

## Research Article

# Superficial Dermatophytosis in Primary Care in the Ecuadorian Andean Region: Clinical Presentation and Therapeutic Approaches

Juan P Domínguez-Enríquez<sup>1\*</sup> and Cristian D Cusco-Cuzco<sup>2</sup>

<sup>1</sup>Secretariat of Higher Education, Science, Technology, and Innovation, Modesto Larrea y Panamericana, Imbabura, Ecuador

<sup>2</sup>Royal Caribbean Group, Oasis of the Seas, Medical Department, Modesto Larrea y Panamericana, Imbabura, Ecuador

### Abstract

Dermatophytosis encompasses a spectrum of fungal infections caused by filamentous fungi, predominantly dermatophytes, affecting humans and animals. This article presents various cases of dermatophytosis along with their respective treatments.

**Keywords:** Dermatophytosis; Dermatophytes; Diagnosis; Tinea; Treatment

### Introduction

Dermatophytosis, encompassing fungal infections of the scalp, skin, and nails, manifests as diverse conditions including tinea capitis, corporis, pedis, and ungueal. Diagnosis typically involves microscopic examination of affected areas, supported by techniques like Potassium Hydroxide (KOH) preparation and lactophenol blue staining. Treatment strategies vary based on infection depth and severity, ranging from topical antifungals for superficial lesions to systemic therapy. Terbinafine emerges as the preferred systemic agent for conditions such as tinea pedis and ungueal infections. This article explores clinical cases highlighting the varied presentations of dermatophytosis and corresponding therapeutic interventions [1]. Dermatophytosis, commonly referred to as fungal skin infections, poses

\*Corresponding author: Juan P Domínguez-Enríquez, Secretariat of Higher Education, Science, Technology, and Innovation, Modesto Larrea y Panamericana, Imbabura, Ecuador, E-mail: juanopablodomin@gmail.com

**Citation:** Domínguez-Enríquez JP, Cusco-Cuzco CD (2024) Superficial Dermatophytosis in Primary Care in the Ecuadorian Andean Region: Clinical Presentation and Therapeutic Approaches. J Toxicol Cur Res 8: 026.

**Received:** March 06, 2024; **Accepted:** March 19, 2024; **Published:** March 27, 2024

**Copyright:** © 2024 Domínguez-Enríquez JP, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

a substantial burden on healthcare systems worldwide due to its high prevalence and diverse clinical manifestations. These infections, predominantly caused by dermatophytes, encompass a wide spectrum of conditions affecting different anatomical sites, including the scalp, skin, and nails. Clinical presentations of dermatophytosis can range from mild, superficial lesions to more severe and chronic infections, underscoring the importance of timely diagnosis and tailored treatment strategies [1].

### Clinical Presentation

Dermatophytosis presents with diverse clinical manifestations depending on the anatomical site involved. Superficial infections, such as tinea corporis and pedis, typically manifest as erythematous lesions with central clearing and peripheral scaling. In the case of tinea capitis, characterized by hair loss and scaling, clinical examination may reveal alopecic patches with surrounding erythema. Deep infections, on the other hand, may result in nail plate invasion and destruction, leading to deformity and discoloration [2-5].

### Diagnostic Approach

Diagnosis of dermatophytosis relies on clinical evaluation coupled with laboratory tests. Microscopic examination of skin scrapings or nail clippings treated with KOH solution facilitates the detection of fungal elements such as hyphae and yeast forms. Additionally, special stains like lactophenol blue enhance the visualization of fungal structures. Culture techniques, utilizing Sabouraud agar media, further aid in identifying the causative organism and determining its antifungal susceptibility profile [6].

