

Onychomycosis Impairs the Quality of Life of Affected Patients Living in Yaoundé, Cameroon

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Abstract

Background: Onychomycosis is a chronic fungal nail infection that can alter the quality of life (QoL) of patients affected, due to its unattractive character. The aim of this study was to evaluate the impact of onychomycosis on QoL of patients residing in Yaoundé, Cameroon.

Methods: We conducted a cross-sectional study from October 2014 to March 2015. All patients seen in dermatology consultation with suspected onychomycosis and who volunteered to participate were recruited, and a nail fragment taken for mycological laboratory analysis (direct examination +/- culture). The "specific QoL questionnaire" was used to assess the QoL of patients with a positive culture.

Results: Of 3,457 patients screened, 117 had onychosis, suspected to be onychomycosis. Onychomycosis was confirmed in 96 patients after mycological examination. Patients having toenail onychomycosis (42/50; 84%) had impaired QoL in at least one of the social, emotional and functional aspects. For fingernail onychomycosis, this proportion was 91.3% (42/46). When onychomycosis concerned the fingers, QoL was even more altered when the patient was a female ($p < 0.005$) or when there was an associated perionyxis ($p < 0.01$).

Conclusion: This study showed an impaired QoL of patients with onychomycosis.

Keywords: Quality of life; Onychomycosis; Mycological examination; Cameroon

Materials and Methods

Study design, setting and participants

We conducted a cross-sectional study from October 2014 to March 2015 in 6 hospitals of Yaoundé, the capital city of Cameroon, namely: the Yaoundé University Teaching Hospital, the Yaoundé General Hospital (YGH), the Yaoundé Military Hospital, the Yaoundé Central Hospital, the Yaoundé Gyneco-Obstetric and Pediatric Hospital and the Elig-Essono Sub-Divisional Hospital. These hospitals were chosen because they offer outpatient dermatology consultations.

We consecutively and exhaustively recruited all patients aged 18 years and above, who were suspected of onychomycosis after the dermatology consultation at one of the study sites, who volunteered to participate in the study, and whose laboratory analyses concluded in favour of the infection. Patients aged less than 18 years or who did not consent to be enrolled was not considered in the present study.

Collection of data

Data collection used a standardized and pre-tested data collection sheet including socio-demographic characteristics (age, sex, occupation and ethnic group), duration of onychomycosis, clinical description (affected nail area, number of affected nails, presence of perionyxis), and results of laboratory assessment. This sheet was

Introduction

Onychomycosis are fungal infections of the nail caused by dermatophytes, yeasts or molds [1-3]; they represent between 18 and 50% of nail diseases [1,4]. The disease is cosmopolitan, with a prevalence ranging from 2 to 26.9% in the general population [5]. Although onychomycosis are not life threatening, they can have an impact on quality of life (QoL) including social, emotional and functional aspects [6], considering their unsightly character and the significant frequency of pains [1].

Data on the impact of onychomycosis on patients' QoL are scarce in Africa south of the Sahara. In Cameroon specifically and to the best of our knowledge, there is no study that has yet addressed this issue. In 2008, Nkonjdo et al. assessed the mycological profile of onychomycosis without evaluating patients' QoL [7]. This information is needed in our context, which could significantly improve the management of patients suffering from onychomycosis, given that beyond being a cosmetic problem, onychomycosis has been shown to directly alter the patient's daily life [6-9]. The present study aimed to determine the impact of onychomycosis on QoL of patients living in Yaoundé, Cameroon.

completed by self-administered Drake et al.'s questionnaires to evaluate patients' QoL [6]. Anamnestic and clinical information were obtained during the clinical examination conducted by a dermatologist. Any patient suspected of onychomycosis was sampled for investigations laboratory done at the laboratory of the Faculty of Medicine and Biomedical Sciences, University of Yaoundé I (Yaoundé, Cameroon). The laboratory examination was conducted by a mycologist, consisting of a direct exam between slide and cover glass after staining with Indian ink, and/or culture using the Sabouraud milieu. This laboratory assessment permitted to confirm the infection or not.

