Original Research Article

Clinical profile of pyelonephritis in patients with diabetes mellitus

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Abstract

Background: Acute pyelonephritis is defined as bacterial or fungal infection of renal parenchyma and collecting system. Acute pyelonephritis was otherwise called acute focal pyelonephritis or acute focal bacterial nephritis or acute lobar nephronia **Aims and objectives:** to study Clinical profile of pyelonephritis in patients with diabetes mellitus. **Methodology:** After approval from institutional ethical committee a cross-sectional study was carried out in the department of Medicine at tertiary health care centre during the two year period i.e. January 2016 to January 2018 in the diabetic patients who were referred for the pyelonephritis were studied by taking the informed consent of the patients. All the patients received treatment as per the standard protocols and at the end outcome in the patients like Survival with Nephrectomy Survival without Nephrectoy, Expired etc. seen. **Result:** The majority of the patients were in the age group of 50-60 i.e. 33.33%, followed by 40-50. 25.00%, 30-40 were 19.44%, >60 were 13.89%, 20-30 were 8.33%. The majority of the patients were male i.e. 69.44% and female were 30.56%. The most common clinical feature was Fever i.e. 90% followed by Dysurea -85%. Altered sensorium in 79%, Renal dysfunction -53%,UTI -49%, Shock -38%, Leucocytosis-29% Thrombocytopenia -21%, Renal Stone -11%, The Culture +ve patients were -93%, E. coli -87%, K. pneumonia in 13%, Pseudomonas -10%, Polymicrobial -7%, Fungal-5%, Culture –ve in 3%. As per the outcome patients Survived with Nephrectomy in 70%, Survived without Nephrectoy in 27%, Expired -3% **Conclusion:** It can be concluded from our study that the majority of the patients were in the age group of 40-50 and affecting mostly to males, the most common clinical features were Fever, Dysurea, Altered sensorium, Renal dysfunction, UTI, Shock, Leucocytosis Thrombocytopenia, Renal Stone on culture the most common organism s were E. coli, K. pneumonia and majority of the patients survived with the surgical treatment like nephrectomy.

Key Words: Pyelonephritis, diabetes mellitus, UTI (Urinary Tract Infection), Renal dysfunction

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Received Date: 23/02/2018 Revised Date: 21/03/2018 Accepted Date: 10/04/2018
DOI: https://doi.org/10.26611/1021619

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 16 April 2018

INTRODUCTION

Acute pyelonephritis is defined as bacterial or fungal infection of renal parenchyma and collecting system. Acute pyelonephritis was otherwise called acute focal pyelonephritis or acute focal bacterial nephritis or acute lobar nephronia.[1] To bring in uniformity in des- cription, the Society of Uroradiology recom- mended that all the parenchymal abnormalities with no abscess attributable to acute infection be called acute pyelonephritis and the severity to be described under the following: (a) unilateral/bilateral, (b) focal/diffuse, (c) focal swelling/no focal swelling and (d) renal enlarge- ment/no renal enlargement.[2] Acute pyelonephritis in patients with diabetes mellitus is severe and may present as septicemia with acute kidney injury (AKI). AKI in acute pyelonephritis can occur either due to sepsis or due to direct infection of the renal parenchyma bilaterally

How to cite this article: Shripad Vithalrao Dhanorkar, Balasaheb Eknathrao Karad. Clinical profile of pyelonephritis in patients with diabetes mellitus. *MedPulse International Journal of Medicine.* April 2018; 6(1): 27-29. https://www.medpulse.in/Medicine/

MATERIAL AND METHODS

After approval from institutional ethical committee a cross-sectional study was carried out in the department of Medicine at tertiary health care centre during the two year period i.e. January 2016 to January 2018 in the diabetic patients who were referred for the pyelonephritis were studied by taking the informed consent of the patients. All the patients studied thoroughly, all details like age, sex, clinical features and all the patients undergone culture for the microbiology. All the patients received treatment as per the standard protocols and at the end outcome in the patients like Survival with Nephrectomy Survival without Nephrectoy, Expired etc. seen.

