

# A Case of Onychomycosis with Nail Lichen Planus: The Importance of Supportive Examinations in Establishing a Diagnosis

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## Abstrak

**Latar Belakang:** Onikomikosis dan Lichen Planus Kuku (NLP) adalah dua kondisi yang menyebabkan kerusakan kuku dan terkadang dapat menunjukkan gejala klinis yang tumpang tindih, sehingga menyulitkan dalam mencapai diagnosis yang akurat. Beberapa pemeriksaan tambahan perlu dipertimbangkan untuk menghindari kesalahan diagnosis gangguan kuku. **Kasus:** Seorang pasien wanita berusia 64 tahun datang ke Klinik Dermatologi, Venereologi, dan Estetika di Rumah Sakit Umum Dr. M. Djamil Padang dengan keluhan penebalan dan pemutihan kuku yang progresif yang memengaruhi hampir semua kuku, kadang-kadang disertai rasa gatal, selama 6 bulan terakhir. Pasien sebelumnya telah didiagnosis menderita onikomikosis dan telah rutin mengonsumsi flukonazol 150 mg setiap minggu selama 6 bulan, tetapi tanpa perbaikan. Pemeriksaan fisik dalam batas normal. Pemeriksaan dermatologis dan onikoskopi mengungkapkan hiperkeratosis subungual, alur memanjang, onikotrofi, onikoskizia, trakionikia, onikolisis, perubahan warna kekuningan, melanonikia, dan leukonikia, dengan skor OSI yang menunjukkan keterlibatan parah dan skor NALSI 100/120. Pemeriksaan KOH menunjukkan adanya hifa, kultur jamur mengungkapkan *Aspergillus niger*, pewarnaan PAS mengkonfirmasi elemen jamur, sementara hasil biopsi konsisten dengan NLP. Pasien didiagnosis menderita onikomikosis dengan NLP bersamaan dan diobati dengan itrakonazol dosis tinggi 400 mg/hari selama satu minggu setiap bulan selama 2–3 bulan. Setelah selesai, pengobatan untuk NLP dimulai. **Diskusi:** Dalam kasus ini, tidak adanya pemeriksaan penunjang yang komprehensif, khususnya biopsi, awalnya menyebabkan diagnosis yang terbatas hanya pada onikomikosis, tanpa pengakuan adanya NLP yang menyertainya. Hal ini menyoroti pentingnya investigasi menyeluruh untuk memastikan diagnosis yang akurat dan tepat.

**Kata kunci :** *Aspergillus*, Onikomikosis, Nail Lichen Planus, skor OSI

## Abstract

**Background:** Onychomycosis and Nail Lichen Planus (NLP) are two conditions that cause nail damage and may sometimes present with overlapping clinical features, leading to difficulties in achieving an accurate diagnosis. Several ancillary examinations should be considered to avoid misdiagnosis of nail disorders. **Case:** A 64-year-old female patient presented to the Dermatology, Venereology, and Aesthetic Clinic at Dr. M. Djamil General Hospital Padang with complaints of progressive nail thickening and whitening affecting almost all nails, occasionally accompanied by itching, for the past 6 months. The patient had previously been diagnosed with onychomycosis and had regularly taken fluconazole 150 mg weekly for 6 months, but without improvement. Physical examination was within normal limits. Dermatological and onychoscopic examination revealed subungual hyperkeratosis, longitudinal ridging, onychotrophy, onychoschizia, trachyonychia, onycholysis, yellowish discoloration, melanonychia, and leukonychia, with an OSI score indicating severe involvement and a NALSI score of 100/120. KOH examination demonstrated the presence of hyphae, fungal culture revealed *Aspergillus niger*, PAS staining confirmed fungal elements, while biopsy results were consistent with NLP. The patient was diagnosed with onychomycosis with concomitant NLP and was treated with pulse

*itraconazole at a dose of 400 mg/day for one week each month for 2–3 months. Upon completion, treatment for NLP was initiated. **Discussion:** In this case, the absence of comprehensive ancillary examinations particularly biopsy, initially led to a diagnosis limited only to onychomycosis, without recognition of the coexisting NLP. This highlights the importance of thorough investigations to ensure an accurate and precise diagnosis.*

