# Alkaline cystitis – a delayed presentation post transurethral resection of prostate. A case discussion and literature review

*Faisal Rauf Khan, Sameer Katmawi-Sabbagh, Roland England, Muhammad Al-Sudani, Sardar Zeb Khan*
Department of Urology, Kettering General Hospital, Kettering Northampshire, United Kingdom

KEY WORDS
alkaline cystitis ◗ suby G solution

ABSTRACT

Alkaline encrusted cystitis is a chronic inflammatory condition. It is rare now because of appropriate antibiotics. It is a challenging situation with regard to its diagnosis and management. We are presenting an interesting case of alkaline cystitis post transurethral resection of prostate. The management includes careful acidification of urine, curettage of calcified material, and appropriate antibiotics.

## INTRODUCTION

Alkaline encrusted cystitis is a rare chronic inflammatory condition associated with severe lower urinary tract symptoms. The diagnosis may be suspected on imaging, but is often established only on cystoscopy and curettage of bladder mucosa [1]. We report a challenging case that occurred two years post transurethral resection of prostate (TURP).

## CASE HISTORY

A 63 year-old male was admitted with suprapubic pain, intermittent hematuria and passage of sandy grits in the urine. His past medical history notable for a TURP two years previously at which time the bladder was normal. Physical examination was unremarkable. A CT scan showed multiple calcifications covering the surface of the bladder with bilateral hydronephrosis (Fig. 1, 2). Cystoscopy demonstrated a small capacity bladder with a necrotic looking urothelium and extensive calcifications adherent to the bladder wall. A bladder biopsy and the curettage (bladder scrapping with loop resection) of calcifications were sent for examination. Histology demonstrated extensive urothelial ulceration, necrosis and nonspecific active chronic inflammation with foci of interstitial calcification (Fig. 3, 4). Analysis of bladder calcifications revealed magnesium ammonium phosphate. Urine pH was alkaline at 8.4. These findings were suggestive of alkaline cystitis. Urine culture grew proteus and the curettage grew *corynebacterium urealyticum*.

The patient did not respond to different antibiotics initially. However, treatment with gentamycin as per sensitivity, intravesical instillation of Suby's G solution, and bladder curettage completely resolved his symptoms (Fig. 5).

## DISCUSSION

Alkaline encrusted cystitis was first described in 1914 by Francois as localized severe inflammation with phosphate of lime de-

