

Isolation and identification of *Candida* species from urogenital tract infections of women in Baghdad city

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Summary

In order to determine *Candida* Species isolates that associated with urogenital infection in women, 174 vaginal swabs and 66 urine samples were collected from pregnant and non-pregnant women suffering from urogenital tract infection whom visited teaching Al-way hospital during the period from January to October 2011. The results showed that 32 out of 174 vaginal swabs were *Candida* Spp positive (18.3%), high percentage was reported in June and July (25%) for each one and no fungal isolates were recorded in March. The results also explained that high percentage of fungal isolates was recorded in pregnant women (68.7%) as comparing with non-pregnant women (31.2%). Thirty-two fungal isolates were recorded which included: *C. albicans* (43.7%); *C. tropicals* (21.8%), *C. prarapsilosis* (12.5%); *C. glabrata* (9.3%); *C. guilliermondii* (6.2%); *C. capitatum* and *C. krusei* (3.1%) for each one. Also the study revealed that 9 out of 66, (13.6%) of the urine samples were *Candida* spp positive which included: *C. albicans* was form high percentage (7.5%) followed by *C. tropicals* (4.5%) and *C. glabrata* (1.5%), these results indicated that *albicans* and non-*albicans* *Candida* may be associated with urogenital infection in women.

عزل وتشخيص أنواع خميرة المبيضات من ادرار ومهبل النساء المصابات بالتهاب القناة البولية التناسلية

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الخلاصة

من اجل معرفة عزلات انواع خميرة المبيضات المصاحبه لاصابات القناة البولية التناسلية في النساء تم جمع 174 مسحة مهبلية و66 عينة ادرار من نساء حوامل وغير حوامل يعانون من اصابات القناة البولية التناسلية راجعن مستشفى العلوية خلال الفتره من شهر كانون الثاني ولغاية شهر تشرين الاول / 2011 اوضحت النتائج بان 32 من 174 مسحة مهبلية كانت موجبه لعزلات خميرة المبيضات (3و18%) و اعلى نسبة عزل سجلت في حزيران وتموز (25%) لكل شهر ولم يسجل أي عزل فطري في شهر اذار وكانت اعلى نسبة عزل في النساء الحوامل (7,68%) مقارنة بالنساء غير الحوامل (2,31%) وشملت العزلات الانواع التاليه من خميرة

المبيضات: *C. albicans* (43.7%), *C. tropicals* (21.8%), *C. prarasilosis* (12.5%),

C. glabrata (9.3%) *C. guilliermondii* (6.2%) and *C. capitatum* and *C. krusei* (3.1%)

واوضحت الدراسه بان 9 من 66 عينة ادرار كانت موجبه للعزل الفطري (6,13%) وكانت العزلات كما يلي:

C. albicans (7.5%), *C. tropicals* (4.5%), *C. glabrata* (1.5%)

تشير نتائج الدراسه بان خمائر المبيضات البيضاء وغير البيضاء قد تكون مصاحبه لاصابات القناة البولية التناسلية في النساء.

Introduction

Candidiasis is a zoonotic disease causes by *Candida* species, with epidemiological surveys explaining that *Candida* Spp. are now the fourth most common pathogens isolated from blood of hospitalized patients (1). *Candida* yeast commonly present in human and their growth is normally limited by the human immune system and by other microorganism such as bacteria occupying the same location in the host body (2) but it can cause infection in immune compromised patients (3). The genus *Candida* includes about 150 different species, however, only few of them can induce human infections, and the most important of pathogenic species is *C. albicans* but other non-*albicans* can be cause infection in human and animal such as *C. tropicals*, *C. glabrata*, *C. krusei*, *C. parapsilosis*, *C. stellatoidea* and *C. kefyr* (4). Vaginal candidiasis is caused by overgrowth of a fungal species, *C. albicans*, in the vaginal flora (5). The symptoms of vulvo-vaginal candidiasis include itching, soreness,

changes in vaginal discharge(6); in 20% of healthy asymptomatic women, candida spp can be found in the lower genital tract flora(7) and approximately 3 out of 4 sexually active women will experience vulvo vaginal candidiasis at least one in their lifetime (8,9).

