# Foot care for the reduction of nail hyperplasia of the lower limbs

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**Abstract**

We reported on care for nail lesions of seven patients with bedridden neurodegenerative disease. We sharpened the nails using an electric nail file and applied an antifungal agent after a bed bath of the foot. Care was provided safely without bleeding, and it was advantageous to use an electric nail file since it prevented dropout of the hyperplasia nail. Performing a bed bath improved the drying of the foot.

## Introduction

In the ward where we work, patients with myoneural intractable disease are hospitalized primarily. There are many patients who have difficulty in verbal communication due to tracheotomy and muscle weakness and rigidity. Because most patients are old and bedridden, full-scale assistance with everyday life is necessary. Nails thicken, and a pick loosens and bleeds, and there are many patients whose nails fall off spontaneously. The cause of nail thickening includes drying due to aging, ringworm, poor blood circulation, and physical pressure. We thought that onychomadesis could be prevented by sharpening a hyperplasic nail using an electric nail file thinly. For ringworm of the foot and the nail, it is necessary to conduct foot care positively in addition to treatment with antifungal agents [1]. For inpatients, a foot bath is difficult because of their systemic contractures and rigidity. We decided to perform a bed bath of the foot in substitution for a foot bath. The bed bath may prevent drying of the foot and improve poor blood circulation. In the present study, we considered whether these treatments could inhibit onychomadesis.

## Subjects and methods

The subjects were seven patients who agreed to the study and had nail thickening. We obtained the consent of the Ethical Review Board of the Tokushima National Hospital in 2015. We considered the privacy of the patients. When we announce it in a society or an article, we encode personal names to prevent identification. Also, we explained the benefits and disadvantages. We obtained written consent.

## Method

1) Electric nail file usage
Because the state of the nail varies according to individual patients, we determined the amount of filing required depending on the state of the nail and sharpened the surface of the dry nail. We minimized the range to reduce of the nail not to bleed. One nurse sharpened the nail of all the subjects to rule out the technical differences caused by the care provider.
2) The foot bed bath methods
We performed a bed bath on Monday, Thursday and Wednesday except for bathing days. Using a towel which we

warmed to 52 degrees, we covered the patient's foot from toe to heel. Furthermore, we wrapped the foot and towel in a plastic bag for two minutes. We took off the cover subsequently and wiped the foot with a dry towel. We then dried the foot well. We applied an antifungal agent, if necessary.

Evaluation method
We took pictures before the intervention, at the time of the intervention, and one and two months after the intervention. The distance between the nail and the camera was 5 centimeters. Based on the photograph, we evaluated it in original criteria.

## Results

The thickness of nails 1 millimeter or less made hyperplasia at the beginning of the study, and it was determined. Because the state worsened in patient A, we could not measure two months later. After having sharpened the nails with an electric nail file, the nails which thickened again were as follows. Patient A, 1 nail of 3 nails; patients B, C and E no nail; patient D, 7 nails of one of 10 nails, patient F, 1 nail of 10 nails; patient G, 3 nails of 10 nails. The nails which did not thicken were as follows.
Patient A, 2 nails of 3 nails; patient B, 4 nails of 4 nails; patient C, one of one of them; patient D, three of ten nails; patient E, one of one of them; patient F, nine of ten nails; patient G, 7 of 10 nails. There were no patients whose nail fell off during the study period. The dry state of the feet of all patients was good.

## Discussion

Kawano et al. have stated that an external drug is easy to soak after a foot bath and bathing [2]. Patients E, F and G used an antifungal agent before this study, but onychomadesis and nail thickening were found. However, nail thickening reduced and onychomadesis did not occur after they enrolled in this study. It was thought to be actually effective to apply an antifungal agent after the bed bath of the foot. However, some nails of patients A and D did not show improvement. Efficacy increases when medicine for external application is given after having sharpened the nail of the lesion [3]. The electric nail file which we used seemed to increase the penetration of the drug. Also, we were able to confirm the safety during use because there were no adverse events. The limitation of this study is that the study period was short. It is necessary to observe the state of the nail in the long term.

## References

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