**Keywords :** *Aspergillus, Onychomycosis, Nail Lichen Planus, OSI score*

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## I. INTRODUCTION

Onychomycosis and Nail Lichen Planus (NLP) are two dermatological conditions affecting the nails that are often difficult to distinguish clinically. Onychomycosis is a fungal infection of the nail, most commonly caused by dermatophytes (80–90%), and may account for up to 30% of all superficial fungal infections and 50% of nail abnormalities.<sup>1</sup> This condition is more frequently observed in the elderly, immunocompromised patients (such as those with diabetes, HIV, or on immunosuppressive agents), and is influenced by lifestyle factors, recurrent nail trauma, and genetic predisposition.<sup>2</sup>

In contrast, Lichen Planus (LP) is a chronic inflammatory disease with a global prevalence of 0.5–1%, which may involve the skin, nails, hair, and oral mucosa. Nail involvement occurs in 10–15% of LP cases and is referred to as NLP.<sup>3</sup> Classic LP presents as purple, flat-topped papules, while NLP is characterized by clinical features such as *longitudinal ridging*, twenty-nail dystrophy, or idiopathic nail atrophy. Other manifestations include anonychia, onycholysis, subungual hyperkeratosis, trachyonychia, and pterygium.<sup>6</sup>

Clinically, onychomycosis is usually manifested by nail discoloration (yellow, white, or brown), onycholysis, and progressive nail fragility or destruction.<sup>4</sup> Additional findings include subungual hyperkeratosis, discoloration, and dermatophytoma, which may mimic the *longitudinal ridges* seen in NLP.<sup>5</sup> NLP, however, often presents with pterygium and anonychia as hallmark indicators. Nevertheless, widespread nail discoloration can resemble onychomycosis, making diagnosis challenging.<sup>9</sup>

The diagnosis of onychomycosis requires laboratory confirmation. A 20% KOH preparation has a sensitivity of 55.9–80% and a specificity of 95%.<sup>7</sup> Fungal culture remains the gold standard with a sensitivity of 23–84.6% and a specificity of 99%. Nail biopsy and Periodic Acid–Schiff (PAS) staining may also aid diagnosis, with sensitivity ranging from 81–

91.6% and specificity of 89%.<sup>8</sup> Meanwhile, the diagnosis of NLP can be made clinically, although histopathological examination via nail biopsy remains the gold standard, with characteristic findings including hypergranulosis, saw-toothed acanthosis, and a lichenoid pattern.<sup>10</sup>

In certain cases, NLP and onychomycosis may coexist. NLP disrupts the nail structure and its protective barrier, thereby increasing susceptibility to fungal infection. Therefore, although both diseases share overlapping clinical features, adjunctive diagnostic examinations remain essential to prevent misdiagnosis and to determine appropriate treatment.

## II. CASE DESCRIPTION

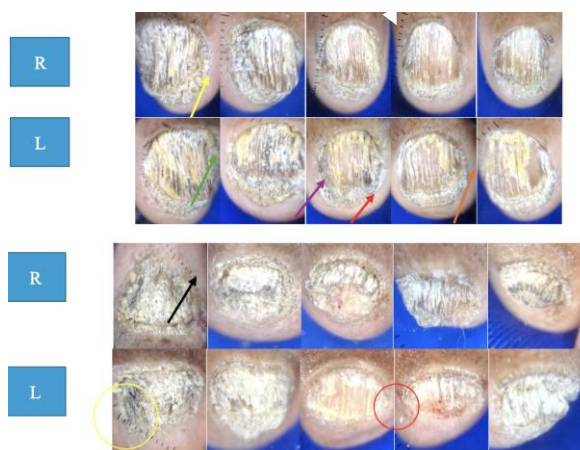
A 64-year-old Minang woman, working as a school janitor, presented to the Dermatology, Venereology, and Aesthetic Clinic of Dr. M. Djamil General Hospital Padang with the chief complaint of thickened, whitish, and ridged nails affecting almost all fingernails and toenails, sometimes accompanied by itching, for the past six months. She had previously worked as a waste management worker for more than ten years, with frequent exposure to damp environments and inadequate footwear, which may have predisposed her to nail disorders. She lives with her husband and one child in a modest house with limited family income. Psychosocially, she feels embarrassed and distressed about the condition of her nails, especially when in public places, which has negatively affected her quality of life. The patient had no history of diabetes mellitus, hypertension, liver disease, organ transplantation, or long-term use of immunosuppressive drugs. There was no family history of similar complaints. Her lifestyle is simple, with daily work performed without protective equipment, leading to frequent direct contact with soil, waste, and moist conditions. No significant history of nail trauma was reported.

