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Evaluation of Role of Prostatic Infarction in Acute Urinary Retention and Review of Literature

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Abstract: Objective of this study is to investigate whether there is a role of prostatic infarction, prostatic inflammation in acute urinary retention. It was an analytic study to evaluate the role of prostatic infarction in AUR in benign prostatic hyperplasia (BPH). All cases underwent thorough clinical, general, systemic examination and the required investigational procedures to exclude any other pathology. The prostatic chips obtained after transurethral resection of prostate were subjected to histopathological examination for changes of infarction, inflammation and histologic pattern. The study includes total 55 cases. Maximum number of cases in both the groups was in 6th decade. Most common pattern observed was mixed glandular and stromal hyperplasia (63.6%). Prostatic infarction was seen in only 2 cases, whereas prostatic inflammation was seen in 41 cases. The association between prostatic inflammation and presence of AUR in BPH was statistically significant.(p=0.004)
Keywords: Acute urinary retention; Prostate; Infarction; Inflammation; Morphology.

INTRODUCTION

Acute urinary retention (AUR) is the sudden and complete inability to void despite the presence of urine in the bladder and the desire to urinate. Benign prostatic hyperplasia (BPH) is the most common benign neoplasm in ageing men. By the age of 60, half of all men have histological evidence of BPH and virtually all men have it by the age of 80[1]. Urinary symptoms that are bothersome and have negative impact on the quality of life represent the most common manifestation of clinical BPH.

Nodular hyperplasia of the prostate originates almost exclusively in the inner aspect of the prostate gland [2, 3].

There are various histological and pathophysiological changes that occurs in the transition zone of prostatic gland, which can cause acute urinary retention or lower urinary symptoms in the patients. Prostatic infarction has been speculated in the etiology of AUR in BPH patients but its role has not been clearly confirmed.

There are various postulations in the pathogenesis of AUR in BPH like Mechanical /dynamic theory, Receptor theory, Prostatic morphology theory, Prostatic inflammation and prostatic infarction theory.

Prostatic infarction has been speculated in AUR etiology but its role has not been clearly confirmed. There is now a hypothesis which states that prostatic infarction leads to a neurogenic disturbance occurring at the prostatic urethra (peri-prostatic zone), which results in failure of relaxation and subsequent AUR [4].

The diagnosis in patient of acute urinary retention or lower urinary tract symptoms due to BPH can be made by patient complaints, physical examination, digital rectal examination, abdominal ultrasound and Prostate specific antigen levels.

Mild cases of BPH may be treated conservatively. The most effective treatment for acute urinary retention is inserting a small catheter into the bladder. For moderate to severe cases not responding well to medical therapy, there are many surgical interventions. Transurethral resection of the prostate (TURP) is indicated as a first line of therapy in certain circumstances such as recurrent urinary retention [5, 6]

MATERIALS AND METHODS

It was prospective study to evaluate the role of prostatic infarction in acute urinary retention in BPH patients from 2015-2017. The patients with acute urinary retention and lower urinary tract symptoms, attending urology clinic and emergency department at the tertiary centre with required eligibility criteria were

considered in this study. After ethical approval and informed consent, all patients underwent transurethral resection of prostate (TURP). The prostatic chips in each group were examined by histopathologist for changes of infarction, acute and chronic inflammation, and predominant histological pattern.

Inclusion criteria

A total of 55 cases of surgically resected prostatic specimens were studied.

- men of age group 40 to 80 years
- patients having acute urinary retention due to BPH
- patients having LUTS due to BPH

Exclusion criteria

- patients not fit for anesthesia
- patients who were known case of prostatic carcinoma
- patients with known coagulopathy
- patients with known neurological ,nonorganic and systemic cause for their symptoms

Patients were divided in two groups

- Group A- patients having BPH with AUR, include 26 cases.
- Group B- patients having BPH without AUR, include 29 cases.

Each patient underwent TURP once by urologist. The specimen was collected and sent to the pathology department for histopathological examination.

The following features were recorded in both the groups –

- Prostatic morphology - glandular, stromal and mixed
- Presence /absence of prostatic infarction
- Presence /absence of metaplasia
- Presence /absence of prostatic inflammation
- Type of prostatic inflammation –acute ,chronic and mixed

Statistical analysis was done using the chi square test

RESULTS

Out of the total 55 cases 58.2% (32) cases were in 60 -69 age group. Out of these 32 cases 14 were seen in group A and 18 cases were in group B. 25.4% cases belong to 70-79 age group.3 cases were above 80 years. The most common pattern observed was mixed glandular and stromal hyperplasia in both groups. No significant difference was seen between the two groups with regard to prostate morphology (p=0.86).

