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URINARY TRACT INFECTION;

FREQUENCY OF FUNGAL URINARY TRACT INFECTION AMONG PATIENT WITH CHRONIC LIVER DISEASE.

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ABSTRACT… Objectives: To determine the frequency of fungal urinary tract infection among patient with chronic liver disease. **Study Design:** Cross-sectional study. **Period:** Six months from 18th March 2016 to 18th September 2016. **Setting:** Department of Gastroenterology, Liaquat National Hospital Karachi. **Patients and Methods:** All the patients between 18 years to 60 years of age, either gender and diagnosed case of chronic liver disease of child class A & B for > 1 years duration were enrolled and explored for fungal urinary tract infection while the data was saved and analyzed in SPSS 16 to present the frequencies, percentages and mean ±SD. **Results:** A total of 236 CLD patients were included in the study of which 70 patients (30%) were male and 165 patients (70%) were female, with mean age of 53.47±5.51.30 years, mean duration of CLD and mean BMI was 3.50±1.50 years and 27.32±1.88 kg/m^2 respectively. Most of the patients (85%) were child class C whereas 141 patients (59.7%) had fungal UTI. **Conclusion:** Fungal urinary tract infection in CLD patients is common as these patients are immunocompromised and has excessive use of antibiotics.

Key words: Fungal Urinary Tract Infections, Liver Chronic Disease, Urinary Tract Infections.

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INTRODUCTION

The antibody-coated yeasts cells in urine were shown to be a non-specific.[1,2] Cast containing yeast is specific for upper urinary tract infection (UTI), but insensitive.[3] CLD patients are known to have various functional immune abnormalities, ignoring a possible *Candida* infection in such patients can have fatal consequences. Obtaining a repeat urine sample post catheter change is a simple but a highly discriminatory exercise; clearly demonstrated in our study as 90.9% of *Candida* cleared post catheter change.[4] Virtually any *Candida* species may be associated with Candiduria. Earlier studies report *C. albicans* as the predominant isolate (50-70%) among chronic liver disease patients.[4] Now there is a paradigm shift toward *non-albicans Candida*. *Non-albicans* species *C. glabrata* adapts well to urine properties such as substrate availability, osmolality and pH; fluconazole prophylaxis promotes their selection.[5-8] *C. hemolunii*, inherently resistant to many antifungals, is being increasingly reported; a case of catheter related candidemia has also been reported.[9-12] Therefore the rationale of the present study was to measure the current magnitude of fungal UTI in CLD patients. Then based on this data strategies could be developed to minimize the morbidity and mortality by screening and providing instant treatment.

PATIENTS AND METHODS

It was six months (from 18th Mar 2016 to 18th Sept 2016) cross-sectional study was conducted in Department of Gastroenterology, Liaquat National Hospital, Karachi. The sample size: Sample size calculated on the basis of the following
Prevalence of fungal UTI in CLD= 67%[16]
Confidence level=95%
Bond on error= 6%
Sample size (n) = 236 no: of CLD patient
Formula n= z^2p (1-P) /d^2

Inclusion Criteria

- Patients between 18 years to 60 years of age.
- Either gender
- Diagnosed case of chronic liver disease for >

1 years duration

Exclusion Criteria

- Diabetes Mellitus for more than one year, it will be confirmed either FBS > 126mg/dl on two different occasion or HBA1c > 6.5
- Antibiotics use for two weeks for any infection
- Patients already on Antifungal drugs or history of usage in last 2 weeks

The fungal urinary tract infection **(**funguria): is defined as > 10^2 CFU fungi/ml or yeast in collected non voided urine samples or 10^5 CFU fungi/ml in a collected voided urine sample as urine detailed report and culture and sensitivity (C.S) in asymptomatic patient.

Chronic Liver Disease

Diagnosis was based on bases of clinical features through patient's history and physical examination with presence of any two of following (ascites, jaundice, hematemesis and/or melena); hematology (thrombocytopenia <150 platelets/cmm, and prolonged prothrombin time (PT) more than 9 sec) and ultrasonographic findings (coarse echo texture of liver, irregular margins, increased portal vein diameter > 13mm, splenomegaly defined as bipolar diameter > 13cm and presence of ascites).