Clinically, the patient appeared moderately ill with a normal nutritional status (body weight 46 kg, height 150 cm, BMI 20.4). Vital signs were within normal limits. Dermatological and

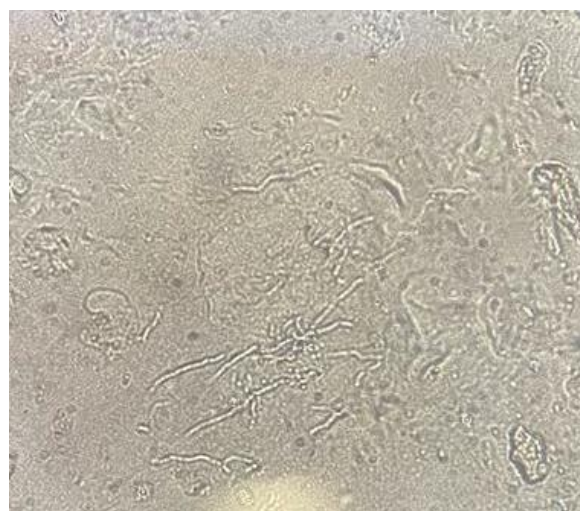
onychoscopic examination revealed onychoschizia, trachyonychia, longitudinal ridging, yellowish-brown discoloration, onychotrophy, onycholysis, subungual hyperkeratosis, melanonychia, and leukonychia. The Onychomycosis Severity Index (OSI) indicated a severe grade, and the Nail Lichen Planus Severity Index (NALSI) score was 100/120.



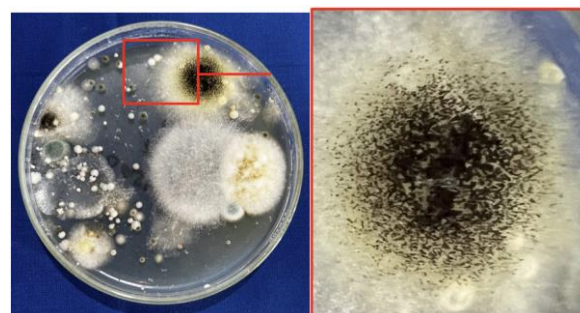
**FIGURE 1.** SUBUNGUAL HYPERKERATOSIS (YELLOW ARROW), LONGITUDINAL RIDGING (GREEN ARROW), ONYCHOTROPHY (RED ARROW), ONYCHOSCHIZIA (GREEN CIRCLE), TRACHYONYCHIA (WHITE ARROW), ONYCHOLYSIS (YELLOW CIRCLE), YELLOWISH-BROWN DISCOLORATION (ORANGE ARROW), MELANONYCHIA (BLUE ARROW), AND LEUKONYCHIA (BLACK ARROW).



