

Clinical character of cystitis glandularis accompanied with upper urinary tract obstruction

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Cite as: *Can Urol Assoc J* 2013;7(11-12):e708-10. <http://dx.doi.org/10.5489/cuaj.359>
Published online November 8, 2013.

Abstract

Objective: We explore the clinical character of cystitis glandularis accompanied with upper urinary tract obstruction.

Methods: We compared 70 cases of cystitis glandularis accompanied with upper urinary tract obstruction with 60 cases of cystitis glandularis without upper urinary tract obstruction. The difference of clinical manifestation and surgical efficacy was observed between the 2 groups.

Results: The incidence of cystitis glandularis in women was higher than in men and the age of patients with cystitis glandularis and upper urinary tract obstruction was younger than the age of patients without upper urinary tract obstruction. The main symptom of cystitis glandularis accompanied with upper urinary tract obstruction were renal colic and abdominal pain; a few patients with a shorter course of the disease also had nausea, vomiting, frequency, urgency, dysuria, hematuria and fever. The distribution and morphological characteristics of lesions on the bladder and in the urine culture were not different between the 2 groups. There was no second operation on patients with upper urinary tract obstruction, but at least a second operation was performed on 9.3% patients without upper urinary tract obstruction.

Conclusions: In patients with upper urinary tract obstruction, we found that it was the main clinical symptom of their cystitis glandularis. Identifying and removing the causes of upper urinary tract obstruction is the most important management method. For the cystitis glandularis, active treatment or close follow-up should be made.

Introduction

In a previous study, we found that upper urinary obstruction could induce chronic non-bacterial cystitis, such as cystitis glandularis, vesical leukoplakia, and hyperplastic cystitis.¹ About 11% of patients with cystitis glandularis and upper urinary tract obstruction were compared with patients hav-

ing cystitis glandularis alone. It was suggested that there would be an association of cystitis glandularis with the upper urinary tract obstruction, and that long-term upper urinary tract obstruction could induce cystitis glandularis.¹

In this study, we compare 70 cases of cystitis glandularis with upper urinary tract obstruction with 60 cases cystitis glandularis without upper urinary tract obstruction. We wanted to see if there were any differences in the clinical manifestation and surgical efficacy were observed between the 2 groups; we also explore the clinical characteristic of cystitis glandularis accompanied with upper urinary tract obstruction.

Methods

Patients

After obtaining informed consent, we gathered 130 patients treated for cystitis glandularis between February 2006 and August 2011. Patients were between the ages of 23 and 86 years old, with a mean age of 61.45. Of these 130 patients, 26 were male and 104 were female.

Moreover, 70 cases (53.85%) were accompanied with upper urinary tract obstruction, 7 cases (5.38%) with benign prostatic hyperplasia, 2 cases (1.54%) with urethral stricture, 2 cases (1.54%) with urethral caruncle and 1 case (0.77%) with bladder stone. We compare 70 cases of cystitis glandularis with upper urinary tract obstruction with 60 cases cystitis glandularis without upper urinary tract obstruction.

Examination and treatment methods

Cystoscopy was performed under local or spinal anesthesia and urinary bacterial culture was performed before the cystoscopy on all 130 patients. Urinary bacterial culture was considered positive when the colony count was more than 100 000/mL. We wanted to inspect the distribution and

morphological characteristics of suspicious inflammatory lesion on bladder mucosa and other associated lesions. In the patients with visible inflammatory lesions on the bladder mucosa, we performed a biopsy.

Cystitis glandularis would be conventionally treated by transurethral electrovaporization on bladder inflammatory lesion according to pathologic diagnosis; other associated lesions would be treated with appropriate therapy. Once a week for 4 weeks, postoperative intravesical instillation was performed by pirarubicin at doses of 20 mg in saline 20 mL; this was followed by once every 2 weeks for 4 times, with a total of 8 chemotherapy treatments. Follow-up was performed between 3 months to 2 years postoperatively (the mean follow-up time was 6 months).

