Tinea Imbricata: Case Series on Three Patients in Sarangani, Philippines

Lemuel Benedict R. Non[1,2] and Belen L. Dofitas[2]

[1]*Municipal Health Office, Kiamba, Sarangani Province, Philippines*
[2]*Section of Dermatology, Department of Medicine, College of Medicine and Philippine General Hospital, University of the Philippines Manila*

ABSTRACT

Tinea imbricata or Tokelau ringworm is an unusual superficial dermatophytosis caused by the anthropophilic Trichophyton concentricum. Three cases of Tinea imbricata observed at the Municipal Health Office of Kiamba, Sarangani Province, Philippines are reported in this study. All three patients were from an indigenous ethnic group of Sarangani Province and lived in isolated upland communities. Patient 1 was a 30 year old male, Patient 2 was a 40 year old female, and Patient 3 was a 19 year old female. Lesions lasted ~27 years, ~25 years, and 2 years, respectively. All patients presented with characteristic extensive polycyclic to serpiginous scaling lesions, with areas of sparing. Microscopic examination of skin scrapings prepared with potassium hydroxide revealed the characteristic broad, branched, septate, irregular hyphae. Trichopyton concentricum, the causative agent, was isolated in one of the patients using Mycobiotic agar. Histopathologic examination on 2 of the patients revealed acute and chronic inflammation, and Periodic Acid Schiff-positive fungal hyphae. All patients were started on Griseofulvin 500mg tab once daily. The case series presented here is the first account of Tinea imbricata in the Philippines since the 1990s.

Key Words: Tinea imbricata, Tokelau Ringworm, Sarangani, Anthropophilic, T'boli tribe

Introduction

Tinea imbricata, also known as Tokelau ringworm, is an uncommon superficial fungal infection caused by *Trichophyton concentricum*. It is a superficial mycosis that causes distinct concentric to serpiginous scaling that could be easily confused with other diseases that present with localized to generalized exfoliation. In the Philippines, case reports of Tinea imbricata have been reported in the past in Mindoro, Tagaytay, and Zamboanga.[1,2] The cases presented here are the first reports of Tinea imbricata in Sarangani Province, and the first account in the Philippines since the 1990s.

Confirmation and identification were done based on morphologic and microscopic analysis of the fungal cultures.

Case Series

Three Filipino patients consulted for outpatient care at the Municipal Health Office of Kiamba during the months of December 2009 to May 2010. They all consulted because of multiple large areas of pruritic serpiginous scaling on various parts of their skin.

All three patients were *T'bolis*, natives of South Cotabato and Sarangani. Patients 1 and 2 were siblings residing in Barangay Kapate, while Patient 3 lived in Barangay Tambilil, all from far-flung and indigenous communities. The patients lived in traditional wooden houses of the ethnic group located high up in humid and very rural, upland communities of Kiamba, Sarangani. These communities had little access to clean water and relied on natural fresh water springs and creeks. The patients reported the presence of similar skin lesions among a few other members of their families and communities. Other infectious diseases, such as tinea versicolor, filariasis, and malaria were also reported to be common in their communities.

The patients' ages were 30 for patient 1, 40 for patient 2, and 19 for patient 3 (Figures 1, 2, and 3). Patient 1 was a male farmer, while both patients 2 and 3 were unemployed females. The durations of the lesions were approximately 27 years, 25 years, and 2 years, respectively. All three patients had the initial local eruption appearing as intensely pruritic, erythematous, concentric lesions on the arms, legs, or other commonly exposed skin areas.

Over time and because of lack of treatment, the lesions evolved into larger, more extensive but less pruritic, polycyclic to serpiginous exfoliative (i.e. white to dirty gray scaling) lesions. In Patient 1, his dark skin made the lesions hypopigmented, while the fairer skins of Patients 2 and 3 made the lesions appear erythematous. Involvement of chest and abdominal areas were seen in all the patients. Patients reported no co-morbidities, and no other

Corresponding author: Lemuel Benedict R. Non, MD
The Office of the Municipal Health Officer
Edralin St., Poblacion
Kiamba, Sarangani Province, Philippines 9514
Email: phage_doc@yahoo.com

pathological skin lesions were found on physical examination.

