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Prevalence Rate of Candida Albicans Isolated from Samples Taken from Oral Cavity and Urine for Patients of Hospitals of Kurdistan Region, Iraq.

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ABSTRACT

Candida albicanus are the most common cause of fungal infections, leading to a range of life-threatening invasive diseases196 oral cavity and urine specimens were collected from patients, of hospitals of Zakho and Duhok cities in period from January to December 2019 including (87) oral swabs from different infected (males and females) and 109 urine specimens from different infected males and females. all samples were cultured on Sabouraud Dextrose agar (SDA). Chlamydospore formation, CHRO Magar, and with the use of Vitek 2 Compact system to ensure this diagnosis. This study aimed to identify prevalence rate of Candida albicanus isolated from oral and urine of patients for hospitals of Zakho and Duhok cities, the total rate of isolates taken from the oral swab in males and females was 43.5%, while the total rate of isolates taken from urine (Vagina of females and Urethra of male). was 54.5%, As for the swabs isolated from the skin, the total rate it was only about 2%, which we did not address in this study. The current study revealed a high prevalence of candidiasis in female more than males for urine samples and also for oral swab samples.

Keywords*: candida albicanus, candidiasis, prevalence rate, oral cavity, urine.*

INTRODUCTION

Candida albicans is a normal microbiota of the skin and mucous membranes, Oral candidiasis is a superficial opportunistic infection of the oral cavity by Candida albicans, first described in 1838 by pediatrician Francois Veilleux. Local and systemic factors facilitating the development of the disease (1). It is one of the common fungal infection, affecting the oral mucosa. The most prevalent Candida species isolated from the oral cavity is Candida albicans (2, 3). Candida is not harmful in healthy hosts, but may cause opportunistic infections in immunocompromised hosts, such as patients suffering from AIDS, leukemia and diabetes. Oral candidiasis, which is frequently caused by Candida albicans (4). Candida species member of the normal flora of an individual from the gastrointestinal tract, vagina, oral cavity, skin and mucosal surfaces of human (5). however, only a few of them can human infection (5,6,7). The last decade has seen Candida spp, infections and chronic mucocutaneous infection in immune compromised patients (5,8). Candida species are present human fungal pathogens can cause genitourinary candidiasis which involves vulvovaginal candidiasis in female and balanoposthitis and balanitis in male, oral candidiasis, and the digestive tract and candiduria in both genders (5-9). Has several virulence formation Phenotypic switching, Dimorphism, Production of hydrolytic enzymes (10). The infections mostly occur in lower urinary tract bladder and urethra (11). Candiduria is the present of Candida spp in urine (12), Vulvovaginal candidiasis is the second most frequent infection of the female genital tract (13). But increasing number of antibiotics can be used to treat mycotic infections (13,15). Candiduria is defined as the presence of, colonization of Candida, or urinary tract infections (UTI), such as disseminated candidiasis (16). Candida is detected in urine; however, Candida associated UTI is mostly determined by >105 CFU/ml and generally related to the symptoms of the patient (17). Among Candida species, Candida albicans has been reported as the most common cause of candiduria.

The aim of this study is to evaluate the prevalence rate of Candida albicans infection in the oral cavity and urine in urethra for male and vagina in female, to study estimating the prevalence of Candida albicans that cause oral disease and UTI and vagina candidiasis of human regarding sex of patients in hospitals of Duhok and Zakho cities.

MATERIALS AND METHODS

A total of (196) samples were collected from (Oral and Urine), sterilized containers from patients in Zakho and Duhok hospitals, the study was carried out during the period from Jan. 2019 to Dec. 2019. Candida isolated were identified depending on the morphological features on culture medium, germ tube formation, and with the use of Vitek 2 compact system the germ tube test is widely considered the better method for the identification of Candida

(30). The germ tube is most economical, rapid, easy, can usually diagnose candidiasis in the mouth or throat simply by looking inside. usually diagnoses candidiasis in female and male by taking a small sample of urine in (Vagina of females and Urethral of male). The examine of sample under a microscope in a laboratory for a fungal culture. This study revealed a high prevalence of candidiasis in female more than males for urine samples and also for oral swab samples, the isolates were stained with gram stain after placing the specimen on a clean slide with a drop of 10% (KOH) and examining it under a microscope. Slide identification using VITEK 2 Compact System, detection using the manufacturer's protocols Candida spp. .

Statistical analysis; The results were statistically analyzed performed by using Microsoft office Excel 2003 and SPSS were considered statistically significant.