Statistical analysis

The differences between 2 analyzed data were compared using the χ^2 test and Student's t-test. Statistical significance was determined at <0.05 .

Results

Under cystoscope, the inflammatory lesions on bladder were symmetrically distributed, mainly at the trigone or neck of the bladder; there were a few cases at the ureteric orifice and other regions were rarely invaded in our 130 cases of cystitis glandularis. There were no differences in the distribution and morphological characteristics of the bladder lesions between the 2 groups.

In total, 26 cases were male and 104 were female patients; there were statistically significant differences between sexes. In the 15 male patients of cystitis glandularis without upper urinary tract obstruction, 7 of them also had benign prostatic hyperplasia. There was no statistically significant difference between the 2 groups: (1) with cystitis glandularis with upper urinary tract obstruction and (2) the group with cystitis glandularis alone (Table 1).

The main clinical symptoms of cystitis glandularis accompanied with upper urinary tract obstruction were renal or abdominal pain; a few patients had nausea, vomiting, bladder irritation, hematuria and fever. In total, 17 cases

(24.64%) had a shorter clinical course. The main clinical symptoms of cystitis glandularis without upper urinary tract obstruction were bladder irritations, such as urinary frequency, urgency, and dysuria. Most patients were admitted to hospital for hematuria or long-term bladder irritations that could not be cured. A few patients had renal or abdominal pain, but generally not severe. Moreover, 26 patients (49.06%) had a longer clinical course (2 weeks or more) and there was statistically significant difference between 2 groups ($p < 0.01$) (Table 2).

Of the 130 patients with cystitis glandularis, 8 did not receive treatment and were therefore excluded from our analysis.

In the remaining 122 cases, 17 (13.93%) had positive urine culture and the main strains were *Escherichia coli*, *Enterococcus faecalis*, *Staphylococcus haemolyticus* and *aerogenes*. There were no statistically significant differences between the 2 study groups. In the 69 cases of cystitis glandularis accompanied with upper urinary tract obstruction, 42 were treated by transurethral electrovaporization on bladder inflammatory lesion and ureteroscopic surgery to remove the cause of upper ureteral obstruction, 25 cases only were treated by ureteroscopic surgery and the remaining 2 did not receive treatment. During follow-up, 67 patients did not experience a recurrence of their symptoms. In the 53 cases of cystitis glandularis without upper urinary tract obstruction, 43 were treated by transurethral electrovaporization on bladder inflammatory lesion, 2 were treated by transurethral resection of prostate or resection of urethral caruncle, and the remaining 8 did not receive treatment. In the 45 patients who received treatment, 3 patients (6.98%) had a second operation for symptom recurrence and 1 patient (2.33%) with serious lesions on bladder mucosa underwent surgery 4 times.

Discussion

With changes in the social environment, the development of urological endoscopic technology, the improvement of urologist's comprehension and the amelioration of the pathological diagnosis, the incidence of cystitis glandularis is increasing. However, the real causes and biological significance of cystitis glandularis is not completely clear. It is believed that cystitis glandularis has the potential tendency to deteriorate the bladder and induce a bladder adenocarcinoma.²⁻⁷ Usually, cystitis glandularis would be treated with surgery.^{7,8} The disease could be induced by chronic bladder inflammation, stones, obstruction, neurogenic bladder, the bladder exstrophy and other primary disease, but there is no satisfactory evidence about the link until now. Our previous study found that cystitis glandularis could be induced by upper urinary tract obstruction.¹ To explore the clinical characteristics and surgical efficacy of cystitis glandularis

Table 1. Comparison of gender in cystitis glandularis with and without upper urinary tract obstruction

	N	Age	Male	Female
With upper urinary tract obstruction	70	56.9	15 (21.43%)	55 (78.57%)*
Without upper urinary tract obstruction	60	66.4	11 (88.33%)	49 (81.67%)*
Total	130		26 (20.00%)	104 (80.00%)*

Compared between the 2 groups, the difference of age ($p < 0.001$) was statistically significant; Male patients were compared with female patients, *** $p < 0.001$.