Microbiologic studies were conducted at the Laboratory of the Municipal Health Office of Kiamba and the College of Public Health of the University of the Philippines-Manila, and histopathological examinations were performed by the Section of Dermatology – Philippine General Hospital. Microbiological studies included direct microscopic examination and fungal culture. Skin scrapings from the patients were prepared with Potassium hydroxide (KOH) before direct microscopic visualization was done. Saboraud Dextrose Agar and Mycobiotic agar were used to culture the fungus. Punch biopsy with subsequent histopathologic examination with Periodic Acid Schiff was performed to rule out other diseases.

The KOH examination of the skin scrapings of all patients revealed florid, broad, much branched, septate, irregular hyphae. Chlamydoconidia were noted in both Patients 1 and 3 (Figure 4). In the fungal culture, *Trichophyton concentricum* was isolated only in Patient 1 using Mycobiotic agar. Colonies appeared white to cream colored, raised and irregular. Microscopic examination of the colonies confirmed the *T. concentricum* (Figure 5). No fungus grew in Saboraud dextrose agar in all patients.

Histopathologic examination was performed only in Patients 1 and 2. The skin biopsies revealed stratified squamous epithelium with thickened stratum corneum and prominent acanthosis. The underlying dermis was infiltrated by lymphocytes, plasma cells, histiocytes and segmented neutrophils (Figure 6a and 6b). Periodic Acid Schiff study revealed fungal elements in Patient 1 (Figure 6c). This was consistent with acute and chronic inflammation caused by dermatophytosis of Trichotphyton sp., as in Tinea imbricata.

All three patients were treated with Griseofulvin 500 mg tablets once daily in conjunction with daily use of sulfur soap. Follow up after 10 days revealed marked improvement in lesions. All findings are summarized in Table 1.

Discussion

Tinea imbricata is an uncommon form of tinea corporis caused by the anthropophilic dermatophyte *Trichopyton concentricum*.[3] It is frequently found among natives of Polynesia, Southeast Asia, South and Central America, and Mexico.[4] The first case of Tinea imbricata was reported by William Dampier from the island of Mindanao, Philippines.[5] However, since then there have been very few reports on the disease in the Philippines. The three more recent reports of tinea imbricata were by Drs. Manuel Fernandez and Rodolfo Lao in 1962 who identified the disease in a patient from Mindoro, Central Philippines, by Flordeliz Abad-Casintahan

Figure 1. Patient 1 is a 30 year old male T'boli, with large areas of hypopigmented map-like concentric to serpiginous lesions on his trunk, back, and upper and lower extremities for ~27 years.

Figure 2. Patient 2 is a 40 year old female T'boli with erythematous generalized concentric to serpiginous lesions with areas of sparing for ~25 years.

Figure 3. Patient 3 is an 18-year old female T'boli with erythematous generalized concentric to serpiginous lesions with areas of sparing for ~2 years.

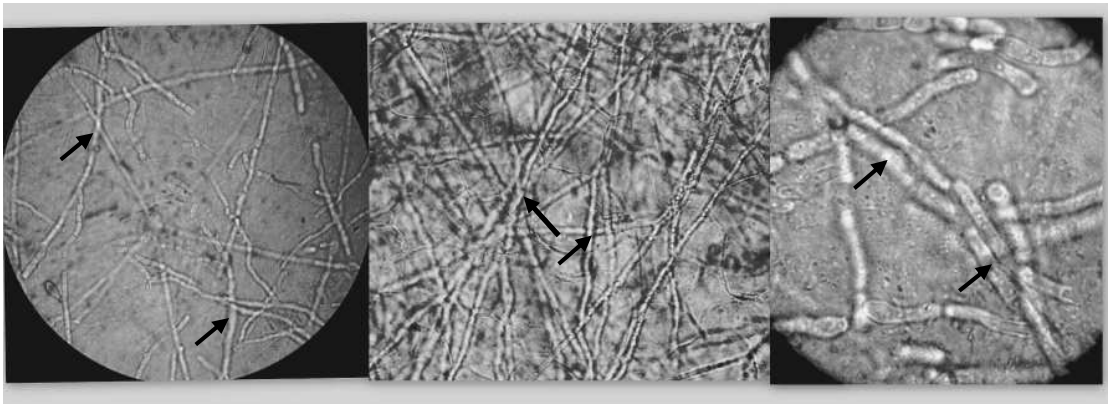


Figure 4. Microscopic exam of skin scrapings of Patients 1-3 (left to right) prepared on KOH showing fungal hyphae (arrows).