RESULTS AND DISCUSSION

the study was carried out during the period from Jan. 2019 to Dec. 2019. Candida isolated were identified depending on the morphological features on culture medium, germ tube formation, Chlamydospore formation, CHRO Magar, and with the use of Vitec 2 compact system.

In table (1) shows that the rate of oral swabs taken from patients in Dohuk hospital was more compared to the oral swabs taken from Zakho hospital. That is, the rate of infections in males and females in Zakho Hospital was 18.5% lower compared to the infection rate in males and females in Dohuk Hospital, which was higher by about 25% The number of isolated swabs for female patients was higher by 61 samples compared to male patients. The number of isolated swabs was 26 samples, and the total average of isolated swabs from male and female patients was about 43.5% samples.

Month	Candida albicanus in Oral Swabs Isolated Duhok hospital			Oral Swabs Isolated in Zakho hospital			Total No.		
	Female Infect	Male Infect	AV	Female Infect	Male Infect	AV	Female Infect	Male Infect	AV
Jan	1	1	1	1	1	1	2	2	2
Feb	2	1	1.5	2	1	1.5	4	2	3
Mar	3	1	2	1	1	1	4	2	3
Apr	2	1	1.5	2	1	1.5	4	2	3
May	4	2	3	3	0	1.5	7	2	4.5
Jun	2	2	2	3	1	2	5	3	4
July	3	1	2	2	0	1	5	1	3
Aug	4	2	3	3	1	2	7	3	5
Sep	3	2	2.5	2	1	1.5	5	3	4
Oct	4	1	2.5	3	0	1.5	7	1	4
Nov	3	2	2.5	4	1	2.5	7	3	5
Dec	2	1	1.5	2	1	1.5	4	2	3
Total	33	17	25	28	9	18.5	61	26	43.5

Table1: Isolated Specimens for Candida albicanus from Oral cavity for The Patients in Dohuk and Zakho hospitals for Year 2019.

In figure (1) shows that the rate of oral swabs isolated from male and female in Dohuk and Zakho hospitals was the highest rate of infections in the month of November and August followed by the month of May, while in June, September and October the rates of infection were equal. This is also the case for the months of February, March and April as well, while in Infection rates were lower in December, followed by January. Our results about microbiological identification are similar to those obtained by Odds (28) who reported that the most frequently used primary isolation medium for Candida is SDA which, although permitti Muadcheingk & Tantivitayakl (29) found that the distribution of C. albicans and non albicans Candida species isolated from oral candidiasis patient's relation to gender was in females 108 isolates Candida albicans species and 66 isolates Non-albicans Candida species, while in males, it was 46 isolates Candida albicans species and 30 isolates Non-albicans Candida species. ng growth of Candida. Approximately, 95% of C. albicans isolates produce germ tubes. (30).

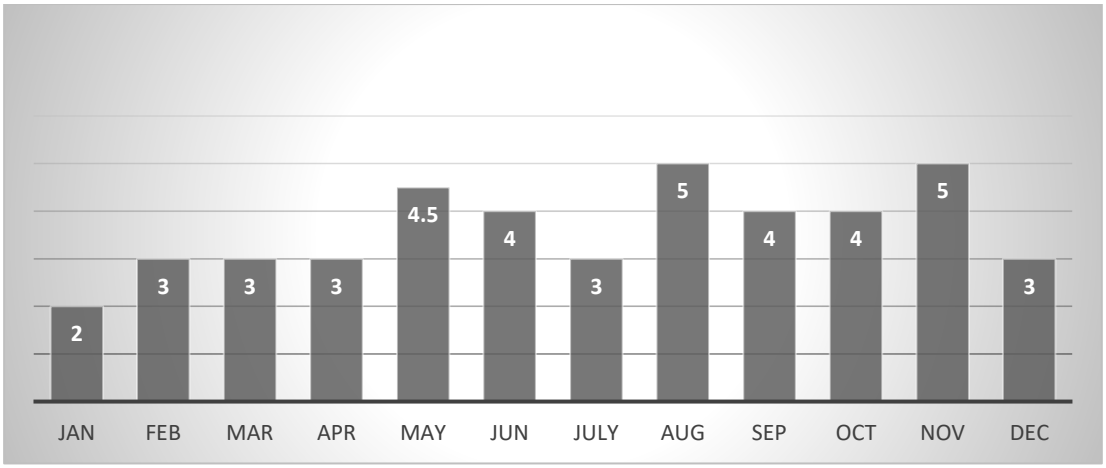

Figure1: Average of oral Swabs Isolated from patients in Zakho and Duhok hospitals for 2019 year (female and male).

