Onychomadesis: A Rare Skin Sign Occurring after Chickenpox

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Sir,

A severe damage of the nail matrix may inhibit the mitotic activity of keratinocytes, causing temporary arrest of the nail plate production. If the insult is short-lived, transverse ridging of the nail plate, known as Beau's lines, can be detected on the nail plate, while its splitting into two parts separated by a full-thickness fissure is the result of long-lasting severe damage of the nail matrix. As a consequence, the gradual detachment of the distal portion takes place: this process is called onychomadesis. In 2000, the association between hand-foot-and-mouth disease (HFMD) and onychomadesis was described for the first time.\[1\] Up-to-date, there are only few articles reporting the association between onychomadesis and chickenpox.

A healthy 9-year-old girl was referred to our clinic for a suspected acute onychodystrophy. The patient had a diffuse self-limiting vesicular rash 5 weeks before, in association with high fever. Likewise, the little sister had recently recovered from a similar episode that had been interpreted as chickenpox. Clinical examination showed bilateral onychomadesis involving the first and third left fingernails and a single Beau's line was present in the I, II, and III toenails [Figure 1a and b]. Serological testing for IgG and IgM antibodies against varicella zoster virus (VZV) and Enterovirus had been prescribed. About 8 weeks later, the patient returned for a clinical checkup, revealing the advancement of the Beau's lines between the proximal and distal portion of the nail plate in toenails and complete resolution after shedding on the fingernails [Figure 1c and d]. Serology yielded only positive results for anti-VZV IgG. The final diagnosis of onychomadesis following varicella infection had been postulated.

Onychomadesis recognizes several etiologies, ranged into five major categories: systemic, drug-related, mechanical, infectious, and idiopathic. Studies focused on HFMD suggest that the cessation of matrix's mitotic activity can either be determined by the direct cytopathic effect exerted by virus replication into the nail unit or results from virus-specific immunocomplexes embolizing to the extremities.\[2\] In the case of varicella, similar to HFMD, the presence of vesicles in the periungual tissue may produce a mechanical damage of the matrix. It is possible that the rise of hypothalamic set point, induced by high fever and increase of acute-phase proteins, lead to increased peripheral vasodilatation making the keratinocytes more vulnerable to internal and external noxae. The “all or nothing” trend of onychomadesis suggests that the nail matrix keratinocytes may have a different vulnerability threshold.

Moreover, the outbreaks of onychomadesis in HFMD had been facilitated by the low herd immunity against Coxsackievirus A6 and A10, considered as the major pathogens.\[3\] Chickenpox has a widespread rate of diffusion at early age and positive serum antibodies are detected in the majority of population. The high viral contagion and the recent advent of vaccination against VZV in many countries created a strong acquired immunity. This may prevent new viral strains to diffuse.

Figure 1: (a) Initial nail shedding of the 1st and 3rd left fingernails. (b) Beau's lines are detected on both left and right toenails. (c) Complete resolution of fingernails' onychomadesis after nail shedding. (d) Distal progression of Beau's lines on toenails.
among the population, decreasing the possibility to develop atypical clinical manifestations.

To the best of our knowledge, onychomadesis associated with VZV infection has been reported in two earlier case reports. Podder et al. described a case of a single fingernail’s onychomadesis starting about 5 weeks after chickenpox, in the absence of a positive history of trauma or drug intake.[4] Kocak and Kocak reported the case of two sisters presenting with onychomadesis of multiple fingernails after a macular-vesicular skin rash consistent with varicella infection, then confirmed by serology.[5]

In all cases, VZV infection had a regular clinical course and was not aggravated by any complications.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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