Assessment of quality of life

Patients' QoL was evaluated on a different day, after obtaining the results of laboratory explorations which confirmed the infection. Drake et al. self-administered questionnaires served to assess patients' QoL [6]. These questionnaires consist of two distinct self-administered questionnaires. The first one is called "fingernail onychomycosis questionnaire", which assesses the QoL of patients with fingernail onychomycosis, associated or not with toenail onychomycosis. The second one is called "toenail onychomycosis questionnaire"; it evaluates the QoL of patients only affected by toenail onychomycosis. Each self-questionnaire consists of three sections assessing the social, emotional and functional impacts of onychomycosis. Responses in these categories range from "not at all disturbing" (score=5) to "extremely embarrassing" (score=0). Subsequently, the score of each item is ordered and reported on a value of 100 for an easier interpretation as follows:

- A score of 100 corresponds to an optimal quality of life;
- A score between 66.6 and 99.9 refers to a slightly impaired quality of life;
- A score between 33.3 and 66.5 corresponds to a moderately impaired quality of life;
- A score below 33.3 refers to a severely impaired quality of life;
- A score of 0 means an extremely impaired quality of life.

Statistical analysis

Data were analyzed using Epi Info 3.5.4 (CDC Atlanta, USA). Results are summarized as count (percentage) for categorical variables, and mean \pm standard deviation (SD) or median (range) for quantitative variables. The U test of Mann Whitney was used to compare the distribution of quantitative variables, and the Chi-2 test was used to seek associations between qualitative variables. Results were considered statistically significant if $p < 0.05$.

Ethical considerations

An ethical clearance was granted by the Ethical Review Board of the Faculty of Medicine and Biomedical Sciences in Yaoundé. Additionally, authorizations from the directors of the different study sites were obtained before commencing the study. Patients were presented all aspects and procedures relating to the study, and we included only those who voluntarily agreed to be enrolled; they signed the consent form accordingly.

Results

During our study period, we received and examined 3,457 patients during dermatology outpatient consultations in the different study sites. Of these, 117 patients were suspected of onychomycosis and sampled for mycological investigations.

Mycological confirmation was obtained for 96 patients (82.1%) among whom 46 patients (48%) had fingernail onychomycosis associated or not with toenail onychomycosis and completed the "fingernail onychomycosis questionnaire", while 50 patients (52%) had only toenail onychomycosis and completed the "toenail onychomycosis questionnaire".

Our series consisted of 49 men and 47 women giving a M/F sex ratio of 1.04. The average age was 42 ± 13.3 years. The Bantu ethnic group (48/96; 50%) was the prevailing one, followed by the Semi-Bantu (44/96; 45.8%) and the Sudanese ethnic groups (4/96; 4.2%).

Analysis of the quality of life for the whole study population

Impairment of the social, emotional and functional aspects of the QoL concerned 84 (87.5%), 90 (93.8%) and 88 patients (91.7%) respectively.

The QoL was equally impaired between patients with fingernail onychomycosis and those with toenail onychomycosis: $p=0.2392$, $p=0.3866$ and $p=0.2835$ respectively for the social, emotional and functional aspects.

The QoL of women was significantly more impaired than that of men ($p=0.0080$, $p=0.0056$, and $p=0.0479$ respectively for the social, emotional and functional aspects).

Analysis of the quality of life for the group "fingernail onychomycosis"

This group included 18 men and 28 women, thus a M/F sex ratio of 0.64. The mean age was 41.9 ± 13.2 years. The median duration of onychomycosis was 47 months, ranging from 1 month to 252 months.

The median number of fingers affected was 3, ranging from 1 to 10. In more than half of cases (27/46; 58.7%), the most affected nail was covered over its entire surface. Perionyxis was found in 22/46 individuals (47.8%).

In this group, 42 patients (91.3%), 43 patients (91.4%) and 42 patients (91.3%) had an impaired QoL respectively regarding the social, emotional and functional aspects (Table 1). The QoL of women was significantly more impaired than that of men in all aspects: social ($p=0.0045$), emotional ($p=0.0019$) and functional ($p=0.0214$) (Figure 1).