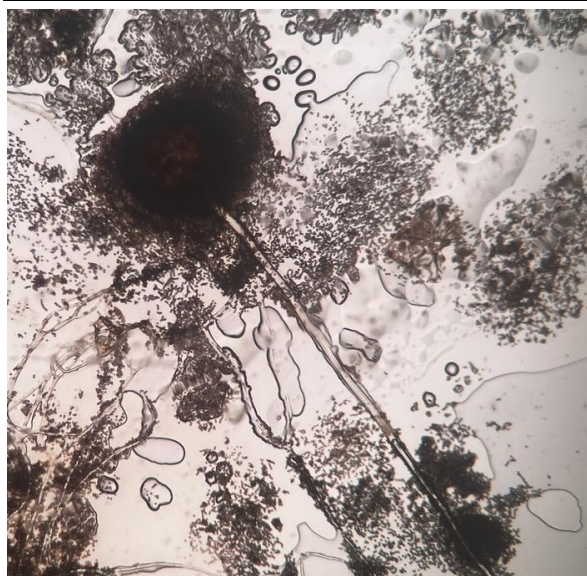
**FIGURE 2.** ONYCHOSCOPY OF THE FINGERNAILS (UPPER TWO IMAGES) AND TOENAILS (LOWER TWO IMAGES). FINDINGS INCLUDE SUBUNGUAL HYPERKERATOSIS (YELLOW ARROW), LONGITUDINAL RIDGING (GREEN ARROW), ONYCHOSCHIZIA (RED ARROW), TRACHYONYCHIA (WHITE ARROW), ONYCHOLYSIS (YELLOW CIRCLE), YELLOWISH DISCOLORATION (ORANGE ARROW), MELANONYCHIA (BLUE ARROW), LEUKONYCHIA (BLACK ARROW), AND SPLINTER HEMORRHAGES (RED CIRCLE). ANCILLARY EXAMINATIONS REVEALED A POSITIVE KOH TEST WITH HYPHAL ELEMENTS, FUNGAL CULTURE YIELDING ASPERGILLUS NIGER, AND PAS STAINING SHOWING FUNGAL STRUCTURES. NAIL BIOPSY DEMONSTRATED HISTOPATHOLOGICAL FEATURES CONSISTENT WITH NAIL LICHEN PLANUS. BASED ON THESE FINDINGS, THE DIAGNOSIS OF ONYCHOMYCOSIS DUE TO ASPERGILLUS NIGER CONCOMITANT WITH NAIL LICHEN PLANUS WAS ESTABLISHED.



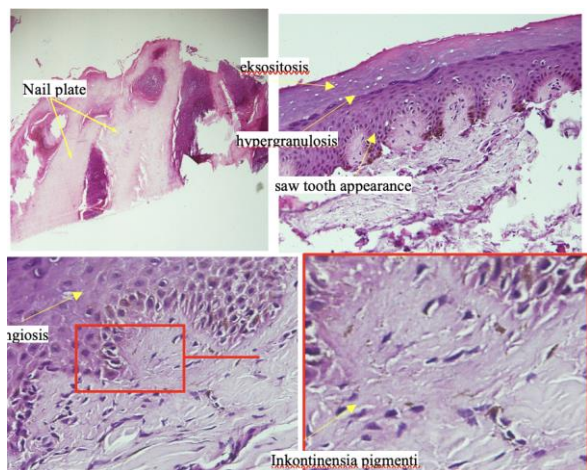
**FIGURE 3.** MICROSCOPIC EXAMINATION WITH KOH PREPARATION SHOWS SEPTATE HYPHAE (RED ARROW) AND BLASTOSPORES (YELLOW ARROW).



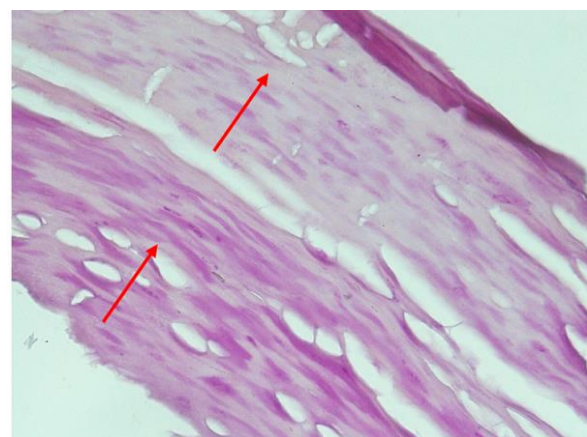
**FIGURE 4.** BLACK COLONIES WITH A VELVETY SURFACE ARE OBSERVED ON SABOURAUD DEXTROSE AGAR PLATE AFTER 3 DAYS OF INCUBATION AT 25 °C.