### Therapeutic Strategies

Treatment of dermatophytosis varies depending on the extent and severity of the infection. Superficial lesions, such as tinea corporis and pedis, are typically managed with topical antifungals, whereas deeper infections may necessitate systemic therapy. Terbinafine, a fungicidal allylamine, stands as the first-line agent for systemic treatment, exhibiting high efficacy against dermatophytes. However, clinicians must exercise caution due to potential adverse effects, including hepatotoxicity [7]. Adjunctive measures such as hygiene education and footwear modification play a crucial role in preventing recurrence and spread of infection [8].

### Materials and Methods

This review article does not involve experimental studies; hence, there are no specific materials and methods to be described, but a series of representative clinical cases presented as follows.

### Clinical Cases

**Tinea Capitis:** A seven-year-old male patient presents with localized alopecia, pruritus, and desquamation, suggestive of tinea capitis. Upon physical examination, a circular lesion of approximately 3cm in diameter is noted on the right parietal region, exhibiting characteristic scaldiness. Treatment with topical antifungal agents results in a gradual amelioration of symptoms (Figures 1 & 2).



**Figure 1:** Patient presents with localized alopecia, pruritus, and desquamation, suggestive of tinea capitis.



**Figure 2:** A circular lesion of approximately 3cm in diameter is noted on the right parietal region, exhibiting characteristic scaliness.

**Tinea Capitis:** An eight-year-old male patient demonstrates a circular area of alopecia accompanied by prominent scaling, consistent with tinea capitis. Physical examination reveals a 5cm scaly lesion with a silver hue located on the temporal-occipital region. Initiation of terbinafine therapy leads to observable improvement in clinical manifestations (Figure 3).



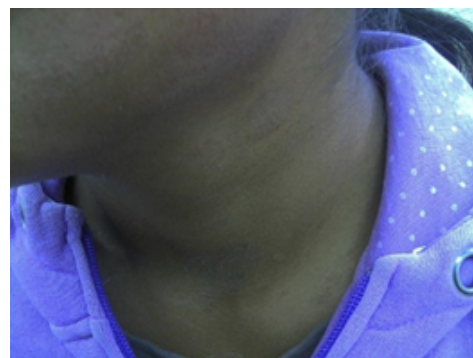
**Figure 3:** Physical examination reveals a 5cm scaly lesion with a silver hue located on the temporal-occipital region.

**Tinea Corporis:** A twelve-year-old indigenous female patient presents with pruritic, scaly lesions affecting the cheeks and chin, indicative of tinea corporis. On physical examination, superficial scaly lesions measuring 2 cm in diameter are identified on the lower chin,

along with a similar lesion of 2cm on the anterior neck. Treatment involving both topical and oral antifungal agents yields rapid resolution of symptoms (Figures 4 & 5).



**Figure 4:** Patient presents with pruritic, scaly lesions affecting the cheeks and chin, indicative of tinea corporis.



**Figure 5:** Physical examination, superficial scaly lesions measuring 2 cm in diameter are identified on the lower chin, along with a similar lesion of 2cm on the anterior neck.

**Tinea Corporis:** A sixty-five-year-old woman presents with localized pruritus and scaling of the skin, suggestive of tinea corporis. Physical examination reveals a 4cm rounded lesion with uniform scaling and a silver background. Topical therapy with clotrimazole results in resolution of symptoms within a week (Figure 6).



**Figure 6:** Physical examination reveals a 4cm rounded lesion with uniform scaling and a silver background.

**Tinea Unguium:** An eighty-two-year-old woman patient presents with thickened, yellow nails and structural deformities consistent with tinea unguium. Physical examination demonstrates nail thickening and yellowing with alterations in color pattern. Initiation of terbinafine therapy follows hepatic evaluation; however, subsequent follow-up is lost (Figure 7).



**Figure 7:** Patient presents with thickened, yellow nails and structural deformities consistent with tinea unguium.

## Results and Discussion

Dermatophytosis manifests across various anatomical sites, ranging from superficial to profound infections. Accurate diagnosis relies on meticulous microscopic examination and specialized staining techniques to identify fungal elements. Tailored treatment approaches are essential, contingent upon infection severity, with terbinafine emerging as a preferred systemic therapeutic option. However, the emergence of therapy-resistant strains presents formidable obstacles to effective management.

