

Thimble Urinary Bladder: Effect of Complicated UTI or Naswar, a Dilemma-A Case Report

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Abstract

Normal urinary bladder capacity is very important for the maintenance of normal voiding pattern. Reduced bladder capacity disturbs reservoir function of urinary bladder. Patient may suffer from frequency of urination, urgency and even incontinence. It makes life of the patient miserable. Bladder capacity can be markedly affected in different conditions. One such important condition is genitourinary tuberculosis, which reduces the bladder capacity up to 10-15 ml. Other conditions may be interstitial cystitis and Bilharziasis.

We describe here a case of Thimble bladder (10-12 ml capacity only) which was not due to genitourinary tuberculosis but may be a sequelae of NASWAR (smokeless tobacco) or complicated cystitis. This case is a dilemma and hopes to generate a discussion and interest for further studies into the topic.

Keywords: Thimble; Complicated UTI; Naswar; Tuberculosis; Genitourinary

Introduction

Bladder capacity can be affected in different conditions. One such condition is Genitourinary Tuberculosis (GUTB). There are two types of lesions in the tubercular bladder. One, more common, is when the bladder due to active infection has a reduced capacity of about 150-200 ml. The other type is the true or structural bladder contracture wherein the urinary bladder has permanently lost its capacity and has little or no value as a urinary reservoir. But once the tubercular bladder shrinks to a very small size due to reduced elasticity and compliance (tubercular thimble bladder) the process may no longer be reversible and reconstructive surgery in the form of augmentation must be performed to prevent/arrest kidney damage [1].

Urinary Tract Infections (UTI) are the most common type of bacterial infections [2], and when recurrent, can be a cause of reduced bladder capacity. The incidence of true urinary tract infection in adult males younger than 50 years is low approximately 5-8 per year per 10,000, with Adult women being 30 times more likely to develop UTI than men. The incidence of UTI in men approaches that of women only in men older than 60 years [3].

Naswar is a type of smokeless tobacco (*Nicotiana tabacum*) typically produced and used in Central and Southeast Asia. Naswar users in India and Pakistan together have been estimated to about 100 million [4]. It consists of tobacco leaves, slaked lime, calcium oxide and ash from the bark of trees prepared by pressing and rolling the tobacco leaves until a soft greenish mass appears [5]. Naswar differs from cigarettes as it relies on systemic venous absorption from the gums and consequently does not achieve rapid systemic arterial delivery as in the case of cigarettes where it takes a few seconds for high doses of nicotine to reach the brain [6]. However, Naswar consumption has

been strongly implicated in the development of oral squamous cell carcinomas [7].

A small capacity 'thimble' urinary bladder is possible sequelae of genitourinary tuberculosis, but Naswar ingestion or complicated cystitis may also lead to a change in the structure of the bladder. It is a dilemma which was considered worth reportable.

Case Presentation

A 54-year-old Pakistani man presented in Urology OPD with history of hematuria, urgency, right-sided flank and supra pubic pain for the past 6 months in 2013.

Radiological findings confirmed right-sided moderate hydronephrosis due to a 17 × 9 mm stone in the pelvis for which the patient underwent Extracorporeal Shockwave Lithotripsy (ESWL). Cystoscopy revealed generalized oozing of blood all over the bladder and with normal capacity biopsy was taken. Biopsy showed non-specific cystitis. He was then discharged with no complications and asked to return to the hospital for follow up.

During his follow up visits patient developed Prostatitis. Urine culture revealed *Pseudomonas aeruginosa* sensitive to Gemifloxacin. Accordingly, medications were prescribed. However, he returned after 1 week with worsened symptoms of urgency, frequency and urge incontinence. He was then given an intra-vesical injection of Cystistat (Sodium Hyaluronate), which showed improvement, but he did not turn up for follow up visits for a year.

He did not have any allergies or co-morbidities. He did not drink alcohol or smoke but consumed Naswar, a powdered tobacco similar to dipping tobacco and snus.

In the last visit, in year 2014, this patient presented again with urgency, marked frequency, urge incontinence and suprapubic pain. The frequency was so marked that the patient had to go to washroom every 10 min.

Ultrasound findings showed a dilated right ureter measuring 10.8 mm in diameter (Figure 1) and a moderate left hydro ureter (Figure 2). Right kidney measured 12.0 × 5.1 cm, parenchymal thickness 1.7 cm. Corticomedullary differentiation was preserved (Figure 3). Left kidney measures 13.3 × 6.0 cm, parenchymal thickness 2.2 cm. Enlarged in size with moderate hydronephrosis. Corticomedullary differentiation is preserved (Figure 4). Urinary bladder is nearly empty and patient cannot hold urine. It contained about 12.0 ml at time of scan (Figure 5).



