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Cutaneous and Deep Mycosis Caused by Talarimyces in Mexico

Salgado-Flores L[1], Horta-Padilla I[2]* and González-Varela A[2]

[1]*Hospital Regional de Alta Especialidad del Bajío, México.*

[2]*Departamento de Medicina y Nutrición, Universidad de Guanajuato, México.*

***Correspondence:**
Ignacio Horta-Padilla, Departamento de Medicina y Nutrición, Universidad de Guanajuato, México.

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ABSTRACT

Talaromycosis (formerly Penicillosis) is a fungal disease commonly described in HIV-infected individuals in the endemics áreas of the tropical countries of South Asia. Talaromyces (Penicillium) marnefeei is a dimophic fungus that causes the infection, probably by the inhalation of their conidias. The mycosis is characterized by multiple organ involvement. Signs and symptoms can vary from localized dermatosis to respiratory or circulatory failure. The diagnosis is made by culture of the dimorphic fungus. Talaromyces was isolated from bronquialveolar lavage in a patient who presented lymphadenopathy, localized dermatosis confromated by ocher-colored umbilicated papulas dyspnea and productive cough in the center of Mexico. The patients does not have any history of traveling to endemic áreas or associated immunosuppression. Must be considered the changing geographical and epidemiological distribution of the organism in order to make early diagnoses in non-endemic areas.

Keywords

Talaromyces marnefeei, Talaromycosis, Cutaneous mycosis.

Introduction

An human case of *T. marneffei* infection occurred as a laboratory-acquired infection in 1959 [1], the first natural human case of infection was reported in 1973 and involved an-American individual with Hodgkin´s disease who resided in Southeast Asia [2]. Nowadays Talaromycosis is an AIDS-defining illnes, ranking just after tuberculosis and cryptococcosis [3,4]. The endemic regions of the tropical South of Asia[3,4] includes Northern Thailand, Shouthern China, Vietnam, Northern India, Hong Kong and Taiwam. Sporadic and travel-related cases are being reported in America [5]. However, there are no cases in Mexico reported in the literature.

Epidemiologic triad

A critical premise of healt is that disease do not occur randomly in a population, models of disease causation have been proposed. Among the simplest of these is the epidemiologic triad, the traditional model for infectious disease. In this model, disease results from the interaction between the agent and the susceptible host in an environment that supports transmission of the agent from a source to that host [6]. We will briefly discuss talaromycosis from this model.

Agent

*Talaromyces (*formerly *Penicillium) marneffei* is the only dimorphic pathogen of the genera Talaromyces. The fungus grows as a mold at 25°C on Sabouraud agar medium, the colony is yellow or gray-green and produces a characteristic soluble red pigment. Microscopic morphology shows septate hyphae, phialides brush-like (penicilli form) and ovoid conidia of 2-3 um. At the human body or 37°C incubationthe conidias convert to the pathogenic form of yeast [3,4,7].

Host

Inhalation of *T. marneffei* conidia with an impairment immune system can result in conidia dissemination throughout the body causing a lethal systemic mycosis [3] HIV-positive individuals who have <100/uL CD4 cell count are in high risk of infection [3,4]. Comparing HIV-negative and HIV-positive groups of patients with talarmycosis, both of them were similar in most clinical

symptoms, including fever, cough, weight loss, lymphadenectasis, hepatosplenomegaly, rash, wheezing in the lungs, and pleural effusion [8]. However, the HIV-negative group had a significantly longer interval from onset of symptoms to diagnosis of T. marneffei infection [8]. Talaromycosis was also reported in other secondary immunodeficiency conditions, including autoimmune diseases, cancers, solid organ or hematopoietic stem cell transplantation, and long term immunosuppressive therapy [3,4].

Environment

Tue infection occurs as a consecuense of the transmission from their reservoirs animals and environment [4]. The endemic regions of the tropical South of Asia (Northern Thailand, Shouthern China, Vietnam, Northern India, Hong Kong and Taiwam) seems to be expanding [3].

The bamboo rat (*Rhizomys sp*) ***is an important enzootic reservior*** of T. marneffei. ao and collaborators demonstrated 100% prevalence of infection in tapped bamboo rats across Guangxi Province, China [9], this region has a subtropical humid monsoon climate. History of exposure to or consumption of bamboo rats was not a risk factor for infection; instead, agricultural exposure to the soil during the rainy season [3,10].

T. marneffei infection and clinical manifestation

T. marneffei proliferates in macrophages and disseminates via the reticuloendotheial system [3,4,11], appears to be a primary pulmonary pathogen that disseminates to other internal organs by hematogenous [4]. Clinically, the infection is characterized by fungal invasion of multiple organs, especially blood, bone, marrow, skin, lungs and reticuloendothelial tissues. Some symptoms can include fever, malaise, hepatosplenomegaly, lymphadenopathy, cough and dyspnea [3,12] The signs can vary from isolated papular skin lesions [3,13] with central umbilication to respiratory failure and circulatory collapse [4,11,12].