Additionally, the lack of control in antifungal sales worldwide facilitates resistance, leading to more severe systemic infections [9]. Terbinafine resistance has become a global concern, primarily due to point mutations in the SE gene, resulting in amino acid alterations [10]. In 2019, Singh et al. [11], identified a unique multidrug-resistant Trichophyton population responsible for a substantial dermatophytosis outbreak. A 2020 study by Ebert et al. [12], involving 402 patients across eight locations in India, found that seventy-one percent of isolates exhibited terbinafine resistance.

Dermatophytosis, a prevalent dermatological affliction, demands comprehensive consideration due to diverse clinical presentations and potential complications. Despite the seemingly straightforward diagnosis and treatment, healthcare providers must remain vigilant for potential challenges. Complications such as Kerion celsi further complicate management [13].

From the cases presented, children and the elderly were most affected. Although most cases resolved successfully without complications, one patient with onychomycosis persisted for three months before improvement. Studies in Ecuador reveal a heterogeneous distribution of dermatophytosis across age groups, with cases observed from infancy to geriatric age [14]. Age serves as a predisposing factor for fungal infections, varying by geographic area, mycosis type, and causative agent [15].

Ecuador's ecological diversity, with tropical and chilly zones due to its elevated Andean terrain, fosters favorable conditions for fungal proliferation. Agricultural activities and prolonged

fluctuations in temperature and humidity contribute to superficial mycoses cases, particularly in tropical regions. Such scenarios are commonly encountered in northern Ecuador, notably in Andean provinces like Imbabura, where individuals inhabit shelters alongside animals [16].

Moreover, the rise of therapy-resistant strains among dermatophytes poses significant challenges, especially in recurrent or chronic infections. Timely diagnosis and appropriate treatment are crucial to alleviate symptoms, mitigate complications, and curb transmission. Further research into novel antifungal agents and treatment modalities is essential to address evolving dermatophytosis challenges.

## Acknowledgment

The authors acknowledge the contributions of healthcare providers involved in the clinical cases discussed in this article. No specific funding or conflicts of interest are declared.

## References

1. Keshwania P, Kaur N, Chauhan J, Sharma G, Afzal O, et al. (2023) Superficial dermatophytosis across the world's populations: Potential benefits from nanocarrier-based therapies and rising challenges. *ACS Omega* 8: 31575-31599.
2. Ward H, Parkes N, Smith C, Kluzek S, Pearson R (2022) Consensus for the treatment of tinea pedis: A systematic review of randomised controlled trials. *J Fungi* 8: 351.
3. Sahoo AK, Mahajan R (2016) Management of tinea corporis, tinea cruris, and tinea pedis: A comprehensive review. *Indian Dermatol Online J* 7: 77-86.
4. Oke OO, Onayemi O, Olasode OA, Omisore AG, Oninla OA (2014) The prevalence and pattern of superficial fungal infections among school children in Ile-Ife, south-western Nigeria. *Dermatol Res Pract* 2014: 842917.
5. Dei-Cas I, Carrizo D, Giri M, Boyne G, Domínguez N, et al. (2019) Infectious skin disorders encountered in a pediatric emergency department of a tertiary care hospital in Argentina: A descriptive study. *Int J Dermatol* 58: 288-295.
6. Hayette MP, Sacheli R (2015) Dermatophytosis, trends in epidemiology and diagnostic approach. *Curr Fungal Infect Rep* 9: 164-179.
7. Manzano MAM, Gallego AG, Clavijo GO, Martín JMS (2019) Terbinafine-induced hepatotoxicity. *Gastroenterology and Hepatology* 42: 394-395.
8. Demirseren DD (2020) New therapeutic options in the management of superficial fungal diseases. *Dermatol Ther* 33: 12855.
9. Guanoluisa TB, Katherine L (2016) Frequency of fungi tinea unguium of the feet in aspiring police officers by mycological culture at the CBOS Training School José Lisandro Herrera in the Clinical Laboratory of the Quito Police Hospital No. 1 from July to December 2015. *Central University of Ecuador, Ecuador*.
10. Sacheli R, Hayette MP (2021) Antifungal resistance in dermatophytes: Genetic considerations, clinical presentations and alternative therapies. *Journal of Fungi* 7: 983.
11. Singh A, Masih A, Khurana A, Singh PK, Gupta M, et al. (2018) High terbinafine resistance in Trichophyton interdigitale isolates in Delhi, India harbouring mutations in the squalene epoxidase gene. *Mycoses* 61: 477-484.
12. Ebert A, Monod M, Salamin K, Burmester A, Uhrlaß S, et al. (2020) Alarming India-wide phenomenon of antifungal resistance in dermatophytes: A multicentre study. *Mycoses* 63: 717-728.