Prostatic infarction was seen in only 2 cases (3.6%). Both groups had 1 case each of prostatic infarction. No association could be derived between prostatic infarction and the presence of AUR due to fewer cases of infarction (table1)

Table-1: Prostatic infarction

	Infarction	Group A	Group B	Total
1.	Present	1 (3.8%)	1(3.4%)	2(3.6%)
2.	Absent	25(96.2%)	28(96.6%)	53(96.4)
		n=26	n=29	Total 55

Metaplasia was seen in 7 cases. Squamous metaplasia was noticed in only 1 case in group A. Transitional cell metaplasia was present in 6 cases, 2 in group A and 4 in group B. However the presence of any type of metaplasia had no significant association with the occurrence of AUR.

Prostatic inflammation was seen in 41 cases, group A had 24 cases where as group B had 17 cases. Maximum cases were of chronic inflammation (25 cases; 45.5%)(table 2).Mixed inflammation was present in 16 cases. In no case acute inflammation was observed. No inflammation was seen in 14 cases. The association between prostatic inflammation and presence of AUR in BPH was statistically significant (p=0.004), however presence of AUR had no association with the type of prostatic inflammation (p=0.81).

Table-2: Prostatic inflammation

	Inflammation	Group A	Group B	Total
1.	Present	24(92.3%)	17(58.6)	41(74.5%)
2.	Absent	2(7.7%)	12(41.4%)	14(25.5%)
		n=26	n=29	55

DISCUSSION

In our study no association could be derived between type of prostatic morphology and AUR. Our study agreed with those of Tuncel *et al*. [7] and Cha WH *et al*. [8] in finding no significant association between the occurrence of AUR and type of prostatic morphology. However, the present study differs with those of Shapiro *et al*. [9], Saboorian *et al*. [10] and Anjum *et al*. [11], who have earlier stated that the ratio

of stromal to epithelial tissue decreased in patient with AUR secondary to BPH.

Our study was similar to those of Anzum *et al.* [11], Truncal *et al.* [7] and Cha WH *et al.* [8] in finding no linkage between prostatic infarction and AUR. The percentage of cases having prostatic infarction in various studies is given in Table 3. The reasons of the widely disparate results in the literature with respect to the frequency of infarction are not clear.

Table-3: Summary of prostatic infarction as reported in various series

	Study	Group A (BPH with AUR)	Group B (BPH without AUR)
1.	Baird *et al.*[12]	80%	27%
2.	Spiro *et al.*[13]	85%	3%
3.	Anjum *et al.*[11]	1.9%	3.0%
4.	Tuncel *et al.*[7]	5.7%	2.2%
5.	Cha WH *et al.*[8]	8.6%	8.1%
6.	Present study	3.8%	3.4%

Prostatic inflammation was very frequent in present study. Group A had 24 (92.3%) cases where as Group B had 17 (58.6%) cases. The difference came out to be statistically significant (p=0.004)

The proportion of cases having prostatic inflammation in various studies is shown in table 4.

Table-4: Summary of prostatic inflammation in various series

	Study	Group A (BPH with AUR)	GroupB (BPH without AUR)	Overall occurrence (%)
1.	Anjum *et al.*	**	**	50%
2.	Tuncel *et al.*	54.7%	28.9%	42.9%
3.	Kefi *et al.*[14]	56.0%	37.0%	**
4.	Mishra *et al.* [15]	70.0%	45.0%	51.0%
5.	Vuuren *et al.* [16]	**	**	48.0%
6.	Asgari *et al.* [17]	**	**	46.4%
7.	Present study	92.3%	58.6%	74.5%

CONCLUSION

BPH is one of the most common causes of AUR in men and its incidence and prevalence increases with age. This prospective study aimed to investigate whether there is an etiological role or association of prostatic infarction with the occurrence of AUR in BPH or not.

From the present study it can be concluded that acute urinary retention is more likely to occur when signs of prostatic inflammation are observed in histology, so prostatic inflammation was an important risk factor in patients with AUR. Hence prostatic inflammation should be taken into consideration in the etiology of AUR. Prostatic morphology prostatic infarction and prostatic metaplasia seemed not to be an important risk factor for AUR.

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