Figure 1: Dilated right ureter

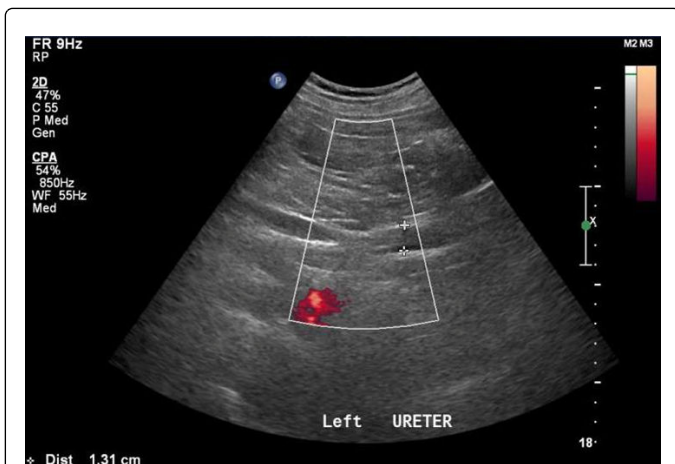


Figure 2: Moderate hydroureter

The patient was admitted as a case of small capacity 'thimble bladder' with urinary tract infections and renal failure. Laboratory investigations showed urinalysis positive for blood and leucocytes. Urine culture and sensitivity revealed *Pseudomonas aeruginosa*. His creatinine was 1.97 mg/dl. Patient was catheterized and his creatinine returned to 1.35 mg/dl after 10 days of catheterization.



Figure 3: Right kidney with moderate upper pole dilation

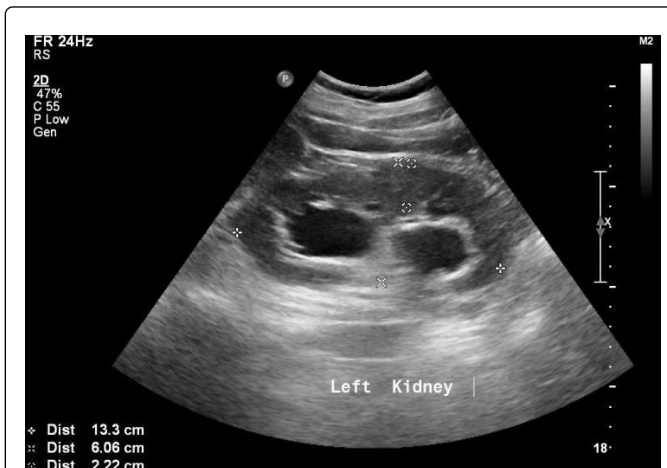


Figure 4: Left kidney with moderate hydronephrosis

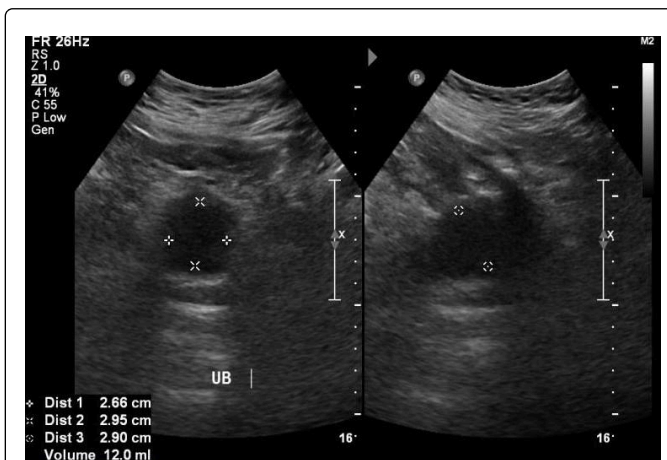


Figure 5: Small capacity urinary bladder

Due to the elevated creatinine level, CT urography could not be done. Instead a cystourethroscopy and biopsy was advised. Cystourethroscopy revealed a small capacity bladder of 10-12 ml volume. Histopathological examination of biopsy revealed fragments of bladder mucosa with eroded lining epithelium showing regenerative changes. The sub mucosal tissue revealed marked fibrosis, inflammatory cell infiltrate consisting of lymphocytes, plasma cell aggregates of lymphonuclear cells. Numerous thick walled blood vessels were also seen along with margination with neutrophils. Other fragments showed muscle fibers, fibrotic tissue infiltrated with inflammatory cells. No evidence of granulomatous lesions or neoplasia was seen. A rare area of calcification was also seen. Diagnosis of non-specific cystitis was made.

The patient was given symptomatic treatment and was advised to undergo bladder augmentation reconstructive surgery.