13. Deh A, Diongue K, Diadie S, Diatta BA, Diop K, et al. (2021) Kerion celsi due to *microsporum audouinii*: A severe form in an immunocompetent girl. *Therapeutic Advances in Infectious Disease* 8: 1-5.
14. Blondet JDM (2020) Prevalence of dermatophytes in patients who attend the Urbirios Health Center of the Manta canton, province of Manabí in 2019. Repository: Pontificia Universidad Católica del Ecuador. Clinical Biochemistry Degree, Ecuador.
15. Campozano J, Heras V (2014) Determination of the prevalence of dermatophytosis in children from the Father Juan Bautista Aguirre basic general education school from the Miraflores parish of the city of Cuenca. University of Cuenca, Ecuador.
16. Vélez GA, Vélez GB (2011) Onychomycosis: Causative agent, clinical correlation, and sensitivity to allylamine and imidazole. Comparison of two methodologies. *Rev Mex Patol Clin* 58: 204-214.



- Advances In Industrial Biotechnology | ISSN: 2639-5665
- Advances In Microbiology Research | ISSN: 2689-694X
- Archives Of Surgery And Surgical Education | ISSN: 2689-3126
- Archives Of Urology
- Archives Of Zoological Studies | ISSN: 2640-7779
- Current Trends Medical And Biological Engineering
- International Journal Of Case Reports And Therapeutic Studies | ISSN: 2689-310X
- Journal Of Addiction & Addictive Disorders | ISSN: 2578-7276
- Journal Of Agronomy & Agricultural Science | ISSN: 2689-8292
- Journal Of AIDS Clinical Research & STDs | ISSN: 2572-7370
- Journal Of Alcoholism Drug Abuse & Substance Dependence | ISSN: 2572-9594
- Journal Of Allergy Disorders & Therapy | ISSN: 2470-749X
- Journal Of Alternative Complementary & Integrative Medicine | ISSN: 2470-7562
- Journal Of Alzheimers & Neurodegenerative Diseases | ISSN: 2572-9608
- Journal Of Anesthesia & Clinical Care | ISSN: 2378-8879
- Journal Of Angiology & Vascular Surgery | ISSN: 2572-7397
- Journal Of Animal Research & Veterinary Science | ISSN: 2639-3751
- Journal Of Aquaculture & Fisheries | ISSN: 2576-5523
- Journal Of Atmospheric & Earth Sciences | ISSN: 2689-8780
- Journal Of Biotech Research & Biochemistry
- Journal Of Brain & Neuroscience Research
- Journal Of Cancer Biology & Treatment | ISSN: 2470-7546
- Journal Of Cardiology Study & Research | ISSN: 2640-768X
- Journal Of Cell Biology & Cell Metabolism | ISSN: 2381-1943
- Journal Of Clinical Dermatology & Therapy | ISSN: 2378-8771
- Journal Of Clinical Immunology & Immunotherapy | ISSN: 2378-8844
- Journal Of Clinical Studies & Medical Case Reports | ISSN: 2378-8801
- Journal Of Community Medicine & Public Health Care | ISSN: 2381-1978
- Journal Of Cytology & Tissue Biology | ISSN: 2378-9107
- Journal Of Dairy Research & Technology | ISSN: 2688-9315
