



ARTÍCULO ORIGINAL

Onychomycosis, predisposing factors, characteristics and associated dermatosis

Onicomycosis, factores predisponentes, características y dermatosis asociadas

Grecia María Giniebra Marín^{1*} <https://orcid.org/0000-0002-2179-4482>

Roxana Rivera Rivadulla¹ <https://orcid.org/0000-0002-4545-2233>

Yaima Gorrín Díaz¹ <https://orcid.org/0000-0003-4685-6472>

Lázaro Pablo Linares Cánovas² <http://orcid.org/0000-0002-1597-9202>

Lázaro Yoan Ordóñez Álvarez² <http://orcid.org/0000-0001-9605-4369>

¹Pinar del Río University of Medical Sciences. Leon Cuervo Rubio Clinical-surgical Teaching Hospital. Pinar del Río, Cuba.

²Pinar del Río University of Medical Sciences. Ernesto Guevara de la Serna School of Medical Sciences. Pinar del Río, Cuba.

* Author for correspondence: greciam@infomed.sld.cu

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ABSTRACT

Introduction: fungal infections in skin, hair and nails are common worldwide, in this context, onychomycosis is the most prevalent disease where the province is no exception.

Objective: to describe the risk factors, characteristics and associated dermatosis in patients older than 18 years old with onychomycosis in a health area.

Methods: observational, descriptive and cross-sectional study conducted at Raúl Sánchez Rodríguez University Polyclinic, Dermatology Clinic during the period 2017-2018.

Results: female sex predominated (55,1%) and the age group between 40 and 59 years (43,8 %), the predominant risk factor was the use of occlusive footwear (84,9 %). Localization in feet (unilateral) (45,9 %), lateral plus distal superficial clinical type (33 %), as well as onycholysis plus incurvation (54,6%) predominated as the main ungueal alteration. The main ungueal modification belonged to the longitudinal lines (70,8 %), in terms of consistency a



thickening of the nails (68,1 %), with *leukonychia* (47 %) and *melanonychia*(36,8 %), which were the main colors detected. *Tinea pedis* (55 %) and crural (10,8 %) were the most frequent associated dermatosis.

Conclusions: it is important to distinguish the clinical epidemiological behavior of onychomycosis in order to be able to act and modify the risk factors and influence of the associated dermatosis and in one way or another to reduce the incidence of onychomycosis.

MeSH: ONYCHOMYCOSIS; SKIN/injuries; SKIN DISEASES; SKIN CARE; MYCOSES; RISK FACTORS.

RESUMEN

Introducción: las infecciones fúngicas en piel, cabello y uñas son comunes a nivel mundial, en este marco, la onicomicosis constituye la enfermedad más prevalente de la que la provincia no es ajena.

Objetivo: describir factores de riesgo, características y dermatosis asociadas en pacientes mayores de 18 años con onicomicosis en un área de salud.

Métodos: estudio observacional, descriptivo y transversal en la consulta de Dermatología del Policlínico Universitario "Raúl Sánchez Rodríguez", en el período 2017-2018.

Resultados: predominó el sexo femenino (55,1 %) y el grupo de edades entre 40 y 59 años (43,8 %), el factor de riesgo predominante fue el empleo de calzado oclusivo (84,9 %). Predominó la localización en pies (unilateral) (45,9 %), la forma clínica lateral + superficial distal (33 %), así como de la onicolisis + incurvación (54,6 %) como principal alteración ungueal. La principal modificación ungueal fueron las líneas longitudinales (70,8 %), en cuanto a la consistencia un engrosamiento de las uñas (68,1 %), siendo la leuconiquia (47 %) y melnoniquia (36,8 %) las principales coloraciones detectadas. La tiña *pedis* (55 %) y la crural (10,8 %) fueron las dermatosis asociadas más frecuentes.

Conclusiones: es importante el conocimiento del comportamiento clínico epidemiológico de las onicomicosis para de esta manera poder actuar y modificar los factores de riesgo e incidir sobre las dermatosis asociadas y de alguna manera disminuir la incidencia de onicomicosis.

DeCS: ONICOMICOSIS; PIEL/lesiones; ENFERMEDADES DE LA PIEL; CUIDADOS DE LA PIEL; MICOSIS; FACTORES DE RIESGO.

