A descriptive study of toenail and fingernail Onychomycosis in Al-Diwanyia city

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خلاصة

جمعت 44 عينة سريرية من المرضى بألتهاب الأظافر والمراجعين الى وحدة الجلدية في مستشفى الديوانية التعليمي من شهر الثامن لسنة -2010الى شهر السادس 2011.وأخذت العينات من كل الجنسين وبأعمار مختلفة وفحصت مباشرة بأستخدام KOH وزرعت على وسط السابرويد دكستروز أكار . أظهرت نتائج الدراسة أن الفطر *Aspergillus* شكل نسبة (95.4%)والخميرة*Candida albicanc* نسبة (4.64%)وبالنسبة للعمر فأظهرت الدراسة أن (79.54%) أعلى نسبة في الفئة العمرية (30-40) واقل نسبة (6.82%) كانت في الفئة العمرية 050- 60) كما أن نسبة الاصابة كانت في الاناث (45.46%) وارتفعت في الذكور الى (54.54%) كما أظهرت نتائج أحتبار الحساسية أن MIC لمضاد Ketoconazole(1.2- 4.1Mg/ml) و(Griseofluvin لمضاد (Mg/ml62.5-2.6 و(1.2- 15.7Mg/ml) لمضاد Nystatin .بالأضافة الى أن أصابةtoenail كانت أكثر شيوعا بنسبة(79%) من أصابة fingernail (21%).

Abstract

A total of 44 clinical cases which clinically diagnosed as onychomycosis of those patients whom admitted the consult of dermatology and venereal diseases in AL-Diwanyia Teaching Hospital at the period from August- 2010 to June-2011.Nial clipping samples were taken from both gender and different ages to examine directly by KOH smear preparation and /or culturing on sabourauds Dextrose agar to isolate and identify the etiological agent .The results revealed that moulds (*Aspergillus spp*.) constitute(95.46%) and yeast (*Candida albicans*) (4.64%) as etiological agent of onychomycosis.According to age, the isolation percent was high (79.54%) in ages (30-40)years old and lowest(6.82%) in ages (50-60) years old,while in females,th percent of isolation was (45.46%) and males (54.54%).

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The MIC values of ketoconazole,griseofluvin and nystatin were determined for fungal isolates and ranged(1.2-4.12mg/ml) for ketoconazole,(2.6-62.5mg/ml) for griseofluvin and (1.2-15.75mg/ml) for nystatin.In addition to that , the toenails was the most infected (79%) than the fingr nails (21%).

Introduction

Onychomycosis is the most common cases of deformed nails , and account for almost 50% of all nail disease or abnormalities [1,2,3] . Onychomycosis expresses itself in various form , and the clinical by pesreconized by a recent classification include distal and lateral subungnal onychomycosis , superficial , proximal , endoy and total dystrophic onychomcosis [4,5] .

Candide spp. Causative agent mainly cause fingernail Onychomycosis in people whose hands are often submerged in water .Aspergillus spp. cause toenail in people contact with soil , the habit of walking bare foot [6] .

Dermatophyte fungi and yeast are commonly involved in the aetiopathogensis of onychomycosis but non- dermatophytic mould may also be prime agent of nail infection . Recently several reports have documented as opportunistic moulds of nail infection [7,8,9,10,11,12] .

Common source of infection for orderly are family history , increasing age , poor health , prior trauma , warm climate , participation in fitness activities , immune suppression (HIV) , druginduced , communal bathing and a clusive foot wear[13] .

The aim of this study was to Identify the causative agent of onychomycosis, determine the percent of isolation according to the site of infection , age and gender of patients and In vitro the MIC test for antifungal against this mould and yeast were determined.

Materials and methods

Collection of specimens:

Fourty four cases were diagnosed clinically by dermalolgist as Qnychomycosis from patients attending the dermatology and veneral department of Al-Diwanyia teaching Hospital at period 1/8/2010 to 1/5/2011 from both sexes and difference ages .

Patients samples were taken from patients directly by clipping the nail ,then specimen transferred to the laboratory immiddiately and placed on slide treated with (20%) KOH for examination [14] . Cultivation of specimens was carried out on sabouraud's dextrose ager with chloramphenicol (0.05g/l.),then incubated at 28-29C^{o} for 10days [15,16] .

The fungal isolates were identified based on microscopic and macroscopic characteristics as of fungi,in iaddition to germ tube formation for identification of yeast [17,18] .Antifungal Sensitivity test of moulds and yeast by determine MIC (Minimum Inhibitory Concentration) was done by using(dilution Methods) [19,20] .

Results

The clinical presentation of Onychomycosis characterized by rough & yellow or cloudy appearance of nail plate and become rough & crumbly or separted from the nail bed , with no pain or other bodily symptoms unless the disease was sever .The results of fungal infection with
onychomycosis were 35(79.54 %)in patients with age group (30 - 40) ,6 (13.64%) with age group (40-50) and 3(6.82%) in age group (50-60)(Table 1).