RESULT

Table 1: Distribution of the patients as per the age

Age	No.	Percentage (%)
20-30	3	8.33
30-40	7	19.44
40-50	9	25.00
50-60	12	33.33
>60	5	13.89
Total	**36**	**100**

The majority of the patients were in the age group of 50-60 i.e. 33.33%, followed by 40-50 25.00%, 30-40 were 19.44%, >60 were 13.89%, 20-30 were 8.33%.

Table 2: Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Male	25	69.44
Female	11	30.56
Total	**36**	**100**

The majority of the patients were male i.e. 69.44% and female were 30.56%.

Table 3: Distribution of the patients as per the clinical features

Clinical feature	No.	Percentage (%)
Fever	32	90%
Dysurea	31	85%
Altered sensorium	28	79%
Renal dysfunction	19	53%
UTI	18	49%
Shock	14	38%
Leucocytosis	10	29%
Thrombocytopenia	8	21%
Renal Stone	4	11%

(*More than one clinical features were present in the patients)

The most common clinical feature was Fever i.e. 90% followed by Dysurea -85%, Altered sensorium in 79%, Renal dysfunction -53%, UTI -49%, Shock -38%, Leucocytosis-29% Thrombocytopenia -21%, Renal Stone -11%.

Table 4: Distribution of the patients as per the culture

Culture	No.	Percentage (%)
Culture +ve	33	93%
E. coli	31	87%
K. pneumonia	5	13%
Pseudomonas	4	10%
Polymicrobial	3	7%
Fungal	2	5%
Culture –ve	1	3%

The Culture +ve patients were -93%, E. coli -87%, K. pneumonia in 13%, Pseudomonas -10% Polymicrobial -7%, Fungal-5%, Culture –ve in 3%.

Table 5: Distribution of the patients as per the outcome

Outcome	No.	Percentage (%)
Survival with Nephrectomy	25	**70%**
Survival without Nephrectoy	10	**27%**
Expired	1	**3%**

As per the outcome patients Survived with Nephrectomy in 70%, Survived without Nephrectoy in 27%, Expired -3%

DISCUSSION

DM is a common predisposing factor for UTI. In comparison to nondiabetics, epidemiological studies have shown that the relative risk of UTI in diabetics increases by a factor of 1.2-2.2.[4,5] Among hospitalized patients with acute pyelonephritis, DM has been shown to be the single most common predisposing cause.[3] The severity of UTIs is also increased in DM; the mean hospitalization rate in patients with acute pyelonephritis was found to be 3.4-24. One times higher in diabetics than nondiabetics.[6] Pyelonephritis in DM tends to be more frequently bilateral and is associated with greater complications. Emphysematous pyelonephritis is a severe, necrotizing renal infection with potential to cause high morbidity and mortality, particularly if the diagnosis (and subsequent percutaneous/surgical intervention) is delayed. Hyperglycemia has been postulated as an important factor for the formation of gas in the renal parenchyma, probably because gas formation requires anaerobic metabolism of glucose.[8,9,10] surgical therapy was thought to be the gold standard for treating EPN until the early 1990s. PCD along with antibiotics has been increasingly recognized over the last two decades for treating EPN.[7, 11,12,13] The majority of the patients were in the age group of 50-60 i.e. 33.33%, followed by 40-50. 25.00%, 30-40 were 19.44%, >60 were 13.89%, 20-30 were 8.33%. The majority of the patients were male i.e. 69.44% and female were 30.56%. The most common clinical feature was Fever i.e. 90% followed by Dysurea -85%. Altered sensorium in 79%, Renal dysfunction -53%,UTI -49%, Shock -38%, Leucocytosis-29% Thrombocytopenia -21%, Renal Stone -11%, The Culture +ve patients were -