INTRODUCTION

Fungal infections in skin, hair and nails are among the most common worldwide. In this framework, onychomycosis, a common condition that represents more than 50% of the problems of the unguis unit and is therefore the most prevalent disease in this part, has shown epidemiological changes in recent decades as a result of changes in environmental conditions, the distribution of etiological agents, aging of the population, the increase in immunosuppressive therapies and diseases such as HIV, in addition to increased secondary resistance to the indiscriminate use of anti-fungal agents, which is reflected in changes in clinical patterns.^(1,2)

The word onychomycosis came from the Greek *onyx* and *mykes*, meaning nail and fungus respectively. It is the term used to describe an infection of the nails caused mainly by dermatophytes (90%) such as *Trichophyton rubrum* (responsible for 71% of cases), *Trichophyton mentagrophytes* (responsible for 5% of cases), *Mycrosporium* and *epidermophyto* species; 5-7 % is caused by *Candida* species and 3 % by non-dermatophytes such as *Fusarium*, *Aspergillus*, *Acremonium* and *Scopulariopsis*.⁽³⁾

The incidence of this condition increases with age, reaching up to 60 % of people over 60. It is also considered one of the superficial fungal infections with the greatest difficulty in diagnosis and treatment, ⁽¹⁾ affecting between 5 and 20 % of the world's population. ⁽²⁾

For some patients, a nail disease is only a cosmetic inconvenience and not a medical problem, so they seek advice or counseling for cosmetic and esthetic reasons. However, it can cause pain, social and emotional discomfort, permanent nail damage and contagion to others. Depending on their classification, the patient may require long-term treatment. ^(4, 5)

The research was carried out with the objective of describing the risk factors, characteristics and associated dermatosis in patients older than 18 years old with onychomycosis at Raúl Sánchez Rodríguez University Polyclinic in Pinar del Río during the years 2017 and 2018.

METHODS

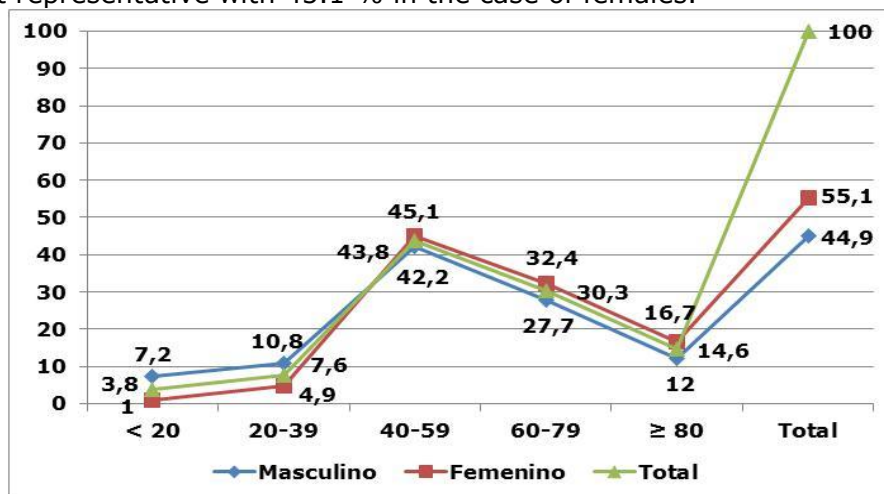
An observational, descriptive and cross-sectional study was carried out in the Dermatology Consultation for two years in a chosen health area of Pinar del Río municipality.

The study target group consisted of 215 patients clinically diagnosed with onychomycosis, leaving a sample of 185 after applying the inclusion criteria of patients older than 18 years of age who gave their consent to be part of the research, which was expressed through their informed consent. Patients with KOH negative were excluded.

The information was collected through an interview conducted at the consultation and the data were processed using the Epiinfo 2012 version system. The results found were summarized and described using descriptive statistics, absolute and relative percentage frequencies. The ethical principles for this type of study were respected.

RESULTS

The sample (Graph 1) showed a predominance of female patients (55.1 %) and of the age group that includes individuals between 40 and 59 years (43.8 %). In both genders, this group was the most representative with 45.1 % in the case of females.



Graph 1 Distribution of the sample by age and gender at Raul Sanchez Rodriguez, University Polyclinic- Pinar del Río 2017-2018

The most frequent risk factors for onychomycosis were the use of occlusive footwear (84.9 %) followed by peripheral vascular insufficiency (72.4 %) and overcrowding (63.2 %). Table 1

Table 1. Distribution according to onychomycosis risk factors at Raúl Sánchez Rodríguez University Polyclinic, 2017-2018

Risk factors	No.	%
Wearing occlusive shoes	157	84.9
Antecedents of peripheral vascular insufficiency	134	72.4
Antecedents of ungueal trauma	109	58.9
Associated chronic diseases	96	51.9
Overcrowding	117	63.2
Antecedents of similar manifestations	24	13.0
Risky occupation	87	47.0

Among the characteristics of onychomycosis (Table 2), there is a predominance of foot localization (unilateral) (45.9 %), lateral + distal superficial clinical form (33.0 %), as well as onycholysis + incurvation (54.6 %) as the main nail alteration. In the sample, the main nail modification present was the presence of longitudinal lines (70.8 %), with consistency, a thickening of the nails in 68.1 % of patients, with leukonychia and melanonychia being the main colorations detected in the nails for 47 and 36.8% respectively.

