CellMed
Orthocellular Medicine and Pharmaceutical Association

Case Report

세포교정영양요법(OCNT)을 이용한 무좀 개선 사례

정지영 약사
충청북도 음성군 금왕읍 무극로 213 중앙약국

A Case Report of the Improvement of Onychomycosis Using Ortho-Cellular Nutrition Therapy (OCNT)

Pharmacist, Jiyeong Jeong
Joongang Pharmacy, 213, Mugeuk-ro, Geumwang-eup, Eumseong-gun,
Chungcheongbuk-do, Republic of Korea

ABSTRACT

Objective: Onychomycosis, also known as nail fungus, is caused by yeast, dermatophytes, and non-dermatophyte molds. Factors contributing to infection include high humidity, wearing poorly ventilated shoes, and repeated trauma to the nails. Infection typically begins in the subungual space beneath the nail plate. Clinically, onychomycosis presents as whitening changes in the nails, and its incidence increases with age. Common diagnostic methods include microscopic examination, fungal culture, and nail biopsy.

Case Report: The patient in this case study is a woman in her 50s who, in 2022, developed linear onychomycosis lesions on her toenail, which subsequently spread across the entire nail. Ortho-Cellular Nutrition Therapy (OCNT), consisting of methylsulfonylmethane, tromethamine, and sunflower seed oil, was administered for one month. Following treatment, the lesions diminished, and the affected nail was shed. One year after initiating OCNT, a significant improvement in the fungal infection was observed.

Conclusion: The OCNT administered to the patient in this case study resulted in a clear improvement in onychomycosis, with complete resolution of the lesions. Although this therapy was tailored to a single patient and may not be generalizable to all cases, the objective symptom improvement and positive impact on quality of life make this case meaningful.

Keywords Ortho-Cellular Nutrition Therapy (OCNT), onychomycosis, fungus, MSM, tromethamine, sunflower seed oil

Introduction

Onychomycosis, also known as nail fungus, is a common nail disorder that affects both fingernails and toenails. It is caused by yeasts, dermatophytes, and non-dermatophyte molds. Globally, the most common causative dermatophytes include *Trichophyton rubrum*, *Trichophyton mentagrophytes*, and *Epidermophyton floccosum*. Among yeasts, the *Candida* genus is most frequently identified. Contributing factors to infection include high humidity, wearing poorly ventilated shoes, repeated nail trauma, genetic predisposition, diabetes, and immunosuppressive conditions.[1]

Onychomycosis typically begins with infections in the subungual space, the tissue beneath the nail plate. Nail fungus is broadly classified into two types based on the infection site: distal subungual onychomycosis, which starts at the nail tip, and proximal subungual onychomycosis, which invades through the proximal nail fold. Infection generally originates from the surrounding skin, most commonly spreading from tinea pedis (athlete's foot) and beginning at the distal lateral edge of the nail. Clinically, the nails exhibit whitening changes, which require differential diagnosis, as they may also indicate HIV infection or other immunosuppressive conditions.[2]

The prevalence of onychomycosis is reported to be approximately 2–3% of the general population in the United States and about 13% among men in Finland. The incidence of this condition increases with age, with around 30% of patients being elderly individuals aged 60 and above. However, onychomycosis can also occur in children, often due to wearing closed shoes. Commonly used diagnostic methods include microscopic examination using potassium hydroxide (KOH) preparation, fungal culture, and nail biopsy with Periodic Acid–Schiff (PAS) staining.[3]

*Correspondence: Jiyeong Jeong
E-mail: hanmac_zzang@hanmail.net
Received Jun 27, 2025; **Revised** Jun 27, 2025; **Accepted** Jun 30, 2025, 2025; **Published** Jun 30, 2025
doi: http://dx.doi.org/10.5667/CellMed.spc.129

† This report has been translated and edited by the CellMed editor-in-chief, Prof. Beom-Jin Lee.

Before starting treatment, several factors must be considered This includes the type of causative fungus, the patient's antifungal susceptibility, underlying conditions, age, and disease severity. Generally, treatment of onychomycosis of the fingernails and toenails involves several months of oral antifungal therapy. The duration depends on drug resistance, the occurrence of side effects, and whether a complete cure for the infection is achieved. Currently, the primary systemic antifungal agents used for treating onychomycosis are allylamines and azoles. These medications can be administered continuously or intermittently, and their effectiveness is influenced by patient adherence to the treatment regimen.[4]

The patient in this case study developed linear onychomycosis lesions on her toenail in 2022, which gradually spread inward and across the entire nail, causing discomfort. Accordingly, Ortho-Cellular Nutrition Therapy (OCNT) was applied, and nutrients were administered continuously for one month. One year after starting OCNT, a significant improvement in the nail fungus was observed. With the patient's consent, this case study is reported.

Case Study

1. Subject

This case study involved a patient with toenail onychomycosis.

1) Name: Jung OO (54 years old / F)
2) Diagnosis: Toenail onychomycosis
3) Date of onset: January 2022
4) Treatment period: July 25, 2024 – August 25, 2024
5) Chief complaints: Toenail fungus on the big toe
6) Medical history: Thymoma, myasthenia gravis
7) Social history: Overwork, stress
8) Family medical history: None
9) Current illness and medications: None

2. Method

Sulfoplex Cream Mild (applied two times a day, in the morning and HS)

This topical agent was applied for approximately one month.