- Journal Of Dentistry Oral Health & Cosmesis | ISSN: 2473-6783
- Journal Of Diabetes & Metabolic Disorders | ISSN: 2381-201X
- Journal Of Emergency Medicine Trauma & Surgical Care | ISSN: 2378-8798
- Journal Of Environmental Science Current Research | ISSN: 2643-5020
- Journal Of Food Science & Nutrition | ISSN: 2470-1076
- Journal Of Forensic Legal & Investigative Sciences | ISSN: 2473-733X
- Journal Of Gastroenterology & Hepatology Research | ISSN: 2574-2566
- Journal Of Genetics & Genomic Sciences | ISSN: 2574-2485
- Journal Of Gerontology & Geriatric Medicine | ISSN: 2381-8662
- Journal Of Hematology Blood Transfusion & Disorders | ISSN: 2572-2999
- Journal Of Hospice & Palliative Medical Care
- Journal Of Human Endocrinology | ISSN: 2572-9640
- Journal Of Infectious & Non Infectious Diseases | ISSN: 2381-8654
- Journal Of Internal Medicine & Primary Healthcare | ISSN: 2574-2493
- Journal Of Light & Laser Current Trends
- Journal Of Medicine Study & Research | ISSN: 2639-5657
- Journal Of Modern Chemical Sciences
- Journal Of Nanotechnology Nanomedicine & Nanobiotechnology | ISSN: 2381-2044
- Journal Of Neonatology & Clinical Pediatrics | ISSN: 2378-878X
- Journal Of Nephrology & Renal Therapy | ISSN: 2473-7313
- Journal Of Non Invasive Vascular Investigation | ISSN: 2572-7400
- Journal Of Nuclear Medicine Radiology & Radiation Therapy | ISSN: 2572-7419
- Journal Of Obesity & Weight Loss | ISSN: 2473-7372
- Journal Of Ophthalmology & Clinical Research | ISSN: 2378-8887
- Journal Of Orthopedic Research & Physiotherapy | ISSN: 2381-2052
- Journal Of Otolaryngology Head & Neck Surgery | ISSN: 2573-010X
- Journal Of Pathology Clinical & Medical Research
- Journal Of Pharmacology Pharmaceutics & Pharmacovigilance | ISSN: 2639-5649
- Journal Of Physical Medicine Rehabilitation & Disabilities | ISSN: 2381-8670
- Journal Of Plant Science Current Research | ISSN: 2639-3743
- Journal Of Practical & Professional Nursing | ISSN: 2639-5681
- Journal Of Protein Research & Bioinformatics
- Journal Of Psychiatry Depression & Anxiety | ISSN: 2573-0150
- Journal Of Pulmonary Medicine & Respiratory Research | ISSN: 2573-0177
- Journal Of Reproductive Medicine Gynaecology & Obstetrics | ISSN: 2574-2574
- Journal Of Stem Cells Research Development & Therapy | ISSN: 2381-2060
- Journal Of Surgery Current Trends & Innovations | ISSN: 2578-7284
- Journal Of Toxicology Current Research | ISSN: 2639-3735
- Journal Of Translational Science And Research
- Journal Of Vaccines Research & Vaccination | ISSN: 2573-0193
- Journal Of Virology & Antivirals
- Sports Medicine And Injury Care Journal | ISSN: 2689-8829
- Trends In Anatomy & Physiology | ISSN: 2640-7752

Submit Your Manuscript: <https://www.heraldopenaccess.us/submit-manuscript>