

ORIGINAL RESEARCH

An Insight into the Etiopathogenesis of Urinary Retention in Patients managed at a Tertiary Care Hospital in Amritsar, Punjab, India

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ABSTRACT

Introduction: Urinary retention is defined as the inability to urinate voluntarily. Acute urinary retention (AUR) is the sudden and painful inability to void, despite having a full bladder. Chronic urinary retention (CUR) is painless retention associated with an increased volume of residual urine. Despite the worldwide interest in the subject, there exist only a limited amount of data with respect to the causes of AUR and CUR. The main aim of study was to study the main aspects of causes and frequency of different causes of urinary retention with their age and incidence in this part of India.

Materials and methods: In this study, 100 patients presenting to the outpatient department (OPD) and emergency of a tertiary care hospital in Amritsar with urinary retention were evaluated and categorized into two groups: AUR and CUR. Further, these patients were subdivided into etiological classification according to the study.

Results: In men, benign prostatic enlargement is the leading cause of urinary retention, with second being stricture urethra. In women, urinary retention was mainly caused by meatal stenosis and blood clots due to urinary bladder growth. We also found some correlation of urinary retention with health negligence and less personal hygiene, which was more common in below-poverty-line patients.

Keywords: Acute retention, Chronic retention, Urinary retention.

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INTRODUCTION

Urinary retention is defined as the inability to urinate voluntarily. Acute urinary retention is the sudden and

painful inability to void, despite having a full bladder.¹ Etiology of acute retention of urine is varied and extends from mechanical obstruction to neurological lesion or even without any actual demonstrative lesion, i.e., functional. From a clinical and prognostic point of view, spontaneous AUR should be separated from precipitated AUR. Importance of differentiating the two types of AUR becomes clear when evaluating the ultimate outcomes of patients. After spontaneous AUR, 15% of patients had another episode of spontaneous AUR and a total of 75% underwent surgery, whereas after precipitated AUR only 9% had an episode of spontaneous AUR, and 26% underwent surgery.

Chronic urinary retention is painless retention associated with an increased volume of residual urine.² Patients with CUR can present with complete lack of voiding, incomplete bladder emptying, and overflow incontinence. Patients may be asymptomatic or present with lower urinary tract symptoms, related to storage and voiding difficulties.

Urinary retention in men becomes more common with age. In men aged 40 to 83 years, the overall incidence of urinary retention is 4.5 to 6.8 per 1,000 men.³ Although it is largely a condition that affects men, still there is an appreciable background incidence in women. Urinary retention in women is less common, though not rare.⁴ The cause of urinary retention in women is unknown in about one-third of cases but approximately half are due to Fowler's syndrome (typically seen in women in their twenties to thirties and thought to be due to failure of the urethral sphincter to relax appropriately).⁵

Despite the worldwide interest in the subject, there exist only a limited amount of data with respect to the causes of AUR and CUR. The main focus of our study was to identify different causes of retention of urine, their frequency, as well as their correlation with age and sex.

MATERIALS AND METHODS

This study was conducted at Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, Punjab, India from 2014 to 2017. Hundred patients of age group 15 to 75 years, presenting with urinary retention in surgical

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OPD and emergency were included in the study. These patients had either postvoid residual (PVR) urine more than 300 mL and/or were unable to urinate with palpable bladder with or without pain in abdomen. Informed written consent was taken from all patients. All patients were subjected to detailed history taking and general physical examination. All postoperative patients, previously diagnosed cases of retention already on treatment, patients with neurogenic bladder, and those who did not give consent were excluded from the study.

All the above patients were evaluated with required investigations like complete blood count, blood urea, and serum creatinine; urine complete and urine culture sensitivity; ultrasound abdomen; plain X-ray kidney, ureter, and bladder; uroflowmetry; retrograde urethrogram and micturating cystourethrogram; prostate-specific antigen; prostate biopsy; computed tomography abdomen and pelvis; magnetic resonance imaging spine and brain.

The patients fitting the above criteria were categorized into two groups: AUR and CUR. Further these patients were subdivided into etiological classification according to the study. The main aim of study was to study the primary aspects of causes and correlation of frequency of different causes of urinary retention with their age and incidence.

Statistical Analysis

Chi-square test was used for the qualitative data.

RESULTS

Age Distribution in Years

In our study, 79% of the patients were in age group of 55 to 74 years with 21% falling in age limit of 15 to 54 years.

Sex Distribution

Out of the 100 patients, 97 patients were males. However, there was not any selection bias.

Correlation of Retention with Socioeconomic Status

In this study, 74% were socioeconomically well off, while 26% were below poverty line.

Type of Population

According to Punjab census 2011, 62% of total population is rural in Punjab. As per less medical facilities provided in rural areas, below-poverty-line population is more in rural regions of Punjab, and less personal care of rural population could be the reason for rural areas being more

prone to urinary retention. In our study, rural to urban ratio of population presenting with retention was 3:1.

Type of Urinary Retention

About 53% of our patients presented with CUR, while only 47% suffered from acute retention.

As shown in Table 1, out of total 47 patients with AUR, only 1 patient had spontaneous AUR, other 46 had precipitated AUR. Precipitated AUR refers to the inability to urinate after a triggering event, such as nonprostate-related surgery, anesthesia, and ingestion of medications with sympathomimetic or anticholinergic effects. All other AUR episodes are classified as spontaneous.