**FIGURE 5. MICROSCOPIC EXAMINATION OF THE CULTURE SHOWS ASPERGILLUS NIGER (MAGNIFICATION 40 × 10).**



**FIGURE 6. RESULTS OF HISTOPATHOLOGICAL EXAMINATION TAKEN FROM THE NAIL OF THE 3RD DIGIT OF THE LEFT HAND (H&E STAINING)**



**FIGURE 7. FUNGAL ELEMENTS VISIBLE (RED ARROWS) (MAGNIFICATION 40 X 10)**

### III. DISCUSSION

In certain cases of nail disorders, the clinical appearance of nail changes and damage may not be specific to a single disease. This may cause physicians to hesitate in making a diagnosis, thus requiring consideration of several supporting examinations to avoid misdiagnosis. In this patient, nail changes were found with clinical features resembling both onychomycosis and nail lichen planus (NLP). Onychoscopy is a non-invasive diagnostic tool that helps differentiate various nail diseases, improves diagnostic accuracy, guides prognosis, and reduces the need for unnecessary biopsies. Onychoscopy can help differentiate onychomycosis from NLP by observing the distinctive dermoscopic patterns of each condition. In onychomycosis, findings include onycholysis with jagged edges (100%), nail plate discoloration (100%), onychodystrophy (68.5%), periungual erythema (36.9%), and subungual hyperkeratosis (15%). In contrast, NLP shows dermoscopic features such as longitudinal ridging (63.6%), nail plate thinning (54.5%), longitudinal melanonychia (45.4%), Beau's lines (36.4%), pterygium (27.2%), and nail dystrophy (18.2%). Other studies have shown that the sensitivity of onychoscopy for onychomycosis can reach around 89.6%–97.9%, with specificity ranging between 66.7%–91.7%, depending on the observed patterns and the reference diagnostic method used.<sup>11</sup>

In this patient, subungual hyperkeratosis, longitudinal ridging, onychotrophy, onychoschizia, trachyonychia, onycholysis, and discoloration were observed. These clinical features may occur in both onychomycosis and NLP, but the distinguishing feature in this patient is the presence of twenty-nail dystrophy, which is more characteristic of NLP. However, this does not rule out the possibility of onychomycosis.<sup>12</sup> Differential diagnosis with nail psoriasis was also considered, as both conditions often share similar clinical features, such as discoloration, loss of nail transparency, brittle nails, and subungual hyperkeratosis. However, the most common feature of nail psoriasis, namely pitting, is rarely observed in onychomycosis. Onycholysis in

psoriasis often has a reddish-brown proximal border, consistent with the “salmon spot,” which is not seen in onychomycosis. Onychoscopy at the margin may also help differentiate nail psoriasis from onychomycosis, with nail psoriasis typically showing irregular and jagged proximal borders known as the “aurora borealis” sign. Histologically, nail psoriasis is characterized by the accumulation of neutrophils in the subungual hyperkeratosis, known as Munro’s microabscesses, often accompanied by increased parakeratosis.<sup>13</sup>

Supporting examinations required in this case include: repeat nail scraping with 20% KOH to identify fungal hyphae, spores, and yeast cells; fungal culture and microscopic examination of the culture to identify fungal species, provide information about fungal viability, and guide subsequent therapy; Periodic Acid-Schiff (PAS) staining to visualize hyphae, pseudohyphae, spores, and yeast; and nail biopsy to confirm the diagnosis of NLP.<sup>12</sup> The KOH test has a sensitivity of 55.9%–80% and a specificity of 95%. Culture has a sensitivity of 23%–84.6% (56%) and a specificity of 99%. Biopsy and PAS have a sensitivity of 81%–91.6% (84%) and a specificity of 89%. In this case, fungal culture identified *Aspergillus niger*, while PAS staining revealed fungal hyphae. This confirms a diagnosis of onychomycosis, since culture is the gold standard for onychomycosis. However, because the patient’s clinical presentation also indicated NLP, nail biopsy was warranted. Biopsy results showed hypergranulosis, saw-tooth appearance, and a lichenoid pattern, which are characteristic findings of NLP. Moreover, although culture is considered the gold standard for onychomycosis, it may yield up to 30% false-positive results, hence PAS staining was needed to confirm the fungal infection. In this patient, PAS confirmed the presence of fungal elements, supporting a final diagnosis of onychomycosis with nail lichen planus.<sup>14</sup>