Discussion

The common causes of a small capacity bladder frequently encountered during urodynamic testing include detrusor over activity with or without urgency and low bladder wall compliance [8]. A small capacity 'thimble' bladder is late sequelae of genitourinary tuberculosis including renal failure [9].

Involvement of the bladder is usually secondary to renal infection and is found in nearly one-third of the patients [10]. In the early stage, i.e., acute phase, bladder changes are usually non-specific which gives rise to irritative voiding symptoms. Chronic inflammation causes reduced compliance and capacity manifesting as frequency of micturition. Urgency develops if the bladder is extensively involved. Those who develop 'thimble bladder' (due to mural fibrosis and contracture) may present with urinary incontinence [11].

According to a study, the average values of the types of toxins present in Naswar (smokeless tobacco) were found to be well above their allowable limits, making the product a major health risk. Calculated lifetime cancer risk from cadmium and lead was 100,000 to 1,000,000 times higher than the minimum 10^{-4} (0.00001) to 10^{-6} (0.000001), which is the 'target range' for potentially hazardous substances, according to the US Environmental Protection Agency [12].

Similarly, the level of arsenic was in the range of 0.15 to 14.04 $\mu\text{g/g}$, the average being 1.25 $\mu\text{g/g}$. The estimated average bioavailable concentration of arsenic is 0.125-0.25 $\mu\text{g/g}$, which is higher than the allowable standard of 0.01 $\mu\text{g/g}$. Similarly, the average minimum daily intake of chromium and nickel was 126.97 μg and 122.01 μg , as compared to allowable 30-35 μg and 35 μg , respectively; a 4-5 times higher exposure. The pH was highly basic, averaging 8.56, which favours the formation of tobacco specific amines thus making the product potentially toxic [12]. This strongly suggests the impending risk of developing carcinomas or other life threatening diseases on Naswar use.

In this case, the obvious causes of the patient's small capacity bladder had been ruled out, that is why, Naswar was thought to be a cause. However, no study shows a significant link between use of smokeless tobacco and development of small capacity 'thimble' bladder.

Conclusion

The patient had complicated UTI with *Pseudomonas aeruginosa* for 2 years. He was using Naswar (smokeless tobacco) as well for last 40 years. Patient developed thimble bladder within a period of 2 years but he was having lower urinary tract symptoms for last 5 years. It is still a dilemma whether complicated UTI is a cause of thimble bladder or a sequel of Naswar use. The case will open a new horizon for further studies into this topic.

References

1. Singh V, Sinha RJ, Sankhwar SN, Sinha SM (2011) Reconstructive surgery for tuberculous contracted bladder: experience of a center in northern India. Int Urol Nephrol 43: 423-430.
2. Foxman B (2002) Epidemiology of urinary tract infections: incidence, morbidity, and economic costs. Am J Med 113: 5-13.
3. Brusck JL (2015) Urinary Tract Infection in Males. Drugs & Diseases.
4. Imam S, Nawaz H, Sepah Y, Pabaney A, Ilyas M, et al. (2007) Use of smokeless tobacco among groups of Pakistani medical students – a cross sectional study. BMC Public Health 7: 231.
5. Ullah N, Haq Asif A, Azam Khan M, Ahmed W, Ali N, et al. (2011) CHEMICAL ANALYSES OF NASWAR AND CIGARETTES; A COMPARITIVE STUDY. International Journal of Basic and Clinical Research 1: 13-15.
6. Molyneux A (2004) Nicotine replacement therapy. Bmj 328: 454-456.
7. Brennan JA, Boyle JO, Koch WM, Goodman SN, Hruban RH, et al. (1995) Association between cigarette smoking and mutation of the p53 gene in squamous-cell carcinoma of the head and neck. N Engl J Med 332: 712-717.
8. Evaluation of Bladder Filling/Storage Functions: Bladder Capacity: Definition.Medscape.com.2015.
9. Kapoor R, Ansari M, Mandhani A, Gulia A (2008) Clinical presentation and diagnostic approach in cases of genitourinary tuberculosis. Indian J Urol 24: 401.
10. Hemal AK, Aron M (1999) Orthotopic neobladder in management of tubercular thimble bladders: Initial experience and long-term results. Urology 53: 298-301.
11. Nzerue C, Drayton J, Oster R, Hewan-Lowe K (2000) Genitourinary tuberculosis in patients with HIV infection: Clinical features in an inner-city hospital population. Am J Med Sci 320: 299-303.
12. Zakiullah, Saeed M, Muhammad N, Khan S, Gul F, et al. (2011) Assessment of potential toxicity of a smokeless tobacco product (naswar) available on the Pakistani market. Tob Control 21: 396-401.