in 1993 in a lowlander in Tagaytay, and by Dr. Cynthia Ciriaco-Tan in 1998 in a Badjao native from Zamboanga, Mindanao.[1,2]

The disease presents in the form of widespread scaling, often arranged in concentric rings, which may fuse upon enlargement to form scaly polycyclic or serpiginous plaques, with large sheets of desquamation. The infection may develop early in life and persist into old age without the development of effective immunity. Tinea imbricata often affects wide areas of the body, sparing only body folds and scalp skin.[6,7] In the patients presented here, it was further observed that the dark-skinned patient 1 had mostly hypopigmented lesions while the fair-skinned patients 2 and 3 had erythematous polycyclic-serpiginous lesions.

Transmission is usually by direct personal contact between family members or from parent to child soon after birth.[8]

Most of the patients from previous studies in the Philippines were members of ethnic groups. Because of this, genetic factors are believed to play a role in susceptibility and may explain why not all intimate contacts within families of affected patients develop the disease. While evidence suggests an autosomal recessive transmission, an autosomal dominant pattern with reduced penetrance cannot be excluded. Malnutrition, humidity, immunologic factors, and poor hygiene also strongly predispose toward infection.[3,9,10]

Mycological investigation and confirmation are important for diagnosis as tinea imbricata, especially those presenting with generalized exfoliation, may be confused with other exfoliative disorders. It may also coexist with other diseases and, because of its extent, may preclude their successful diagnosis and treatment. Histopathological examination with Periodic Acid Schiff is not routinely done for tinea imbricata but may be used for culture-negative cases to detect hyphae in the stratum corneum, and to exclude other diagnoses. Recommended treatment for tinea

Table 1. Clinical and Laboratory Characteristics of the Patients

	Patient 1	Patient 2	Patient 3
Age/ Sex	30/M	40/F	19/F
Comorbid conditions	-	-	-
Duration of lesions	~27 years	~25 years	2 years
Clinical signs and symptoms	Large areas of occasionally pruritic, map-like serpiginous hypopigmented lesions with extensive scaling at anterior and posterior chest areas, abdomen, upper extremities, lower extremities	Large areas of occasionally pruritic, map-like serpiginous hypopigmented-to-erythematous lesions with extensive scaling at anterior and posterior chest areas, neck, abdomen, upper extremities, lower extremities.	Generalized serpiginous, occasionally pruritic serpiginous erythematous lesions with extensive exfoliation (palms and soles not spared), with sparing of map-like areas in abdomen and skin folds (inframammary area).
Microscopic examination (KOH smear)	broad, much branched, septate, irregular hyphae, with chlamydoconidia	Broad, much-branched, irregular hyphae	broad, much branched, septate, irregular hyphae, with chlamydoconidia
Fungal culture	*Trichophyton concentricum*	-	Not done
Histopathologic study	Acute and chronic inflammation; (+) Dermatophyte infection, (+) PAS	Acute and chronic inflammation; (+) Dermatophyte infection, (+) PAS	Not done
Treatment	Griseofulvin	Griseofulvin	Griseofulvin