In this case, it was suspected that the patient initially developed NLP, which subsequently predisposed the nails to fungal infection, leading to onychomycosis. This is supported by the patient’s initial complaint of rough and ridged

nails. The damage caused by NLP may make nails more vulnerable to fungal invasion.<sup>15</sup> Currently, there are no specific guidelines for the management of coexistent NLP and onychomycosis. Treatment must be carefully tailored, as the two conditions present conflicting therapeutic approaches. For instance, the use of corticosteroids or immunosuppressants in NLP may suppress the immune system and worsen fungal infection. Previous studies have suggested that immunosuppressive therapies such as systemic corticosteroids, methotrexate, cyclosporine, and biologic agents may increase the risk of onychomycosis in patients with nail psoriasis. However, literature on the role of immunosuppressants as a predisposing factor for fungal infections remains limited, requiring further studies.

In this patient, systemic and topical antifungal therapies remain essential for managing onychomycosis. Topical therapy is indicated for mild to moderate cases based on the Onychomycosis Severity Index (OSI), or when systemic therapy is contraindicated. Oral antifungal therapy is the mainstay for moderate to severe OSI cases, or when >50% of the nail or nail matrix is involved, although side effects must be closely monitored. Combination therapy (oral plus topical) is often recommended to improve effectiveness and reduce relapse. In this case, given the severe OSI, itraconazole pulse dosing may be considered.<sup>15</sup> For NLP, as in this case involving all twenty nails with a NALSI score of 100/120, extensive involvement necessitates systemic therapy. According to prior studies, first-line therapy is systemic corticosteroids. Commonly used regimens include oral prednisolone at an average dose of 40–80 mg per week, and intramuscular triamcinolone acetonide at 40 mg/mL monthly. Triamcinolone acetonide may also be given intralesionally, but when all twenty nails are involved, systemic (oral or intramuscular) administration is more practical than injecting each nail individually.<sup>16,17</sup>

Previous studies have reported that most patients (92.9%) experienced involvement of both fingernails and toenails, thus widespread

presentation is not unusual. Treatment in these studies included systemic corticosteroids and topical therapies, with outcomes varying greatly. NLP is recognized as a condition that is difficult to treat, often showing only minimal improvement. Even with systemic therapy, most patients experienced only limited improvement. In one report, approximately 66.7% of patients showed only minimal response despite receiving various therapies, including systemic corticosteroids.<sup>17,18</sup>

Another important aspect to note is the presence of dorsal pterygium, a classical but irreversible feature of NLP. This finding does not respond to any therapy, underscoring the importance of early diagnosis and timely intervention to prevent permanent damage. Thus, although first-line therapies are established, treatment success cannot be guaranteed, and management must account for the complexity and progressive nature of this disease.<sup>18</sup>

#### IV. CONCLUSION

Onychomycosis and nail polish removal can have overlapping clinical presentations, so a comprehensive examination is necessary to ensure a correct diagnosis. Onychoscopy, KOH, fungal culture, PAS, and nail biopsy are all available ancillary tests for nail disorders. These ancillary tests must be carefully selected based on each patient's clinical condition and indications to ensure an accurate diagnosis and appropriate management. In this case, the patient was initially diagnosed with onychomycosis due to the lack of a comprehensive ancillary examination, so it is important to always consider the use of relevant additional tests to ensure a correct diagnosis.