Further, the functional aspect of the QoL was significantly impaired in patients with perionyxis ($p < 0.0034$) (Figure 2).

Moreover, the ethnic origin did not impact on the patients' QoL ($p=0.6955$, $p=0.5177$, $p=0.8384$, respectively for the social, emotional and functional aspects); this was the same with the affected nail surface area ($p=0.1858$, $p=0.7720$, $p=0.5430$ respectively for the social, emotional and functional aspects), the number of nails affected ($p=0.7904$; $p=0.2413$, $p=0.3894$ respectively for the social, emotional and functional aspects) and the duration of onychomycosis ($p=0.2056$, $p=0.6748$, $p=0.3266$ respectively for the social, emotional and functional aspects).

Aspects	Quality of Life	Fingernails		Toenails	
		n	%	n	%
Social	Not at all impaired	4	8.7	8	16
	Impaired	42	91.3	42	84
	Mild impairment	25	54.3	16	32
	Moderate impairment	13	28.3	20	40
	Severe impairment	4	8.7	1	2
	Very severe impairment	0	0	5	10
	Total (Impaired + not impaired)	46	100	50	100
Emotional	Not at all impaired	3	6.5	3	6
	Impaired	43	93.5	47	94
	Mild impairment	17	37	25	50
	Moderate impairment	16	34.8	20	40
	Severe impairment	9	19.6	2	4
	Very severe impairment	1	2.2	0	0
	Total (impaired + not impaired)	46	100	50	100
Functional	Not at all impaired	4	8.7	4	8
	Impaired	42	91.3	46	92
	Mild impairment	21	45.7	18	36
	Moderate impairment	12	26.1	21	42
	Severe impairment	8	17.4	7	14
	Very severe impairment	1	2.2	0	0
	Total (impaired + not impaired)	46	100	50	100

Table 1: Quality of life of patients in our series.

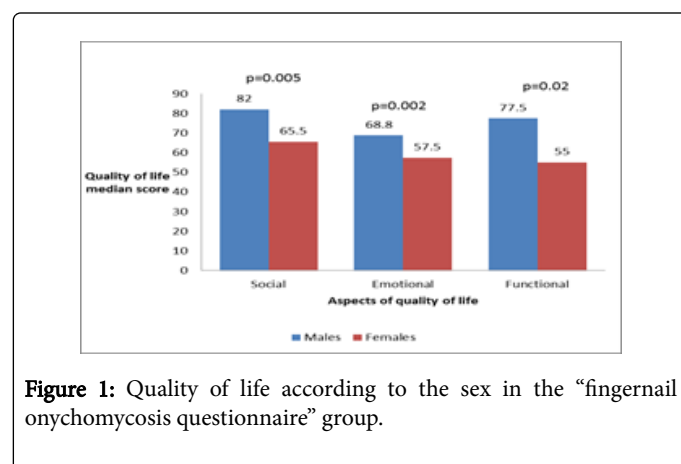


Figure 1: Quality of life according to the sex in the "fingernail onychomycosis questionnaire" group.

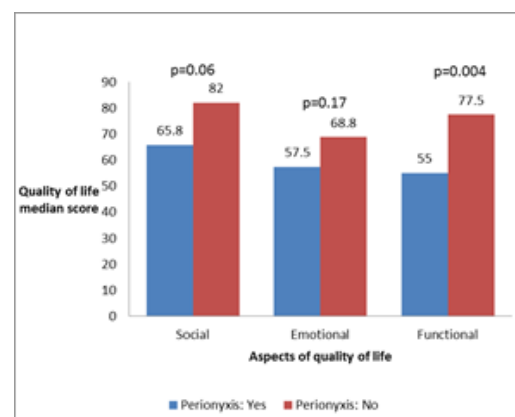


Figure 2: Quality of life according to the presence/absence of perionyxis.

Analysis of the quality of life for the group "toenail onychomycosis"

This group consisted of 31 men and 19 women giving an M/F sex ratio of 1.6. The mean age was 41.6 ± 13.5 years. In this group, the median duration of onychomycosis was 49 months, ranging from 2 to 540 months. The median number of toes affected was 4, with a range between 1 and 10. The most affected nail was covered over its entire surface in 20 patients (40%).