**Fig. 1.** Coronal CT showing small bladder with calcified walls consistent with alkaline cystitis.

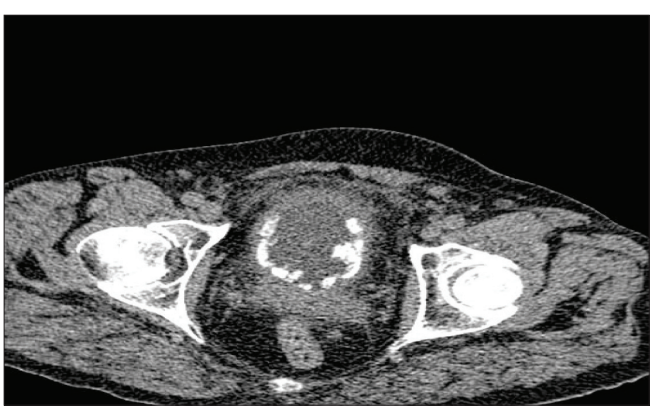

**Fig. 2.** Transverse CT section showing the same findings.

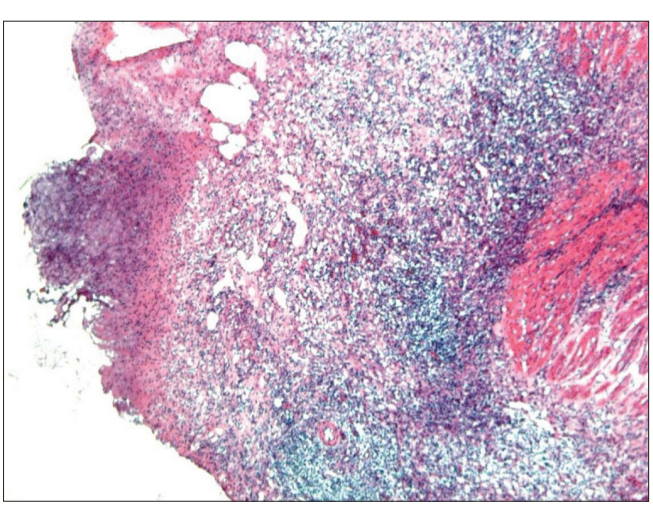

**Fig. 3.** Bladder mucosa showing surface ulceration, severe acute and chronic inflammation down to muscularis.

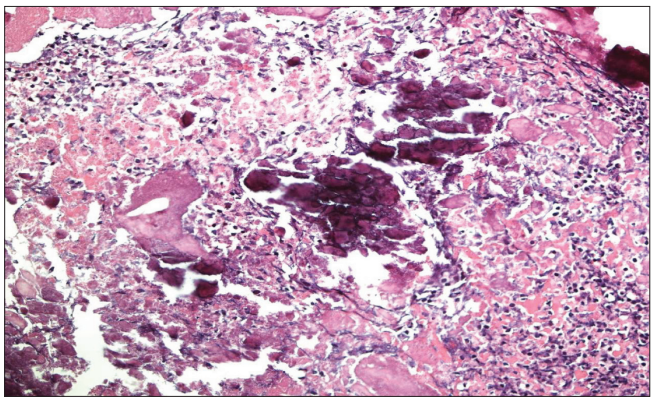

**Fig. 4.** Bladder mucosa showing deposits of calcium salts and surrounding inflammatory cells.

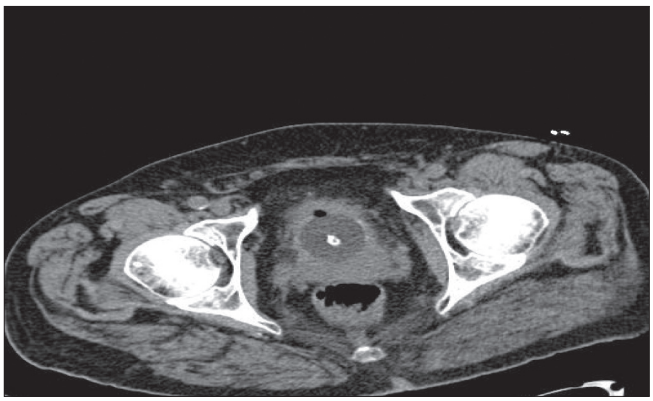

**Fig. 5.** Transverse CT section showing significant radiological improvement in terms of clearance of calcifications after treatment. (Bladder Catheter balloon *in situ*).

posits [2]. Encrusted cystitis occurred in patients with chronic or recurrent urinary tract infections appearing after surgery or instrumentation [3]. The characteristics features are usually those of high alkaline urine, recurrent troublesome urinary symptoms and urinary tract infections in addition to calcification on radiological examination. Bladder biopsies usually rule out the presence of a tumor and reveal a calcified necrotic urothelium.

Various organisms such as streptococcus, staphylococcus, proteus, *E. coli* and corynebacterium are reported to be responsible for this condition [4].

*Corynabecterium urealyticum* is a gram-positive microorganism usually found on skin. It is slow growing, urea splitting microorganism and is highly resistant to many antibiotics [5]. Urinary infections due to this bacterium are nosocomial. There is published evidence of an association between bladder instrumentation and alkaline cystitis and severe symptoms were recorded in these cases [3]. In one of these cases, cystitis was noted within five months after the TURP. Different acidifying agents such as Suby G Solution R have been used with a variety of treatment strategies for urine acidifications. Suby G is a buffered mixture of four percent citric acid, magnesium oxide, and sodium bicarbonate. There were no randomized controlled trails (VI) so the use of Suby G solution should be with caution and should not be used immediately after surgery or when infection is active. Citric acid is used for the dissolution of struvite stones in kidney. It is available in Solution R form, which contains 6% of citric acid. Solution R is also used in preventing encrustations in bladder to reduce the catheter blockages by changing the urinary pH.

Management of alkaline cystitis has been developed by several authors and they have suggested a three-staged approach: removal of calcified plaques as much as possible, urine acidification and appropriate antibiotics as per sensitivity [7].

This approach was sufficient to control our patient's symptoms and radiological findings (Fig. 5). In searching the English language literature, we could not find any reported case with delayed presentation of alkaline cystitis up to 2 years post-TURP, as was the situation in our patient.

## CONCLUSION

Diagnosis of alkaline cystitis is very rare nowadays because of appropriate antibiotic usage. However, the management of the diagnosed cases is very difficult and demanding.

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**Correspondence**

Faisal Rauf Khan
Kettering General Hospital
Rothwell Road
Kettering Northampshire NN16 8UZ, UK
phone: +01 536 492 000
drfaisalrauf1979@yahoo.com