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MYCOLOGICAL PROFILE OF ONYCHOMYCOSIS IN KENITRA CITY (MOROCCO)

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ABSTRACT

Onychomycosis is defined as a fungal infection of the nail caused by dermatophytes, yeasts or molds. It affects between 2 and 26.9% of the general population. The epidemiological profile of onychomycosis is not well determined in Morocco. This study aimed to determine the etiology of these mycological onychomycosis in kenitra city in Morocco. A prospective study was conducted from May to December 2014 in the Regional Hospital Center El Idrissi of Kenitra and in collaboration with a private dermatologist doctors in Kenitra city. All patients consulting and suspected of a nail lesion were included and interviewed through a questionnaire that contains all of the epidemiological data about the patient. 40 patients were addressed to a medical analysis laboratory, the samples collected from the lesions have been the subject of direct examination and culture on the culture media of Sabouraud-chloramphenicol actidione and Sabouraud-chloramphenicol. The identification was based on the type of fungus observed. The prevalence of onychomycosis was 62.5% (25/40). Women were more affected with a sex ratio of 3.44 (31/9) and the majority of patients were adults with an age between 31 and 60 years.Onychomycosis was localized in 97.5% of cases in the toes. Dermatophytic onychomycosis represent 79.16% (19/24) of the cases, Trychophyton

rubrum was the most common species with 94.73% (18/19). Infection by yeast was rare and the only species observed was Candida albicans in 3 cases (7.5% of cases).

KEYWORDS: Onychomycosis; kenitra city(Morocco) ; Dermatophytes; yeasts.

INTRODUCTION

Onychomycosis is defined as a fungal infection of the nail caused by dermatophytes, yeasts or molds. It affects between 2 and 26.9% of the general population.[1,2] In Morocco, the actual frequency of onychomycosis is certainly underestimated because of the high cost of care leading to a restriction of the prescription of mycological examination, resulting in a failure to confirm the etiology of these nail.[3] The prevalence of onychomycosis shows a tendency to increase.[4] The arguments used to explain this increase are the aging of the population, the increasing number of immunocompromised patients and some lifestyle habits such as wearing tight shoes or playing sports facilitating contamination.[5,6]

The existence of a clinical attack of the nail does not mean onychomycosis, this latter represents 18 to 50% of nail diseases.[6,7] So many differential diagnostics should be considered (nail psoriasis, nail dystrophy ...), explaining thus the importance of mycological levy to avoid inappropriate care led to unnecessary, risky and expensive treatments.

Toes are most often affected (80% of cases). The responsible dermatophytes are primarily Trychophyton rubrum (80% of cases), followed by Trichophyton mentagrophytes (20% of cases). Yeasts represent approximately 5-17% of the fungi of onychomycosis and are found most frequently on the hands.[7,8] Candida albicans is the most frequently isolated species. Onychomycosis caused by molds are rare, however, an increase in prevalence in recent years ranging from 1.45% to 17.6% was reported.[9, 10, 11]

The aim of this study is to describe the mycological profile of onychomycosis in Kenitra city and identify fungal agents most frequently found.

MATERIALS AND METHODS

Type and place of the study

This is a prospective study conducted over a period of seven months from may 2014 to december 2014 in the Regional Hospital Center El Idrissi of Kenitra and in collaboration with a private dermatologist doctor in Kenitra city . Kenitra is a city situated approximately 45 km far Rabat city, capital of Morocco. It represents a link between the north and south and

between west and east of Morocco, and is characterized by a mediterranean climate, mild and wet in winter and hot and dry in summer. The precipitations are abundant exceeding the national average. The city has known over the last few years a large demographic development, its population in 2012 was estimated of 918,222 habitants.[12]

Population Study

The patients included in the study came from different regions of Kenitra city, consulting for a suspicion of a nail onychomycosis of the hands or feet and with clinical signs as a thickening, dystrophy, friability, detachment or deformation of the nail. All these patients are sent to the laboratory for performing a mycological examination.

Data Acquisition

For each patient included, we have collected on a questionnaire of epidemiological data such as age, sexe, previous treatment history, clinical presentation, location of the lesion, etc.

Mycological study

The sampling technique is based on a disinfection with alcohol, then the nail was cut with a sterile nail clippers until the junction with healthy nail. The sample is collected by scraping the subungual squames at this junction. The squames are collected in a sterile Petri dish.

The mycological examination consists of.

Direct examination

It was carried out after the softening of the pathological product with 30% potassium hydroxide, after the sample was deposited on a microscope slide with a drop of clarification liquid then observed microscopically to the objective 10 and 40.

Culture

Two culture media were systematically used: Sabouraud medium supplemented with antibiotics (Chloramphenicol) with or without actidione. The tubes were incubated at 27 ° C and kept for 4 weeks with regular control (twice a week).

The colonies identification is based on the study of.

- Macroscopic and microscopic characters for dermatophytes and filamentous fungi.
- Morphological and physiological aspects (chromogenic media) and the chlamydosporulation test on RAT medium for yeasts.

