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BACTERIURIA AND CANDIDURIA IN URINARY TRACT INFECTIONS IN PATIENTS WITH DIABETES

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ABSTRACT

Background: Candiduria is finding of yeast Candida species in the urine could mean that the patient has pyelonephritis or cystitis who have bladder colonization, and in patients who have upper urinary tract infection that developed either from retrograde spread from the bladder or hematogenous spread from a distant source. **Objective:** The aim of this research work was to isolate and identify bacteriuria and Candiduria associated in Urinary tract infections in patients with diabetes to establish relationship of measure serum PCV, WBC and Hb levels in diabetes and compare with control. **Methods:** The work was applied on 57 UTI Patient and40 apparently health controls with age range (30-60) years. Urines cultures were collected from patients who gave informed consent aseptically into sterile McCartney bottles and examined microscopically, culturally Samples were cultured on blood agar, McConkey agar and SDA agar. Also collected blood sample from patients analyzed for serum PCV, WBC and Hb. **Results**: Urines cultures ‘of UTI Patient with diabetes reveals major types of bacteria, E. coli, K. pneumoniae, S. aureus. The least prevalent organisms were Streptococcus pyogenes, E. faecalis and S. saprophyticus. The parameters showing that there is a significantly increased ($p< 0.05$) in WBC in Diabetes mellitus patients (10231) compared to control group (5500) and where as HB and PCV levels decreace in there value specially with age between (41-50).

KEYWORDS: Bacteriuria, Candiduria, U.T. Idiabetes mellitus, PCV, WBC and Hb.

NTRODUCTION

Bacteriuria is led to development of urinary tract infection in pregnancy due to physiological changes and a major risk factor for the patients with diabetes, It is mean the presence of at least 105 colony-forming units (CFU) per ml of 1 or 2 bacterial species in clean-voided

midstream urine sample from an individual without symptoms of a urinary tract infection (UTI).[1]

Diabetes mellitus is effects of the genitourinary system. This effect predisposes to bacterial urinary tract infection (UTI) in the patient with diabetes, Patients with diabetes mellitus have been reported to have increased rates of UTI infections and renal disease can which cause by Recurrent UTI.[2,3]

Risk of bacteremia accompanying UTI in these patients is nearly 12% and gram negative bacteria are the most common pathogens; however, gram positive bacteria such as Enterococcus and Staphylococcus could also cause bacteremia.[4]

Bacterial is one of aetiologic agents in bacteriuria have been reported to include Klebsiella pneumoniae, Escherichia coli, Streptococcus agalactiae, Enterococcus faecalis, coagulase negative.[5]

Candida species are the most commonly identified fungi in urine and candiduria is the presence of Candida species in the urine,

Candida is a member of normal flora in vagina and oral cavity, there are many predisposing factors that can lead to these infections such as pregnancy, long term use of antibiotics, diabetes mellitus, using of corticosteroids, HIV infection, and being immunocompromised.[6] Candiduria may indicate bladder colonization due to indwelling catheters, fungal bezoar, and primary or disseminated candidiasis[7]

MATERIALS AND METHODS

Urine samples 57 were collected from patients with type 2 diabetes mellitus with UTI attending the Mergane Hospital consisting of 40 health controls were involved in this study. Their age range was from (31–70) years.

Bacteriuria in patients with diabetes mellitus is the presence of a significant quantity of bacteria in a urine specimen properly collected from a person without symptoms or signs of UTI.

Bacteriological study includes culturing of Urine specimens with selective and differential media. Biochemical investigations were done for bacterial identification.[7]

Yeast study

Germ tube test

A loopful of yeast cells suspension was inoculated into 0.5 ml of human serum and incubated at 37°C for 3 h. After incubation period, it was examined under field microscope. Germ tube was considered as a lateral tube without septum and had no constriction at initiating site, which is a positive test for C. albicans.[8]

Chlamydospore formation test

Chlamydospore formation test was fulfilled by pick up. Inoculums of yeast colonies were subcultured on rice agar medium (10 g rice polish and 15 g agar all dissolved in 1 L of distilled water) and incubated at 30°C for 72 h. Then they were mounted by adhesive tape on slide with lactophenol cotton blue.