Urinary candidiasis is one of the most confusing forms of candidiasis, since the differentiation between colonization and real infection is difficult to make, isolation of these organism from the urine may be represent colonization or contamination. Candiduria can be a sign of candidemia or invasive renal candidiasis (10, 11). The present study aimed to determine the Candida spp isolates from urogenital tract of women suffering from urogenital tract infection.

Materials and methods

Vaginal swabs were collected from 174 pregnant and non-pregnant women, also 66 urine samples were collected from those were suffering from urogenital tract infection .The patients visited Teaching AL-Ulwyia hospital during January to October, 2011

Samples were cultured on sabourauds dextrose agar plates, containing 0.5 mg per ml chloromphenicol and incubated at 37C and examined for its growth at 24, 48 and 72 hr, then biweekly intervals for 4weeks.

Candida species was identified as follows:

1-macroscopic appearance

Shape, color, consistency, odor and edge of the yeast colonies were examined

2-Germ tube test according to (12)

3-production of the chlamydospores was done according to (13)

4-staining and microscopic examination

A-lactophenol cotton blue stain according to (14)

B-gram stains according to (15)

C-Nigrosen stain .it done according to (16)

5-Biochemical test (urease production test) according to (17)

6-API Candida: The API-yeast IDENT system was used for the identification of yeast isolate (4)

Results

Culture methods showed clear yellowish white creamy colonies within 1-2 days post-incubation,microscopic examination revealed pseudo-hyphae, cluster of budding cells, blastospores and chlamydospores, and germ tube formation, these feature were given suspected that the isolates were Candida spp which confirmed by other test that mentioned above. The results ,which confirmed by API test, showed that examining 174 vaginal swabs from women,32 swabs were positive Candida spp isolates (18.3%) ,and these isolates were variable according to months of years ,June and July showed the high percentage of isolates:8 out of 174 (4.59 %) for each one ,wheras no fungal isolates were reported in March, also the result revealed that the pregnant women expressed high percentage of fungal isolated:22 out of 174(12.6%) as comparing with non-pregnant women :10 out of 174(5.7%) ,(table:1).

The present study explained that the fungal isolates include *albicans* and non-*albicans* *Candida* with variable percentage .*C.albicans*:14 out of 32 (43.7%), *C.tropicalis*:7 out of 32(21.8%) ,*C.prarapsilosis*:4 outof 32 (12.5%), *C.glabrala*:3 out of 32(9.3%) ,*C.krusei* and *C.capitatum* :1 out of 32(3.1%) for each one.(table:2)

Table (3) showed that 9 out of 66 urine samples were Candida Spp positive isolates (13.6%). Fungal isolates recorded in pregnant women were more, (6 out of 66 (9.09%)) than those number in non - pregnant women, (3 out of 66 (4.45%)). The result also revealed that *C.albicans* form a high percentage of isolates from urine samples: 5out of 66(7.57%) followed by *C.tropicalis*:3 out of 66(4.54%) and *C.glabrala* 1 out of 66(1.5%). (Table: 4).

Table: 1. Number of vaginal swabs collected from patients recurrent AL-Ulwya hospital during January to October 2011 with positive isolates of Candida species.

