu hingga beberapa bulan setelah infeksi HFMD dan umumnya bersifat *self-limited* tanpa memerlukan terapi khusus. **Kesimpulan:** Onikomadesis dapat terjadi sebagai komplikasi lanjut HFMD pada anak. Kondisi ini bersifat jinak, tidak memerlukan pengobatan khusus, dan diharapkan dapat mengalami perbaikan serta resolusi lengkap dalam waktu 6 minggu. **Riana Suwarni, Anjar Nuryanto. Onikomadesis sebagai Komplikasi Penyakit Tangan, Kaki, dan Mulut: Laporan Kasus.**

Kata Kunci: Laporan kasus, penyakit tangan, kaki, dan mulut, HFMD, onikomadesis.

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INTRODUCTION

Hand, foot, and mouth disease (HFMD) is an infectious disease characterized by fever and vesicular rash on the hands and feet.[1] This disease spreads worldwide, and the prevalence is higher in tropical and subtropical areas, especially in Southeast Asia.[2] Based on the Ministry of Health data, 6,500 HFMD cases were found in Indonesia from January to March 2024.[2] Hand, foot, and mouth disease generally has mild symptoms and is self-limited, but in rare cases, HFMD can cause neurological and cardiopulmonary complications with a reported 0.06%–0.11% case fatality rate in the United States.[3] Several cases of onychomadesis as rare complications of HFMD have also been reported.[4,5]

Onychomadesis is characterized by the separation of the proximal nail plate from the

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matrix with continued attachment to the distal nail bed and often, but not always, eventual complete detachment of the nail from the nail bed.[6] Onychomadesis is often idiopathic, but can also be associated with nail trauma, autoimmune diseases, systemic diseases, drugs, and various infections such as HFMD.[6,7]

CASE

A 4-year-old boy with no significant medical or surgical history came to Puskesmas Noyan with a fever for 1 day, followed by the appearance of some rashes on both hands and feet and around the mouth, accompanied by cough and pain in swallowing. The patient's schoolmate had a history of fever with the same rashes. The patient has been fully immunized.

At physical examination, the patient was conscious, pulse rate 100 x/minute, respiratory rate 30 x/minute, temperature was 39°C, and oxygen saturation was 98%. Nutritional status was within normal limits. No abnormalities on examination of the lungs. Rashes of erythematous papules and vesicles without exudates were found on the arms, palms, legs, and soles (**Figure 1**). There was aphthous palate and papules around the mouth (**Figure 2**). The patient was diagnosed with HFMD and received ibuprofen syrup 100 mg 3 times a day for 3 days. After 1 week, the patient's clinical condition improved. The rashes on both hands and feet faded and peeled, and the aphthae disappeared.

Two months later, white spots appeared at the base of the fingernails and toenails, followed by nail shedding (**Figure 3**). The patient did not have a fever. No pain, redness, or exudation around the nails. The overall physical examination was within normal limits. With a history of previous HFMD infection, the patient was diagnosed with onychomadesis as a late complication of HFMD. Because it is a self-limited disease, we do not provide therapy. We educated the parents that onychomadesis will improve in 6 weeks. We obtained written informed consent from the patient's parents to publish this case report and related images.

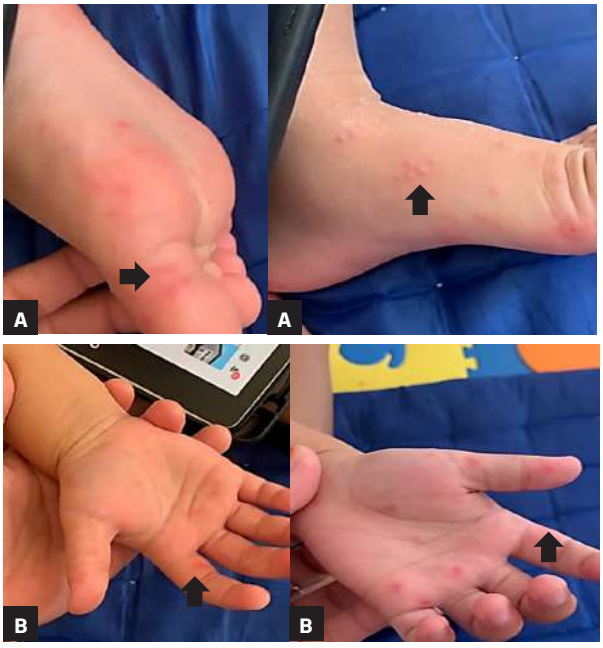

Photo documentation by Riana Suwarni.

Figure 1. (A) cluster of erythematous papulovesicular eruptions over the feet; (B) Erythematous papulovesicular eruptions on the palm.

Photo documentation by Riana Suwarni.

Figure 2. (A) Erythematous papule eruptions around the mouth; (B) Aphthous on the palate.

Photo documentation by Riana Suwarni.

Figure 3. Onychomadesis in both feet and hands 2 months post HFMD (arrows).