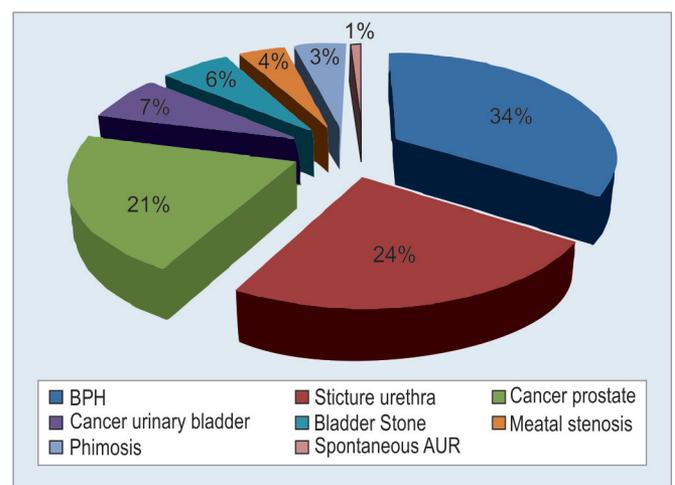
In our study, 1 patient of 35 years had no history of previous retention episodes, no history of medication, no history of per-urethral surgery, presented with an episode of AUR which was relieved by single-time bladder decompression by k-90 with PVR of 350 mL, and later patient voided without any difficulty. In this case, no alpha blocker was given and ultrasound showed 27 cm³ prostate with no back-pressure changes. This case was suspected spontaneous AUR.

Etiological Study Analysis

As shown in Graph 1 and Table 2, benign hypertrophy prostate was the main cause of retention of urine with 34% of patients suffering from it, closely followed by patients of stricture urethra (24%) and cancer prostate (21%), and spontaneous AUR with the least common cause of urinary retention (1%).

Table 1: Types of acute retention patients in study population

Type of acute urinary retention	Number of patients
Precipitated AUR	46
Spontaneous AUR	1
Total	47



Graph 1: Etiological study (pie chart) of urinary retention patients

Table 2: Number of acute urinary retention and CUR in study population along with mean age of all causes

<i>Etiology</i>	<i>Acute retention (number of patients)</i>	<i>Chronic retention (number of patients)</i>	<i>n = 100 Total %</i>	<i>Mean age (years)</i>
Benign prostate hyperplasia	19	15	34	63.4
Stricture urethra	5	19	24	52.0
Cancer prostate	2	19	21	66.0
Bladder stone	6	0	6	57.5
Meatal stenosis	4	0	4	55.2
Phimosis	3	0	3	31.6
Spontaneous AUR	1	0	1	18.0
Urinary bladder growth	7	0	7	59.2

DISCUSSION

Despite the worldwide interest in the subject there exists only a limited amount of data with respect to the incidence and causes of AUR and CUR. Incidence of primary AUR in western world is approximately 3/1000 per annum.⁶

In the present study, etiology has been critically analyzed, discussed, and compared with modern series. Although it has not been possible to discuss all the causes from very many angles, an attempt was made to discuss the important aspects of the various causes found in the present study.

The most common obstructive cause of retention is benign prostatic hyperplasia (BPH).¹ In a study of 310 men over a 2-year period, urinary retention was caused by BPH in 53% of patients and other obstructive causes accounted for 23%.⁷ Murray et al⁸ concluded that BPH is the cause for the AUR in at least 65% of men presenting with AUR. In our study, BPH is cause for AUR in 36.1% of men presenting with AUR.

European and American data showed the cancer prostate patients with AUR to be between 7.0 and 13.3%.⁹ It can therefore be said that prostate carcinoma is a well-known and important cause of AUR. In our study, the cancer prostate patients presented with AUR were 6.0% of the study population.

Other causes of AUR among men in our study were bladder calculi and phimosis. In the literature, bladder calculi have been reported to be a cause of AUR in 0.2 to 2% of cases.^{10,11} In our study, bladder calculi were the cause of AUR in 6.0% of all retention patients, and phimosis was the cause of AUR in 4.0% of all retention patients.

In our study, three females presented with retention among which two presented with meatal stenosis and one presented with retention due to clots of bladder carcinoma. Another study by Klarskov et al¹² estimated

that female AUR occurs 1 in 100,000 every year, and female-to-male incidence rate is 1:13, with postpartum and postoperative as the most common surgical causes of urinary retention.

Chronic urinary retention is a painless retention of urine associated with a significant PVR volume.¹³ Abrams et al¹³ assigned an arbitrary figure of 300 mL of residual urine after voiding as the minimum volume required for the definition of CUR.¹⁴ Some investigators defined CUR as PVR urine of more than 400 mL,¹⁵ or a postvoid volume of 100 to 500 mL,¹⁶ others have not given it a definite volume. In our study, CUR was found in about 52% of the patients. These patients had renal insufficiency confirmed by the presence of elevated serum creatinine levels.

CONCLUSION

Our study highlighted that urinary retention is not uncommon. Men were affected more frequently than women. In men, the leading cause of urinary retention is benign prostatic enlargement with second common being stricture urethra. In our study, carcinoma of the prostate has also come out to be an important cause of urinary retention. In female patients, urinary retention was mainly caused by meatal stenosis and blood clots due to urinary bladder growth. Initial and definitive management varied depending on the causes, gender, and age. We found some correlation of urinary retention with health negligence and less personal hygiene, which was more common in low socioeconomic group.

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