N	Months	No of sample	No of positive	Pregnant	Non-pregnant
1	January	15	2	2	-
2	February	14	2	1	1
3	March	11	-	-	-
4	April	13	1	1	-
5	May	20	2	1	1
6	June	18	8	6	2
7	July	32	8	5	3
8	August	16	4	2	2
9	September	18	3	2	1
10	October	17	2	2	-
	Total	174	32	22	10

Table: 2 .Type of Candida spp isolated from vaginal swabs

N	Candida spp	Number of isolates
1	<i>C.albicans</i>	14
2	<i>C.tropicals</i>	7
3	<i>C.prarapsilosis</i>	4
4	<i>C.glabrata</i>	3
5	<i>C.krusei</i>	1
6	<i>C.guilliermondii</i>	2
7	<i>C.capitatum</i>	1
	Total	32

Table: 3.Number of urine samples collected from women recurrent AL-Ulwya hospital during January to October 2011

N	Months	No.urine sample	NO.positive Canidida spp	State of pateints	
				pregnant	Non-pregnant
	January	14	1	-	1
	February	-	-	-	-
	March	-	-	-	-
	April	6	1	1	-
	May	15	3	2	1
	June	6	-	-	-
	July	15	3	2	1
	August	3	1	1	-
	Sepyember	-	-	-	-
	October	7	-	-	-
	Total	66	9	6	3

Table: 4.Types of Candida Spp isolated from urine samples collected from AL-Ulwya hospital

N	Candida spp	No of isolates
	<i>C.albicans</i>	5
	<i>C.tropicals</i>	3
	<i>C.glabrata</i>	1
	total	9

Discussion

Candidiasis constitutes the majority of fungal infections especially vulvovaginitis with an increased incidence(18).The diagnosis of Candidiasis is usually based on the isolation and identification of *Candida* by conventional morphological and biochemical tests(19).The morphological results of colonized and microscopic examination were helped in the primary diagnosis of *Candida* spp in the present study .These evidence was in consistence with (20) and (21) who explained that germ tube formation, chlamydoconidia, budding and pseudohyphae are the main feature of *Candida* species .Also Odd *et al.*(22) explained that the most rapid identification of *Candida* Spp is the examination of germ tube production.

The present study revealed high number of *Candida* isolates in summer months ,these may be due to the presence of suitable environment condition which including temperature that increase sweating with decrease cleaning the lower part of genital tract, these evidence was in consistence with Sobel(6) who explained that *Candida* spp colonized the lower part of genital tract. A high percentage of *Candida* spp were isolated from pregnant women as comparing with non-pregnant women, these indicated that the pregnancy may be predisposing factor for vaginal candidiasis, as a result of elevation in glycogen content of vagina in latter stage of pregnancy, the glycogen was converted to lactic acid by *lactobacilli*, thus providing amilieu favorable for growth of the yeast(23).

Also generalized suppression of adaptive immune response mainly occurred during pregnancy (24), this immunosuppression state prevent maternal rejection of the fetus but has unfortunate consequence of increasing maternal susceptibility to certain infectious agents (25). Furthermore infection of non-pregnant women may be indicated that Candidiasis occur in both pregnant and non-pregnant women at active sexual age, due to high estrogen levels which stimulate glycogen secretion that provides extra nutrition for yeast growth(26). Risk factors associated with vaginal candidiasis include elevated estrogen and uncontrol of using antibiotics (7).

Our results showed that albicans and non albicans *Candida* spp were isolated from vulvovaginitis and the main isolate was *C.albicans* followed by *C.tropicals*, *C.prarapsilosis* and *C.glabrala* . These observation may be indicated that these isolates play important role in vulvovaginitis in women, these observation was supported idea that mentioned by (27) who said that the pattern of mycological shift from *C.albicans* to non-albicans *Candida* spp in Asian, Nyrjery, *et al.* (28) who explained that *C.albicans* was the predominant species that cause vaginitis with prevalence of 70-90%, also (29) reported *Candida* Spp in (28 out of 50) women with a history of recurrent vulvovaginal Candidiasis.

The low number of fungal isolates from urine samples in the present study may be due to less number of the collection samples as comparing with study of Dorko *et al.* (30) who reported that 58 out of 94 urine samples were *Candida* Species positive isolates and they reported that *C.parapsilosis* was a high isolates (23 out of 58) followed by *C.tropocals* (6 out of 58), *C.krusei* ,(3 out of 58)

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