Table 2. Comparison of clinical symptoms in cystitis glandularis with and without upper urinary tract obstruction

	With upper urinary tract obstruction (n=69)	Without upper urinary tract obstruction (n=53)
Irritation sign of bladder	13 (18.84%)	36 (67.92%)*
Hematuria	12 (17.39%)	39 (73.58%)*
Renal or abdominal pain	59 (85.51%)	14 (26.42%)*
Nausea and vomiting	26 (37.68%)	0*
Fever	9 (13.04%)	1 (1.89%)
Positive urine culture	9 (13.04%)	8 (15.09%)
Escherichia coli	5 (7.25%)	4 (7.55%)
Enterococcus		
Faecalis	2 (2.90%)	3 (5.67%)
Staphylococcus haemolyticus	2 (2.90%)	0
Aerogenes	0	1 (1.89%)

Compared between the 2 groups, *** $p < 0.001$; The difference of positive urine culture rate was not statistically significant.

glandularis accompanied with upper urinary tract obstruction, we discuss the pathogenesis of cystitis glandularis and seek to improve its diagnosis and treatment.

Cystitis glandularis is a term describing a metaplastic transformation of mucosal cells lining the urinary bladder and was first reported by Yon Limberk in 1887.⁹ It occurs more often in women. The main clinical symptoms include urinary frequency, urgency, dysuria, nocturia, incontinence, enuresis, suprapubic and perineal discomfort, painful sexual intercourse, and hematuria. In this study, the incidence of cystitis glandularis accompanied with upper urinary tract obstruction was higher in women and it is more prevalent in younger patients. We found no differences in the distribution and morphological characteristics of the bladder lesions under cystoscopy between the 2 groups. The main clinical symptoms of cystitis glandularis accompanied with upper urinary tract obstruction were renal or abdominal pain; a few patients had nausea, vomiting, bladder irritation, hematuria and fever and these patients usually had a shorter clinical course. The urinary tract obstruction was the main clinical symptom in patients with glandular cystitis. There was no statistically significant difference in the urinary bacterial culture between the 2 groups. However, the positive urine culture rate in glandular cystitis with and without upper urinary tract obstruction was up to 13.04% and 15.09%, respectively. These results suggest that the infection is equally important in these 2 kinds of glandular cystitis.

This follow-up study found that more than 9% of patients with cystitis glandularis without upper urinary tract obstruction had at least a second operation for recurrence of symptoms. However, no second operation was required in patients with cystitis glandularis with upper urinary tract obstruction.

Among the 69 patients in this group, 42 underwent transurethral electrovaporization on bladder inflammatory lesion combined with ureteroscopic surgery, while the other 25 cases only were performed by ureteroscopy to remove the cause of ureteral obstruction. This may be related to the fact that the primary disease is cured by ureteroscopic surgery, which could promote healing of lesions on bladder in cystitis glandularis. The remaining 2 patients refused treatment. Cystitis glandularis is often accompanied by other diseases; therefore its treatment cannot be ignored.⁸

Patients with upper urinary tract obstruction and cystitis glandularis should have a cystoscopy in ureteroscopic surgery. In patients with visible inflammations lesions in the bladder mucosa, a biopsy should be always taken to confirm the diagnosis.

Conclusion

In the therapeutic protocol to cystitis glandularis accompanied with upper urinary tract obstruction, the most important thing is to identify and remove the causes of the obstruction. Cystitis glandularis should be actively treated when the lesions are more serious; in other cases, long-term close follow-up should always be done.

Competing interests: Dr. Li, Dr. Liu, Dr. H. Lu, Dr. Zhang, Dr. J. Lu, Dr. Wang, Dr. Fang, and Dr. Zhang all declare no competing financial or personal interests.

This paper has been peer-reviewed.

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