DISCUSSION

Hand, foot, and mouth disease (HFMD) is caused by Human Enterovirus species A (HEV-A) belonging to the *Picornaviridae* family. The common serotypes are Coxsackievirus A16 (CA16) and Enterovirus 71 (EV71).[8,9] Other HEV-A serotypes such as Coxsackievirus A6 and Coxsackievirus A10 are also associated with HFMD and herpangina. All viruses cause mild symptoms in children. However, the EV71 virus has been associated with a potentially fatal neurological disease with large outbreaks in the Asia Pacific region over the past decade.[10] Transmission occurs through fecal-oral, oral-oral, and droplet contact. Humans are the only carriers of the HFMD virus. The most infectious phase occurs in the first week of illness, but the active virus can survive in the feces for more than eight weeks. The incubation period ranges from 3 to 6 days.[3] The ratio of men to women was approximately 1.64 : 1.[11]

The clinical feature of HFMD begins with a short, mild fever followed by lesions in the mouth and skin. The skin lesions are papulovesicular on an erythematous skin base or maculopapular without vesicles, especially on both hands and feet.[12] Vesicles in HFMD are similar to vesicles in varicella, but are more elongated and oval. Oral lesions are vesicles that rapidly become multiple small superficial ulcerations with an erythematous halo. These ulcers are similar to aphthous ulcers, usually seen on the palate, tongue, buccal mucosa, lips, and gums.

Hand, foot, and mouth disease is a mild disease; the main problem is dehydration related to inadequate fluid intake due to odynophagia.[13] Some cases have fatal neurological and cardiological complications. Onychomadesis (nail shedding) and Beau's lines have also been reported as late complications of HFMD.[4,7,13] The first case is a seven-year-old boy with fingernail loss 3 weeks after recovery from HFMD.[4] The second case is a three-year-old boy who had Beau lines on almost all of his nails 14 days after HFMD, while the third case was a seven-year-old boy who had nail loss on the third and fourth fingers of his right hand 10 days after HFMD.[14] The last case was a seven-year-old boy with Beau lines and nail loss on the index and middle fingers of both hands, 5 weeks after HFMD.[5] (**Table**).

Onychomadesis and Beau's line are nail dystrophies caused by a slowdown or temporary cessation of nail growth from the nail matrix. Beau's line is a white transverse line caused by a temporary slowdown of nail matrix growth, onychomadesis is a complete separation of the nail from the proximal nail bed due to the cessation of nail plate growth for 2–3 weeks. These two conditions can occur separately or simultaneously.[4,5,15] Causes include nail trauma, systemic disease, autoimmune disease, idiopathic, drugs, and various infections. One of the most common infections is HFMD.[16] These nail changes are observed between 1–2 months after the onset of HFMD. Usually, around 4 nails are affected.[16] The changes often occur simultaneously and persist for 1–8 weeks. It can occur in children and adults.[1] In our case, nail changes occurred 2 months after HFMD infection and affected 8 nails of the hands and feet.

The mechanism of transient inhibition of nail matrix proliferation in onychomadesis following HMFD infection is still unknown. It has been hypothesized that onychomadesis occurs due to severe systemic effects of HFMD infection. Second, direct injury to the nail matrix from HFMD skin lesions, such as blisters around the nails. The third hypothesis is that a specific new variant of human enterovirus (HEV) causes nail matrix dysfunction, mainly caused by CVA6.[1,16] The fourth hypothesis is because CVA6 was found in the nail samples, nail matrix damage was suspected due to the effects of CVA6 replication.[17] The other mechanism is temporary arrest of the nail matrix growth due to inflammation caused by viruses, and consequently causes onychomadesis.[18]

Chiu, *et al*., found that the nail affected by onychomadesis did not correspond to the locations of papulovesicular lesions in the acute phase, so they do not support the hypothesis that onychomadesis is caused by direct injury to the nail matrix due to HFMD skin lesions.[16] In 2008, in Finland, there were outbreaks of HFMD accompanied by onychomadesis with CVA6 identified from shed nails. It supports the hypothesis that a new virulent virus may damage the nail matrix and cause onychomadesis. The incidence of onychomadesis after CVA6 infection is around 37% compared to 5% after other virus strains.[16]

Nail changes are usually self-limited and resolve spontaneously in all patients.[19] So

Table. Onychomadesis case reports.

Author	Patient	Manifestation	Physical Examination	Diagnosis	Management	Outcome
Gan and Zhang. [4]	7-year-old boy	Nail changes in 3 weeks after HFMD	• Multiple fingernails and toenails had shed completely or partially. • Beau lines, horizontal grooves running across the nail plates.	Onychomadesis	No treatment	Complete resolution
Xavier and Junior.[14]	3-year-old boy	Nail changes in 14 days after HFMD	• Beau lines in almost every nail	Onychomadesis	No treatment	Complete resolution
Xavier and Junior.[14]	7-year-old boy	Nail changes in 10 days after HFMD	• Detachment of the previous nail from the newer one in the third and fourth fingers of the right hand	Onychomadesis	No treatment	Complete resolution
Alghamdi Ali, *et al*.[5]	7-year-old boy	Nail changes in 5 weeks after HFMD	• Nail changes, onychomadesis, and Beau's lines in the thumb, index, and middle finger of both hands.	Onychomadesis	No treatment	Complete resolution


the main management is observation.[1,15] The observation is to ensure good nail matrix condition to facilitate new nail growth within 12 weeks or less.[20]

CONCLUSION

Hand, foot, and mouth disease can cause complications of nail shedding known as onychomadesis. No treatment is needed because it is self-limiting and will resolve within six weeks.

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