Table (1)The number and percent of onychomycosis cases depending on age

Age	Number of cases	Positive cases	%
30-40	40	35	79.54
40-50	40	6	13.64
50-60	40	3	6.82
Total	120	44	100%

X^2cal=32.892
X^2tab=9.21
($p<0.01$ significan)

While according to gender, results of infction were 20 (45.46 %) in famales , and 24 (54.54 %) in males(Table 2).

Table (2) The number and percent of onychomycosis cases depending on gender.

Sex	Positive case	Percentage
Females	20	45.46
Males	24	54.54
Total	44	100%

X^2 Cal.=0.12
X^2 Tab.=0.046 (significant $P<0.01$)

The fungal etiology of Onychomycosis were represented by 3 species . the Lab and 6/44(13.64%) isolates of *Aspergillus flavus* where as the rest were *Candida albicans* 2/44(4.54%).

Table (3) the number and percent of onychomycosis cases depending on causative agent.

Causative a gent	+v	%
Moulds	36	81.82
Aspergillus niger		
Aspergillus flavus	6	13.64
Yeasts	2	4.54
Candida albicans		
Total	44	100%

X^2cal=36.95
X^2tab=6.63
($P < 0.01$)significant

According to the site of infection, the toenails samples represented by 31/44 (79%) of cases and fingernails samples represented by 13/44(21 %) of cases(Table 4) .

Table (4) shows the number of cases depending on site of infection

Site of Infection	+v	%
Toenail	31	79
Fingernail	13	21.1
Total	44	100%

X^2cal=4.65
X^2tab=3.84
(P < 0.01)significant

In this study, the interaction between age and gender showed that the infection was more common in both gender with age group (30-40) (Table 5) .

Table (5) The number and percent of onychomycosis cases according to interaction between age and gender.

Age / Sex	30-40	40-50	50-60	Total
Fameles	20	0	0	20
Males	15	6	3	24
Total	35	6	3	44

X^2cal=7.8
X^2tab=5.99
(P< 0.05)significant

MIC values were highly variable depending on the antifungal under test . In vitro antifungal susceptibility test of *Aspergillus sp*. and *Candida albicans* showed the resistance to griseofluvin and ketoconazole as well as nystatin whereas MIC for ketoconzole are variable but within a range of (1-4 Mg/ml) . MIC for Griseofluvin was (2-62Mg/ml) and for Nystatin was (1-15Mg/ml)(Table 6) . They was no significant differeneces(p>0.01) between fungal species and antifungals .

Table (6) shows the MIC (Minimum Inhibitory Concentration) for three species against three antifnngat.

Species	Ketocouazole	Griseofluvin	Nystatin
Aspergillus niger	1.2-2.6	8.25-15.75	2.6-8.25
Aspergilluj Flavus	1.2-4.12	15.75-62.5	2.6-15.75
Candida albicans	2.6-4.1	2.6-15.75	1.2-2.6

F_{cal} =1.67
F_{tab} = 18(p>0.01) No significant

Discussion

The present study showed that the onychomycosis was to be a disease of the middle – age group (30-40) with male and female (1:1) ratio. This is similar to results conducted in India [21,22] . This is may due to that age agroup are more available work and more contact with environment where opportunistic fungi were found[29].

The causative agent *Aspergillus niger, Aspergillus flavus* and *Candida albicans* were the majority of the cases etiology and this result is similar to study in eastern Literature [23].

Aspergillus niger the most common pathogen isolated in our study followed by *Aspergillus falvus, andCandida albicans* this result is in agreement with other study[24] .

Candida nail infection occur more commnly in womn than men and this may due to that women are more continuously in contact with water and detergent that facilliitate the infection with fungi may due to that these fungi [25] .

The reason for high percent of Aspergillus spp . may due to that these fungi are a widespread saprophyte moulds in soil , air , seeds , plant , fruits and decaying vegetative [26,27] .

Torres *et al* showed that the Incidence of onychomycosis that due to non – dermatophytic moulds varies according to geography Location such infection are moe common in the toenails [28].

In this study, we showed a high percent of toenail infection . Elweski explained that several factors to modern life have resulted

may increased prevalence of toenail onychomycosis include : the wearing of shoes more time , Longer explore to pathogenic fungs because long time is spent in environment and did not maintain foot care[29] .Bouckachabine & Agonmi observed that in village farmers frequent contact with mud on the bare feet and hand, mainly have history contact the hand with water this allowed increasing in infection in fingernail too [3o].

Of the various systemic antifungal agent studied seems not to be effective and unsuitable for treat onychomycosis. The cause is backing to the prevalence of non – dertmatophytic fungi and yeast very much higher than dermatophyte infection therefore treatment with the drugs seems futil [31] .

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