Blood samples Three ml of blood were collected by vein puncture into two sterile test tubes, in one of them 2 ml of blood were put and left for (2–4) hours, and using it in serological tests and determination of PCV, WBC and Hb.[9]

STATISTICAL ANALYSIS

T-test ($p < 0.05$) were carried out according to.[10]

RESULTS

Table 1 shows the bacteria isolated in from urine samples of patients with type -2 diabetes mellitus and the percentage prevalence of the organisms.

E. coli were found to be the most prevalent in patients with type -2 diabetes mellitus (47.3%), followed by K. pneumoniae (19.2%) and S. aureus (14%). The least prevalent organisms were Streptococcus pyogenes, E. faecalis and S. saprophyticus (3.5%, 7% and 8.7%).

In This study Found Gram-positive bacteria was not high; this is similar to other studies in different countries.[10] Apart from the Gram-positive isolated in urine, the other isolates are inhabitants of the large bowel. The Enterobacteriaceae family were the most common microorganism isolated of Urinary tract.

The main etiologies of renal and perinephric abscesses are enteric gram-negative bacilli (predominantly E. coli) or polymicrobial infection.[11]

Table: 1 Bacteria isolated from urine samples of patients with type -2 diabetes mellitus

Bacteria types	No. of isolates %
Streptococcus pyogenes	2(3.5%)
Enterococcus faecalis	4(7%)
Strept. saprophyticus	5(8.7%)
Staphylococcus aureus	8(14%)
Escherichia coli	27(47.3%)
Klebsiella pneumoniae	11(19.2%)
Total	57(100%)

The results obtained from the morphological and cultural characterization of the fungal isolates from the urine samples revealed the presence of Candida albicans (24.74%), **C**.tropicalis (22.2%), C.krusi (20.37%), Rhodoteula rubra (16.6%) (Table 3),

Most C. albicans isolates formed germ tubes and chlamydospores on Rice agar (Table 1). Results show that 94 and 96.4% of C. albicans isolates formed germ tubes and chlamydospores, respectively. These results are in line with those of (12) C. albicans had remained the major agents of 1` Aszx candiduria until recently (13), The results showed that chromoagr contributed to differentiation of Candida spp. into two groups, C. albicans and non-albicans species. However, this medium was unable to differentiate C. albicans from C. krusi and C. tropicalis because there was no clear borderline between these yeasts due to their colors on CHROMagr.[14,15]

Table: 2 Germ tube, chlamydospore formation and colony color of type -2 diabetes mellitus patients Candida spp.

Yeast types	No. of isolates %	No. of Germ tube %	No. of Chlamydospore %	Colony color on CHROMagar and texture
C.albicans	23 (40.3%)	20 (%)	21(%)	Light green and smooth
C.tropicalis	(712.2%)	(00%)	(00%)	Blue-pink
C.krusi	(47%)	(00%)	(00%)	White-pink with white border
C.parapsilosis	(610.5%)	(00%)	(00%)	White cream
C. glabrata	17(29.8%)	0(0%)	0(0%)	Pink to cream

Detection of hematological parameter in patient with Diabetes mellitus

Levels of WBC increace compairted with control and age prioued (51-60) showed highly increase in WBC value about 10.231 compairted with control 5.500.where as HB and PCV levels decreace inthere value specially with age between (61-70). Table (3). Found report that relationshipe between Wbc and Diabetes mellitus.[15] This result of stimulation of immunity system and stimulation led to increase symbole of infelmantry like Wbc and

cytokines because relationshipe of infelmantory and insulin and Human blood components formed a critical signal for any abnormalities resulted by invading of foreign agents or inflammation, these invaders led to changes in levels of blood parameters such as WBC, PCV, phagocytes percentage as a result of defense mechanism.[16]

Table (3) Some hematological parameter in patients with type -2 diabetes mellitus

Age years	Groups	HB M ± SD	PCV M ± SD	WBC M ± SD
31-40	Patient	*13.194±0.267	*38.841±0.786	9.053±o.950
	Control	12.505P±0.253	39.682±0.933	5.132P±0.418
41-50	Patient	12.717±0.304	*43.617±0.619	9.951±1.323
	Control	14.642±0.271	42.264±1.758	5.053±0.323
51-60	Patient	*13.105±0.167	*43.029±1.026	10.231±0.322
	Control	13.558±0.162	43.011±0.032	5.500±0.543
61-70	Patient	*13.662±0.286	45.264±0.622	9.552±0.953
	Control	14.182±0.675	43.523±0.632	4.530±0.867

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