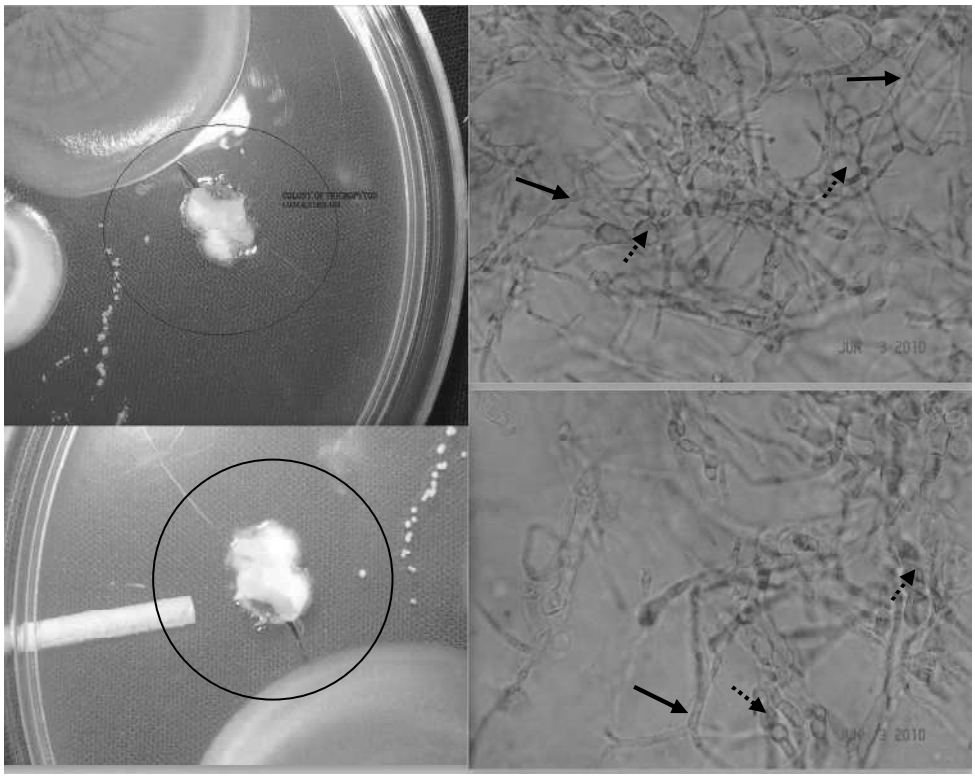
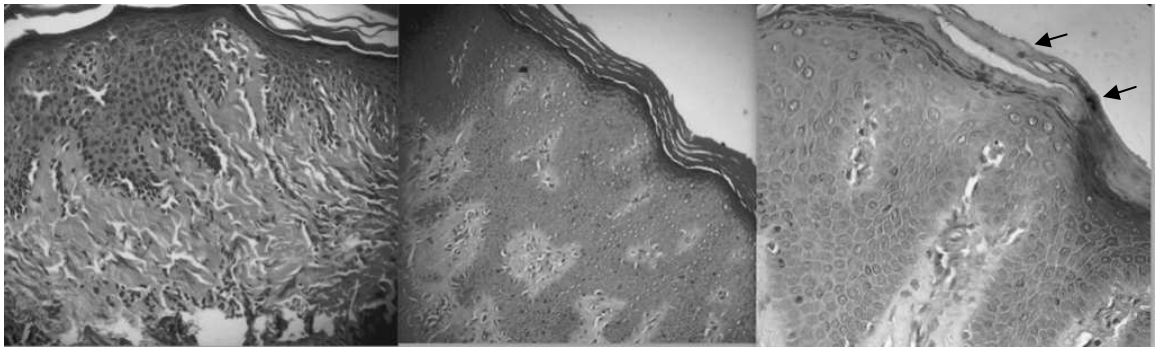


Figure 5. Trichophyton concentricum on Mycobiotic agar (encircled) inoculated from Patient 3. Microscopic examination of the colony revealed the characteristic broad septate irregularly branched hyphae (black arrows) of T. concentricum. Chalmydoconidia can also be identified (dashed arrows).



a **b** **c**

Figure 6. Histopathologic exam of punch biopsy samples from Patients 1 (a) and 2 (b) showing acute and chronic inflammation consistent with Tinea imbricata. PAS-positive hyphae in stratum corneum of Patient 1 (c) shown by black arrows.

imbricata is with either Terbinafine or Griseofulvin for 1 month. Both have comparative remission rates. The decision of whether to treat at all and which medication to choose depends greatly on the extent of involvement, the social situation, and the availability of resources such as laboratory testing and follow-up.[11] In all patients in this series, Griseofulvin was chosen because it was more affordable.

The case series presented here is the first to be reported in the Philippines in over a decade. These cases are significant because they may indicate that Tinea imbricata is endemic among the oftentimes neglected indigenous populations of Sarangani Province, a part of the Mindanao region of the Philippines. Further investigation on the epidemiology of the disease is recommended so that

appropriate public health programs can be developed to address this infectious disease among our underprivileged communities.

Acknowledgments

To the National Telehealth Center for the invaluable support. To Drs. Aileen Cubillan and Alessandra Pardo of the Section of Dermatology, Philippine General Hospital for the histopathological photographs. To Mahroren Altura, Mary Ann Sison, Edwin Buentiempo, and Azita Raquel Lacuna of the College of Public Health, University of the Philippines-Manila for the microbiologic studies. To Jonathan Hilario, Blanch Osalla, Melbeth Baigan, Jihve Balanag, and other staff of the Municipal Health Office of Kiamba for the assistance. Thank you all.

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