In table (2) shows that the rate of urine smears taken from the vagina in females and the urethra of male patients in Dohuk hospital was lower compared to urine smears taken from Zakho hospitals. That is, the infection rate in males and females in Zakho Hospital was higher by 29% compared to the infection rate in males and females in Dohuk Hospital, it was less by about 25.5%, and the number of isolated swabs from female patients was higher by 78 samples compared to male. The number of isolated swabs was 31 samples, and the total rate of isolated swabs from male and female patients was about 54.5 %samples.

Month	Candida albicanus								
	Urine Swabs Isolated Duhok hospital in			Urine Swabs Isolated in Zakho hospital			Total No.		
	Female Infect	Male Infect	AV	Female Infect	Male Infect	AV	Female Infect	Male Infect	AV
Jan	2	1	1.5	2	1	1.5	4	2	3
Feb	2	1	1.5	3	2	2.5	5	3	4
Mar	3	1	2	4	2	3	7	3	5
Apr	4	0	2	3	1	2	7	1	4
May	3	1	2	3	1	2	6	2	4
Jun	4	1	2.5	5	2	3.5	9	3	6
July	2	0	1	3	1	2	5	1	3
Aug	4	2	3	3	2	2.5	7	4	5.5
Sep	3	1	2	2	2	2	5	3	4
Oct	4	1	2.5	2	1	1.5	6	2	4
Nov	5	2	3.5	5	2	3.5	10	4	7
Dec	3	1	2	4	2	3	7	3	5
Total	39	12	25.5	39	19	29	78	31	54.5

Table2: Isolated Specimens for Candida albicanus from Urine for The Patients in Dohuk and Zakho hospitals for Year 2019.

In figure (2) shows that the rate of urine swabs taken from the vagina in females and the urethra in male from the hospitals in Dohuk and Zakho had the highest infection rate in the month of November, followed by the month of June, followed by the month of August, then the month of March, and then January, while the months of February, April, May, September, and October. Infection rates were equal, while in January and July infection rates were lower and also equal. As for the swabs isolated from the skin, the total rate it was only about 2%, which we did not address in this study.

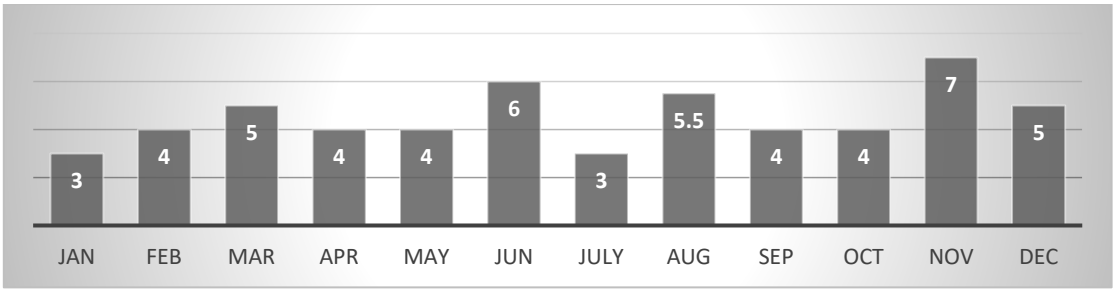

Figure2: Average of urine swabs Isolated from patients in Zakho and Duhok hospitals for 2019 year (female and male).

Candida albicanus causes of urinary tract infections in both female and male (11). Genital regions from female infected by Candida albicanus are called vulvovaginitis (21). Most Scientists are referring to Candida species causes urinary tract infections (12). The prevalence of candiduria caused by different species Candida (14, 20, 22), which include C. albicans, C. glabrata, C. krusei, C. pararapsilosis, C. tropical, C. builliermonbii, and C. spellatoibef (8), both albicans and non albicans ability infection urinary system (7). C. albicans was the most frequently isolated species. This result is consistent with a previous study carried out in the same hospital in 2019 (24), as well as with several studies from other countries (23, 25-26). Urine, throat swab was the samples inhich yeasts were isolated most frequently. Our results are also similar to those previously reported elsewhere (27, 28, 29). simply by looking inside.

CONCLUSION

The prevalence rate in the urine candidiasis by Candida albicans was highest compared with oral candidiasis was less in female and male, the total rate of isolates taken from the oral swab in males and females was 43.5%, while the total rate of isolates taken from urine (Vagina of females and Urethra of male) was 54.5%, Candida albicans infection have indicated that the female patients are highly than of male patients.

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