RESULTS AND DISCUSSION

Population characteristics

Between may 2014 and december 2014, 40 patients have done a nail samples including 39 on the toes and 1 on the fingers. The mean age was 41.80 years, ranging from 11 to 74 years. More than 73% of the patients were adults whose age is between 31 and 60 years (Figure 1). This significant incidence of onychomycosis noted in adults is consistent with the results of other studies[13,14], wich more than 50% of patients achieved by onychomychoses have an age between 40 and 59 years. Some authors have demonstrated that advanced age is a risk factor for the occurrence of onychomycosis. This was explained by repetitive strain injury, more prolonged exposure to fungal agents as well as the increased physical activity and more accentuated venous insufficiency with age.[15]

The prevalence of onychomycosis in young children is rare, as illustrated a survey conducted in Casablanca (Morocco) which showed that only 4% of children which have an age less than 15 years presente an onychomycosis.[3] In our study only 2.5% of patients were younger, less than 20 years. This rarity of onychomychoses in children can be attributed to several factors such as the difference in the nail plate structure, the reduced exposure to trauma than adults and speed of the nail regrowth.[11]

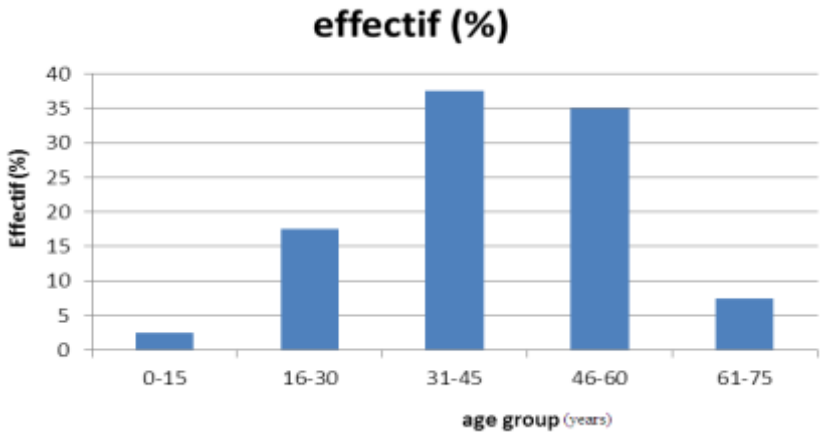

Figure 1: Distribution of patients by age group

Among the patients with onychomycosis, the women had a majority with 77.5% (cf.table 1). This dominance was affirmed by other similar studies, for example in Tunis erea in Tunisia and Casablanca city in Morocco with 63.5% and 59% respectively.[16, 3] This result can be explained by the frequent humidity of the hands and feet of women caused by housework

tasks, contact with detergents and aesthetic concern (repeated and aggressive manicures care) causing nail injuries.[17, 18]

Lesion frequency and variation of infection rate

Among the patients included in the study, 39 have shown onychomycosis that was localized in toes (97.5%) against (2.5%) in the fingers (cf.tableau 1). This result was reported by many authors indicating that onychomycosis is more frequent in the toes[19, 20], this can be explained by the numerous factors mainly related to lifestyle and habits (gyms ,swimming pool, walking and wearing tight shoes) causing repeated local trauma sometimes it is favored by foot deformities resulting from troubles static (hallucis longus, erectus, hammer toes and overlapping toes ...).[7] There is also another factor related to the nail growth rate which is slower in toes reducing the elimination of fungus.[21]

Table1: localization of lesions

		Feet injury	Hands injury
Women	**Effectif (%)**	30 76.92%	1 100%
Men	**Effectif (%)**	9 23.07%	0 0 %
TOTAL	**Effectif**	39	1

Distribution of the species found

Direct examination is an essential step of the biological diagnostic process and its result must remain, the basic argument of a definitive diagnosis of onychomycosis.[22] In this study direct examination was positive in 62.5% (25/40) of patients and culture was positive in 55% (22/40) (cf.table 2). This result was reported by many authors.[23,7]

Table 2: Onychomycosis distribution according to direct and culture examinations

	Direct examination	Culture
Positif	25/40 (62.5%)	22/40 (55%)
Negatif	15/40 (37.5%)	18/40 (45%)

Dermatophytes represent in this work, the most common etiology of onychomycosis particularly in toe nails 86. 36% (19/22) of the cases observed that in agreement with several study whose dermatophytes represent about 80-90% of the fungi of onychomycosis (which are isolated 4/5 feet).[24] T. rubrum was the most common species with 95% (19/20) followed by T.mentagrophytes in second place with 5% (1/20) (cf.table 3). The predominance of T. rubrum in onychomycosis is usually reported in in Lyon area in France, Tunis erea in Tunisia

and Fes city in Morocco.[25, 16,14] The transmission of this anthropophilic species is ensured via wet soils showers, pools, the high frequentation of Moorish baths, this could explain the frequency of fungal infections in the Moroccan population.[26]

Table 3: Species isolated from onychomycosis

	Number	percentage
Dermatophytes	**n = 19**	
T.rubrum	18	94.73 %
T.mentagrophytes	1	5.26 %
yeasts	**n = 3**	
C.albicans	3	100 %

for nail infection by yeasts. C. albicans is the only isolated species with 7.5% (3/40) with similar studies[14] because of its pathogenicity character.[27, 28]

CONCLUSION

The results of this study show that onychomycosis is the main cause of nail diseases in Kenitra city. Patients were an average age of 41.55 years and women are the majority. In the toes, dermatophytes are more frequent with T. rubrum in the first position followed by T. mentagrophytes. However, yeasts are the main cause of this affection in the fingers. C. albicans is the most isolated species.

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