#### REFERENCES

- [1]. Widasmara D, Ajie AB, Rofiq A. Pemeriksaan dermoskopi untuk evaluasi morfologi kuku pada pasien onikomikosis. *Jurnal Dermatologi Indonesia*. 2024;26(157):1-10.
- [2]. Monod M, Mehul B. Recent findings in onychomycosis and their application for appropriate treatment. *J Fungi*. 2020;5(1):20.
- [3]. Mangold AR, Pittelkow MR. Lichenoid and Granulomatous Disorders. In: Kang S, Masayuki A, Bruckner A, Enk A, Margolis D,

- McMichael A, et al., editors. *Fitzpatrick's Dermatology* 9th Edition. McGraw Hill; 2019. p. 526-47
- [4]. Bongomin F, Batac CR, Richardson MD, Denning DW. A review of onychomycosis due to *Aspergillus* species. *Mycopathologia*. 2019;183(3):485-93.
- [5]. Minansal Y, Sabir M, Anggra A, Nasir M, Pratika M. Onychomycosis: a case report. *J Med Prof (MedPro)*. 2024;6(2):199-205.
- [6]. Gupta MK, Lipner SR. Review of Nail Lichen Planus: Epidemiology, Pathogenesis, Diagnosis, and Treatment. *Dermatol Clin*. 2021 Apr;39(2):221-230
- [7]. Minansal Y, Sabir M, Anggra A, Nasir M, Pratika M. Onychomycosis: A Case Report. *Med Prof*. 2024;6(2):199-202
- [8]. Widaty S, Oktarina C, Marissa M, Adawiyah R, Rozaliyani A, Kartika E, Tugiran M. Clinical and microbiological characteristics of onychomycosis in a tertiary hospital: a cross-sectional study. *Med J Indones*. 2024;33(1):17-23.
- [9]. Huang J and Shi W. Successful treatment of nail lichen planus with tofacitinib: a case report and review of the literature. *Front. Med*. 2023. 10:1301123.
- [10]. Singal A, Gaurav V, Kaur I. Clinical characteristics and management outcomes in isolated nail lichen planus: A retrospective case series. *Indian J Dermatol Venereol Leprol*. 2024;90:329-35
- [11]. Satasia M, Sutaria AH. Nail Whispers Revealing Dermatological and Systemic Secrets: An Analysis of Nail Disorders Associated With Diverse Dermatological and Systemic Conditions. *Cureus*. 2023. 11;15(9):e45007
- [12]. Perhimpunan Dokter Spesialis Kulit dan Kelamin Indonesia (PERDOSKI). *Panduan Praktik Klinis bagi Dokter Spesialis Dermatologi, Venereologi, dan Estetika Indonesia*. Jakarta: PERDOSKI; 2024. p. 259-64
- [13]. Haneke E. Nail Disorders. In: Kang S, Amagai M, Bruckner AL, Enk AH, Margolis DJ, McMichael AJ, Orringer JS, editors. *Fitzpatrick's Dermatology*. 9th ed. New York: McGraw-Hill; 2019. p. 1569-76
- [14]. Hwang JK, Grover C, Iorizzo M, Lebwohl MG, Piraccini BM, Rigopoulos DG, et al. Nail psoriasis and nail lichen planus: Updates on diagnosis and management. *J Am Acad Dermatol*. 2024;90(3):585-596
- [15]. Jiang R, Kim SR, Christensen SR, Zubek A. Isolated single or pauci-nail lichen planus, three cases. *JAAD Case Rep*. 2024;46:52-6. doi:10.1016/j.jdcr.2024.01.031

- [16]. Rusia K, Singh A, Madke B, Jawade S. The Coexistence of Trachyonychia and Mucocutaneous Lichen Planus: A Case Report. *Cureus*. 2023 Nov 6;15(11):e48415
- [17]. Gupta AK, Foley KA. Fungal infections and nail psoriasis: an update. *J Fungi*. 2022;8(2):154.
- [18]. Wechsurok P, Bunyaratavej S, Kiratiwongwan R, Suphatsathienkul P, Wongdama S, Leeyaphan C. Clinical features and treatment outcomes of nail lichen planus: A retrospective study. *JAAD Case Rep*. 2021;17:43-48.