Overall, the QoL was socially impaired in 42 patients (84%), emotionally impaired in 47 patients (94%), and functionally impaired among 46 patients (92%). There was no relation between the QoL and sex ($p=0.1037$, $p=0.1258$, $p=0.5537$ respectively for the social, emotional and functional aspects), the same being with the affected nails surface area ($p=0.8284$, $p=0.9634$, and $p=0.5266$ respectively for the social, emotional and functional aspects), the duration of the disease ($p=0.2399$, $p=0.1728$, $p=0.5152$ respectively for the social, emotional and functional aspects) or with ethnicity ($p=0.2626$, $p=0.4143$, $p=0.2603$ respectively for the social, emotional and functional aspects).

Discussion

The QoL was assessed among 96 patients with onychomycosis using the Drake et al. specific quality of life questionnaire [6]. In general, the QoL was altered in all social, emotional and functional aspects. Our findings concur with previous reports figuring an impaired QoL in patients suffering from onychomycosis in other parts of the world [6,8-11].

In our study, the QoL was equally impaired between patients presenting fingernail onychomycosis and those with toenail onychomycosis, in contrast with Drake et al. findings [10]. Indeed, these authors found that individuals with isolated toenail onychomycosis (66%) were less often embarrassed compared to individuals with isolated fingernail onychomycosis (74%) or those presenting both fingernail and toenail onychomycosis (85%) ($p < 0.05$) [10]. This result could be explained by the fact that toenails are usually camouflaged by closed socks and shoes, which is not the case for

fingerails. Toenail onychomycosis are therefore less accessible to others' glances.

Globally, our women had a significantly more altered QoL than men, this being truer in the group of patients with fingernail onychomycosis. These results corroborate that from Drake et al. showing that women with onychomycosis were more often embarrassed than men (44% vs. 26%) [10]. This discrepancy between men and women can be explained by the fact that women tend to be more attentive to their esthetic appearance than men. However, we found no relation between sex and alteration of QoL among patients suffering from toenail onychomycosis, in contradiction with Lubeck et al. who reported that women were significantly more embarrassed than men with toenail onychomycosis, which they explained by the unsightly appearance of onychomycosis [12].

The functional aspect of the QoL was significantly impaired in patients with perionyxis, probably because perionyxis can be sometimes very painful. Lubeck et al. demonstrated in their study that patients with onychomycosis had a significantly more impaired QoL than healthy controls ($p=0.02$) [8]. In fact, patients with onychomycosis experienced more pains than their healthy counterparts ($p<0.001$) [8].

We found no significant relation between QoL impairment and patients' ethnic origin, which is in contradiction with a previous report. Indeed, Drake et al. suggested that cultural backgrounds do influence QoL alteration among patients with onychomycosis [6]. These authors found a significantly lower QoL impairment among Italians compared to Americans, Germans and French concerning toenail onychomycosis, especially for the social and emotional aspects [6]. Regarding fingernail onychomycosis, the social and emotional aspects of QoL of Germans and Americans were more affected than that of Italians and French [6].

Our study presents some limitations. The questionnaires we used to assess the QoL were designed for Western populations. These tools have not been validated in African populations yet; thus, it may appear unsuitable to have used them in our study, though to date and to the best of our knowledge, there are no questionnaires that have been validated in our populations. Moreover, due to the fact that this study was conducted only in one town (Yaoundé), the generalization of our findings to the entire country may be hampered.

Conclusion

Onychomycosis has a real impact on QoL of patients affected, altering both the social, emotional and functional aspects. Women's

QoL tend to be more impaired than that of men, especially when the fingerails are infected. The presence of perionyxis seems also to aggravate the QoL alteration. In this regard, clinicians must consider integrating a psychological aspect when taking care of patients with onychomycosis in our milieu. Further studies are warranted in our context, to develop and validate local tools to be used for assessment of the QoL of patients suffering from onychomycosis.

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