All the subjects attending inpatient or outpatient department of gastroenterology in Liaquat National Hospital, Karachi with chronic liver disease, whose urine detail report and culture and sensitivity were explored and studied with aseptic measures, while in catheterized patients urine sample was collected after sampling & cleaning with pyodine & let it dry of lower 2/3 of Foley's catheter. Urine sample was collected by staff nurse & was sent to laboratory for analysis. The SPSS version 17 will be used for data analysis. Frequencies and percentages will be computed for categorical variables like gender, Fungal UTI, BMI, child Pugh's score, history of diabetes mellitus, history of prior antibiotic use. Values will be presented as mean ± standard deviation for continuous variables like age and duration of CLD. Effect modifier like age, gender, duration of CLD, BMI, child Pugh's score, H/O diabetes mellitus and antibiotic use will be controlled through stratification. Post stratification chi-square test will be used. P ≤0.05 will be considered level of significance.

RESULTS

A total of 236 patients were included to conduct the study. The mean age was 53.47±5.51.30 years while the mean duration of CLD (yrs) and mean BMI (kg/m^2) was 3.50±1.50 and 27.32±1.88 respectively. The results are presented in Table I-V.

Fungal UTI	Frequency (n)	Percentage (%)
YES	141	59.7%
NO	95	40.3%
TOTAL	236	100(100%)

Table-I. Frequency distribution of fungal UTI (n=236)

Gender	Fungul UTI			P-Value
	Yes (n=141)	No (n=95)	Total	
Male (n=71)	0	71	71	0.000
Female (n=165)	141	24	165	
Total	141	95	236	

Table-II. Distribution of distribution of fungul UTI according to gender (n=236)

Age	Fungul UTI		Total	P-Value
	Yes (n=141)	No (n=95)		
42-52 years	79	55	134	0.000
53-68 years	62	40	102	
Total	141	95	236	

Table-III. Distribution of distribution of fungal UTI with respect to age (n=236)

Child Class	Fungul UTI			P-Value
	Yes (n=141)	No (n=95)	Total	
B (n=36)	0	36	36	0.000
C (n=165)	141	59	200	
Total	141	95	236	

Table-IV. Distribution of fungul UTI according to child class (n=236)

Duration of CLD	Fungul UTION			P-Value
	Yes (n=141)	No (n=95)	Total	
1-3 Years	41	94	131	0.000
4-7 Years	100	1	105	
Total	141	95	236	

Table-V. Distribution of fungul UTI according to duration of CLD (n=236)

DISCUSSION

CLD patients are known to have various functional immune abnormalities, ignoring a possible fungal infection in such patients can have fatal consequences. Reported rates of isolation of fungus from the urinary tract vary widely because of differences in the definition of a positive culture and population being studied.[13,14] Regardless funguria appears to be relatively common condition the incidence of which is increasing.[15] Our study shows that this common condition was managed extremely erratically in a large academic medical centre. This observation undergoes the need for a better understanding of funguria and how it should be managed; this will requires the resolution of several important issues.

The first issue concerns determining who is at risk for funguria, so that predisposing factors can be modified. Several previous studies have described risk factors for funguria (candiduria) but the relative importance of these factors has not been established. Underlying conditions and risk factors includes the presence of urinary catheters and other disturbances of urine flow, diabetes mellitus, treatment with broad-spectrum antibacterial agents, corticosteroids, cytotoxic drugs and other immunosuppressat agents, female gender, extremes of age, radiation therapy and even genitourinary tuberculosis.[16,17] As CLD patients are immuno compromised so they are at risk, another critical issue concerns the clinical significance of funguria. One understanding of this entity and its potential for causing significant local or systematic disease is based on meager data. In one of the few published prospective natural history studies of asymptomatic funguria, Schonebeck J;[18] described the outcome of 40 cases of asymptomatic fungurai in patients seen in urology department and in 25 instances (62.5%), funguria resolved without specific antifungal therapy, although most patients had modification of one or more risk factors, such as the removal of a urinary catheter. In summary on the basis of the results of our study we concluded that fungal UTI is common in CLD patients.