Results

The patient applied the prescribed OCNT regularly to the affected area for approximately one month following the OCNT prescription, starting in July 2024. As a result, the linear lesions on the toenail decreased, and holes began to form. From September onward, the holes gradually enlarged, and after the upper portion of the nail shed, new nail growth led to significant improvement in the fungal symptoms. The patient's nail changes over the course of about one year are shown in Fig. 1.

Discussion

The patient in this case study is a woman in her 50s who reported the appearance of linear lesions on her toenail beginning in 2022. She stated that she usually did not apply medication regularly. When the lesions began to spread across the entire big toenail, she visited a pharmacy and received a prescription for OCNT. In this case study, the prolonged history of fungal infection, along with the overall skin condition and pH imbalance of the affected area, were considered major contributing factors. Accordingly, OCNT was prescribed to improve the entire toenail and provide moisturization.

Onychomycosis is an infectious disease caused by fungi that invade the skin and induce inflammation. Due to the spore-forming nature of fungi, the infection can easily spread to multiple areas. Therefore, controlling inflammation to alleviate the patient's symptoms was considered a priority. The Sulfoplex Cream Mild prescribed to the patient contains methylsulfonylmethane (MSM). MSM is an organic sulfur

Fig. 1. Photographs of the patient's toenail change throughout OCNT treatment. (A) July 25, 2024; (B) August 11, 2024; (C) August 16, 2024; (D) September 8, 2024; (E) April 17, 2025; (F) May 12, 2025. These images show a reduction in lesions and growth of new toenails following OCNT.

compound commonly found in nature, present in various fruits, vegetables, and grains, and has been reported to have several beneficial effects on the human body. Notably, it exhibits anti-inflammatory properties; cell studies have demonstrated that MSM reduces the secretion of interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-α) and inhibits the nuclear translocation of NF-κB, thereby blocking inflammatory pathways.[5] Therefore, it was prescribed to alleviate the localized inflammatory response occurring on the big toenail.

Fungi generally thrive in moist environments and alkaline pH, while their growth rate is known to significantly decrease in acidic pH conditions.[6] Therefore, tromethamine was prescribed to help maintain the skin's slightly acidic pH. Tromethamine is an organic amine and proton acceptor, widely used for various purposes such as surfactant synthesis and biological buffering due to its multiple polar functional groups and alkalinity. It neutralizes acidic substances to maintain the skin surface's slightly acidic pH. According to the Cosmetic Ingredient Review (CIR) expert panel in the United States, tromethamine is considered a safe ingredient that functions as a pH regulator without harmful effects on the human body.[7] Therefore, tromethamine was used to maintain normal skin pH and inhibit fungal growth.

Finally, through the inclusion of sunflower seed oil in Sulfoplex Cream Mild, an overall improvement in the patient's toenail onychomycosis was targeted. The lipid composition of sunflower seed oil enhances the structure and function of the skin barrier by providing a physical protective layer against infectious pathogens, supplying essential fatty acids to the stratum corneum, and reducing epidermal inflammation through linoleic acid, thereby improving overall skin function. A study involving repetitive massage with sunflower seed oil on 500 newborns demonstrated that after one month, erythema, rash, and dryness decreased, and the formation of the skin's acidic protective barrier was rapidly promoted.[8] Therefore, the above prescription was given to promote structural and functional improvement of the patient's nails and epidermis.

The patient in this case study underwent OCNT for approximately one month starting in July 2024 and consistently applied the prescribed cream, resulting in a gradual reduction of abnormal nail lesions. In August, small holes were observed in the nail. As the damaged nail in those areas shed and new nail growth occurred, the symptoms of onychomycosis visibly improved. Although this case study was tailored to a single patient and thus has limitations in generalizing to all onychomycosis patients, it demonstrated clear improvement in nail fungus symptoms and had a positive impact on the patient's quality of life. Accordingly, this report is presented with the patient's consent.

References

1. Welsh O, Vera-Cabrera L, Welsh E. Onychomycosis. Clinics in dermatology. 2010;28(2):151-9.

2. Elewski BE, Charif MA. Prevalence of onychomycosis in patients attending a dermatology clinic in northeastern Ohio for other conditions. Archives of dermatology. 1997;133(9):1172-3.

3. Elewski BE. Onychomycosis: pathogenesis, diagnosis, and management. Clinical microbiology reviews. 1998;11(3):415-29.

4. Baran R, Hay RJ, Garduno JI. Review of antifungal therapy and the severity index for assessing onychomycosis: part I. Journal of Dermatological Treatment. 2008;19(2):72-81.

5. Kim YH, Kim DH, Lim H, Baek D-Y, Shin H-K, Kim J-K. The anti-inflammatory effects of methylsulfonylmethane on lipopolysaccharide-induced inflammatory responses in murine macrophages. Biological and Pharmaceutical Bulletin. 2009;32(4):651-6.

6. LÓPEZ-MALO A, Alzamora S, Argaiz A. Vanillin and pH synergistic effects on mold growth. Journal of food science. 1998;63(1):143-6.

7. Becker LC, Bergfeld WF, Belsito DV, Hill RA, Klaassen CD, Liebler DC, et al. Safety assessment of tromethamine, aminomethyl propanediol, and aminoethyl propanediol as used in cosmetics. International journal of toxicology. 2018;37(1_suppl):5S-18S.

8. Summers A, Visscher MO, Khatry SK, Sherchand JB, LeClerq SC, Katz J, et al. Impact of sunflower seed oil versus mustard seed oil on skin barrier function in newborns: a community-based, cluster-randomized trial. BMC pediatrics. 2019;19:1-12.