Table 2. Characteristics of onychomycosis obtained from observation of the patients in the sample

Characteristics		No.	%
Localization	Hands (unilateral)	46	24,9
	Hands (bilateral)	5	2,7
	Feet (unilateral)	85	45,9
	Feet (bilateral)	37	20,0
	Hands and feet (unilateral)	12	6,5
	Hands and feet (bilateral)	0	0,0
Clinical manifestation	Lateral	21	11,4
	Lateral + superficial distal	61	33,0
	Lateral + superficial proximal	31	16,8
	Distrófica total	20	10,8
	Superficial distal	34	18,4
	Superficial proximal	18	9,7
Ungueal Alteration	Onycholysis	19	10,3
	Incurvation	22	11,9
	Onycholysis+ incurvation	101	54,6
	Onychogryphosis	17	9,2
	Koilonychia	5	2,7
	Brachionichia	21	11,4

The most frequent associated dermatological diseases were *tinea pedis* (55 %), followed by *tinea cruralis* (10, 8 %) (Table 3)



Table 3. Dermatological diseases present in patients with onychomycosis

Dermatological diseases	No.	%
<i>Tinea pedis</i>	76	41,1
<i>Tinea cruralis</i>	19	10,3
Intertrigo candidiasis	11	5,9
Psoriasis	7	3,8
Dermatitis of ectasy	5	2,7
Lichen planus	5	2,7
Total	123	66.5

DISCUSSION

Onychomycosis, the most frequent and chronic nail infection, as a disease can have a negative and significant effect on the quality of life of patients, both physiologically and emotionally, and can even cause stigmatization and social exclusion.⁽⁶⁾

The literature reviewed showed discrepancies with respect to the predominant gender, reflecting the same as it is more frequent in men, which could have a relationship with the physical activity and sports practices preferred by them. However, women have now shown a rise, which could suggest that practices that were previously considered excluding men (such as contact sports or gym attendance), are now also performed by women,^(7,8) in addition, the greater frequency of presentation found in women can be explained by a higher rate of consultation by women, given the cosmetic implications of these diseases.⁽²⁾

On the other hand, it is related to the predominance of the age group, with individuals close to 60 years of age being the most likely to develop these conditions.^(1,2,4)

The results of this research coincide with the literature reviewed, in terms of the numerous factors that influence the development of the infectious process, such as the use of closed footwear, frequent trauma, and use of common showers, among others.^(1, 9, 10)

The associated risk factors are mainly the type of footwear, sports habits, recurrent trauma, exposure to humidity and the state of the immune system, as well as clinical conditions such as diabetes mellitus or immunosuppressive diseases that lead to the appearance of this condition^(3-5,11,12), other authors coincide with these same risk factors, at the same time they refer how the coexistence of these factors in elderly patients can favor the appearance of onychomycosis as age increases, since it is the elderly who most frequently show these risk factors, both separately and as a whole. In fact, in the elderly patients, peripheral vascular disease, diabetes, immunosuppression or trauma also complicate the effective therapy.^(2, 13)

Onychomycosis is universally distributed; however, reports of prevalence of this disease in the general population are contradictory. Numerous population studies that have been conducted show figures based on clinical aspects. In Spain a study of 10000 inhabitants determined a prevalence of 2.6 %; in the United Kingdom 2.7 % over 9000 inhabitants;⁽¹³⁾ in the United States 2-3 %; in Guatemala 2.6 %, however, the prevalence increases when laboratory data are included, as in Finland, with a prevalence of 8 %.⁽¹³⁾

Dealing with this situation, the intentional search to measure the real frequency and make a correlation in the clinical and laboratory fields, allows a more adequate knowledge of the ethiopathogenesis and the natural history of onychomycosis.

At the same time, it allows to develop better strategies of study, prevention and treatment, which avoid the early dystrophy of the nail and the spread of the infection in this group of patients. It is also concluded that the clinical examination is very useful in the suspicion of onychomycosis, but not in the knowledge of the causal agent; due to the etiological variability, it is necessary the complete laboratory examination for fungi (direct examination with KOH and culture), for the correct etiological treatment of the entity. ⁽¹³⁾

In conclusion, onychomycosis was more frequent in women, predominating between 40 and 59 years, occlusive footwear was the main risk factor and the most frequent clinical type was distal lateral onychomycosis. Longitudinal lines and nail thickening, as well as *leukonychia* and *melanonychia*, predominated in the cases studied. *Tinea pedis* was the dermatosis most associated with onychomycosis.

In conclusion, it is important to know the clinical epidemiological behavior of onychomycosis in order to be able to act and modify the risk factors and influence the associated dermatosis and in some way decrease the incidence of onychomycosis, since these require a very prolonged treatment, including important adverse events and therefore the additional cost of medications. Knowing about these epidemiological characteristics would allow correct identification and modify them as much as possible, in order to avoid iatrogenies in their diagnosis.

Conflict of interest

The authors state that there is not conflict of interest

Authors' contribution

The authors contributed equally to the design of the study.

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