93%, E. coli -87%, K. pneumonia in 13%, Pseudomonas -10%, Polymicrobial -7%, Fungal-5%, Culture –ve in 3%. As per the outcome patients Survived with Nephrectomy in 70%, Survived without Nephrectoy in 27%, Expired -3% These findings are similar to P Dutta *et al* [14] they found A total of 105 diabetic patients with pyelonephritis were admitted from July 2010 to June 2012. Patients were treated with appropriate antibiotics and percutaneous drainage (PCD) as indicated. Nephrectomy was carried out in patients of EPN who were refractory to conservative measures. NEPN and EPN were seen in 79 (75.2%) and 26 (24.7%) patients, respectively. Escherichia coli was the most common organism. Pyelonephritis was associated with renal abscess and papillary necrosis in 13 (12.4%) and 4 (3.8%) patients with EPN and NEPN, respectively. Worsening of renal functions were seen in 92 and 93% of patients with EPN and NEPN, respectively. Class 1 EPN was seen in 2 (7.7%), Class II in 8 (30.7%), IIIa in 7 (27%), IIIb in 5 (19.3), and IV in 4 (15.4%) patients. Antibiotics alone were sufficient in 38.5% of EPN versus 62% in NEPN

CONCLUSION

It can be concluded from our study that the majority of the patients were in the age group of 40-50 and affecting mostly to males, the most common clinical features were Fever, Dysurea, Altered sensorium, Renal dysfunction, UTI, Shock, Leucocytosis Thrombocytopenia, Renal Stone on culture the most common organism s were E. coli, K. pneumonia and majority of the patients survived with the surgical treatment like nephrectomy.

REFERENCES

1. Kawashima A, Sandler CM, Goldman SM. Imaging in acute renal infection. BJU Int 2000; 86 Suppl 1:70-9.
2. Talner LB, Davidson AJ, Lebowitz RL, Palma L, Goldman SM. Acute Pyelonephritis. Can we agree on the terminology? Radiology 1994; 192: 297-305.
3. Chiu PF, Huang CH, Liou HH, Wu CL, Wang SC, Chang CC. Long-term renal outcomes of episodic urinary tract infection in diabetic patients. J Diabetes Complications 2013; 27:41-3. Boyko EJ, Fihn SD, Scholes D, Abraham L, Monsey B. Risk of urinary tract infection and asymptomatic bacteriuria among diabetic and nondiabetic postmenopausal women. Am J Epidemiol 2005; 161:557-64.
4. Boyko EJ, Fihn SD, Scholes D, Chen CL, Normand EH, Yarbro P. Diabetes and the risk of acute urinary tract infection among postmenopausal women. Diabetes Care 2002; 25:1778-83.
5. Nicolle LE, Friesen D, Harding GK, Roos LL. Hospitalization for acute pyelonephritis in Manitoba, Canada, during the period from 1989 to 1992; impact of diabetes, pregnancy, and aboriginal origin. Clin Infect Dis 1996; 22:1051-6.
6. Somani BK, Nabi G, Thorpe P, Hussey J, Cook J, N′Dow J, et al. Is percutaneous drainage the new gold standard in the management of emphysematous pyelonephritis? Evidence from a systematic review. J Urol 2008; 179:1844-9.
7. Huang JJ, Tseng CC. Emphysematous pyelonephritis: Clinicoradiological classification, management, prognosis, and pathogenesis. Arch Intern Med 2000; 160:797-805.
8. Schainuck LI, Fouty R, Cutler RE. Emphysematous pyelonephritis. A new case and review of previous observations. Am J Med 1968; 44:134- 9.
9. Piccoli GB, Consiglio V, Deagostini MC, Serra M, Biolcati M, Ragni F, et al. The clinical and imaging presentation of acute "noncomplicated" pyelonephritis: A new profile for an ancient disease. BMC Nephrol 2011;12:68.
10. Flores G, Nellen H, Magaña F, Calleja J. Acute bilateral emphysematous pyelonephritis successfully managed by medical therapy alone: A case report and review of the literature. BMC Nephrol 2002; 3:4.
11. Michaeli J, Mogle P, Perlberg S, Heiman S, Caine M. Emphysematous pyelonephritis. J Urol 1984;131:203-8
12. Sharma PK, Sharma R, Vijay MK, Tiwari P, Goel A, Kundu AK. Emphysematous pyelonephritis: Our experience with conservative management in 14 cases. Urol Ann 2013; 5:157-62.
13. P Dutta, KL Gupta, V Jha, HS Kohli. Acute pyelonephritis in diabetes mellitus: Single center experience. Indian Journal of Nephrology, Vol. 24, No. 6, November-December, 2014, pp. 367-371

Source of Support: None Declared
Conflict of Interest: None Declared