CONCLUSION

Fungal urinary tract infection in patients with chronic liver disease is common due to low immune system along with prolong use of antibiotics and urinary instrumentations.

REFERENCES

1. GulerS, Ural O, Findik D, Arslan U. **Risk factors for nosocomial candiduria.** Saudi Med J 2006; 27(11):1706-10.
2. Harding SA, Merz WG. **Evaluation of antibody coating of yeasts in urine as an indicator of the site of urinary tract infection.** J ClinMicrobiol. 1975; 2:222–5.
3. Argyle C, Schumann GB, Genack L, Gregory M. **Identification of fungal casts in a patient with renal candidiasis.** Hum Pathol.1984; 15:480–1.
4. Storfer SP, Medoff G, Fraser VJ, Powderly WG, Dunagan WC. **Candiduria: Retrospective review in hospitalized patients.** Infect Dis ClinPract.1994; 3:23–9.
5. Snydman DR. **Shifting patterns in the epidemiology of nosocomial Candida infections.** Chest. 2003; 123(5 Suppl):500–3.
6. Pemán J, Cantón E, Linares-Sicilia MJ, Roselló EM, Borrell N, Ruiz-Perez-de-Pipaon MT, et al. **Epidemiology and antifungal susceptibility of bloodstream fungal isolates i pediatric patients: A Spanish multicenter prospective survey.** J ClinMicrobiol. 2011; 49:4158–63.
7. Cendejas-Bueno E, Kolecka A, Alastruey-Izquierdo A, Theelen B, Groenewald M, Kostrzewa M, et al. Reclassification of the Candida haemulonii complex as Candida haemulonii (C. haemulonii group I), C. duobushaemulonii sp. nov. (C. haemulonii group II), and C. haemulonii var. vulnera var. nov: **Three multiresistant human pathogenic yeasts.** J ClinMicrobiol. 2012; 50:3641–51.
8. Kim S, Ko KS, Moon SY, Lee MS, Lee MY, Son JS. **Catheter-related candidemia caused by Candidahaemulonii in a patient in long-term hospital care.** J Korean Med Sci. 2011; 26:297–300

9. Lundstorm T, Sobel JD. **Nosocomial can¬diduria: A review.** Clin Infect Dis. 2001; 32(11):1602-7.

10. Strofer SP, Medoff G, Fraser VJ, Powderly WG, Dunagan WC. **Candiduria Retros¬pective review in hospitalized patients.** Infect Dis Clin Pract.1994; 3:23-9.

11. Leu HS, Huang CT. **Clearance of funguria with short-course antifungal regimens: A prospective, randomized, controlled study.** Clin Infect Dis.1995; 20(5):1152-7.

12. Kremery S, Dubrava M, Kremery Jr. V. **Fungal urinary tract infections in patients at risk.** J Antimicrob Agent.1999; 11:289-91.

13. Schaberg DR, Cullver DH, Gragnes RP, **Major trends in the microbial etiology of nosocomial infection.** AM J Med. 11991; 91:36725-75S.

14. Wonf-Beringer A, Jacobs RA, Guglielmo J. **Treatment of funguri.** JAMA. 1992; 267; 2780-6.

15. Fisher JF, Chew WH, Shadomy S, Duma RJ, Mayhall CG, House WC. **Urinary tract infections due to Candiada albicans.** Rev Infect DIs. 1982; 4:11-7-18.

16. Wise GJ, Goldberg P, Kozinn PJ. **Genotourinary candidiasis: Diagnosis and treatment.** J Urol.1976; 116:778-80.

17. Hamory BH, Wenzel RP. **Hospital associated candiduria: Predisposing factors and review of literature.** J Urol.1978; 120:444-8.

18. Schonebeck J. **Asymtomatic candiduria.** Scand J Urol Nephrol. 1972; 6:136-46.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Hamid Ali	Contributed to conception and design, acquisition of data, analysis and interpretation of data.	
2	Riaz Hussain Awan	Drafting the article and shares its expert research opinion and experience in finalizing the manuscript.	
3	Seema Nayab	Contributed in conception and interpretation of data and give his expert view for manuscript designing.	
4	Khadim Hussain Awan	Collection and acquisition of data, analysis and interpretation of data and make it suitable for final review and a corresponding author	