Patients with pulmonary involvement exhibited various chest X-ray abnormalities such as uni or multilobar consolidations, cavities, interstitial infiltrates, pleural effusion, pericardial effusion and enlarged hilar shadow due to mediastinal and hilar lymphadenopathies [12,14,15].

Talaromycosis in a non-HIV individual and in a non-endemic area case report

A woman in her seventh decade of life; who who lives in Mexico, works as a merchant and has no history of traveling to endemic areas of *T. marneffei*; *presents skin lesions (Figure 1) in her right leg, lymphadenopathy in the axillary and inguinal region, dyspnea and productive cough in accesses.*

In a thoracic high-resolution computed tomography were infiltrative lesions in the operculum and thoracic diffuse cotonose lesions with generalized affection in the entire parenchyma, glass ejected, alveolar occupation, micro and macronodular infiltrates multiple-focus pneumonia and peribronchovascular inflammation (Figure 2).

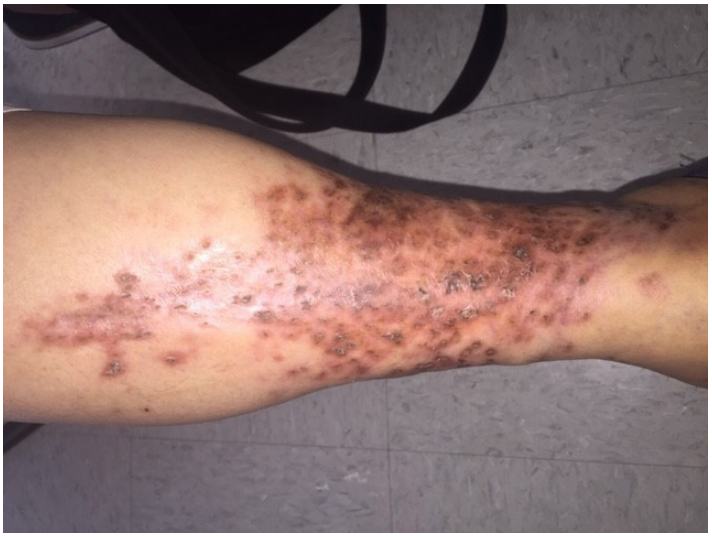

Figure 1- Posterior view of the rigth calf. Maculopapules whit central necrosis observed in a patient whit talaromycosis.

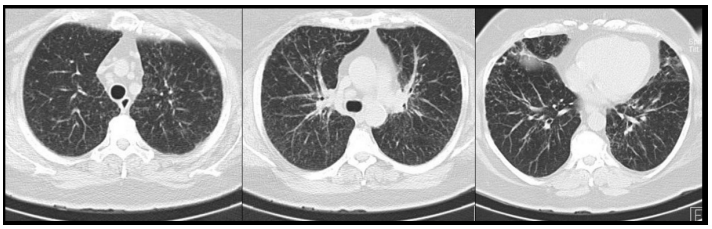

Figure 2- Thoracic high-resolution computed tomography of a patient with talaromycosis who presented ***dyspnea and productive cough. The images presents*** generalized affection with glass ejected, alveolar occupation, micro and macronodular infiltrates multiple-focus pneumonia and peribronchovascular inflammation

Cutaneous lymphoma was suspected and biopsy of the skin lesion is performed, the result was a chronic inflamation noncaseating granuloma and no malignant cells or microorganisms were found.

Spirometry is performed due to dyspnea and shows a restrictive pattern (FVC=64.6% FEV1= 59.9% FEv1/FVC= 73.14) that does not improve with bronchodilators. Pulmonary tuberculosis was suspected but polymerase chain reaction (PCR) and tuberculin skin test were negative. it was decided to do a bronchoscopy and the diagnosis was made by the isolation of T. marneffei from bronquialveolar lavage.

Domiciliary treatment was started with itraconazol 400 mg per day for a year when Talaromyces was isolated and skin lesions and respiratory symptoms improved immediately.

Conclusions

The delay in diagnosis is a mayor determinant of prognosis and an independent predictor of all-cause mortality [15]. Must be considered an expansion of the known endemic region in order to make a prompt diagnosis of talaromycosis. The therapeutic strategie is the same for HIV-infected and HIV-uninfected individuald, and should be started as son as posible, however depends upon the

severity of disease. Amphotericine B deoxycholate (0-6-1.0 mg/kg per day for 2 weeks) is the first-line as introduction therapy for severe talaromycosis, followed by itraconazole (400 mg per day for 10 weeks) as maintenance therapy. Individual who are immunosuppressed (itraconazole 200 mg per day for at least 6 months) as HIV-infected individuals [5].

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