Eosinophilic Cystitis Coexisting with Superficial Bladder Cancer

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Abstract

Eosinophilic cystitis is a rare form of allergic cystitis. We reported a case of eosinophilic cystitis coexisting with superficial bladder cancer, which seemed to be invasive bladder cancer on imaging. We performed total cystectomy in this case. When invasive bladder cancer is diagnosed by imaging, coexistence of eosinophilic cystitis with superficial bladder cancer should be considered if biopsy does not show invasive bladder cancer.

Key words: eosinophilic cystitis, superficial bladder cancer, treatment

Introduction

Eosinophilic cystitis is a rare and severe form of allergic cystitis. Since it was first described by Brown in 1960, over fifty cases have been reported in the urologic literature. Although the symptoms of eosinophilic cystitis vary, the majority of patients exhibit hematuria, urgency, dysuria and suprapubic discomfort. Factors such as food allergens, parasites and drugs have been implicated in the genesis of eosinophilic cystitis. Patients with a history of allergies are at increased risk of developing eosinophilic cystitis. Intravesical mitomycin C is a reported causative agent. We report a rare case of eosinophilic cystitis coexisting with superficial bladder cancer, which appeared as invasive bladder cancer.

Case Report

A 62-year-old man consulted our department with a 1-year history of frequency, nocturia, urgency, gross hematuria and suprapubic pain. There was no history of urinary tract infection and cultures were negative. He had no food or drug allergies; however, he suffered from atopic dermatitis. The inside of the bladder could not be viewed by cystoscopy because of gross hematuria. Urine cytology indicated urothelial carcinoma grade 3. Enhanced computed tomography (CT) demonstrated an irregular and thick enhanced bladder wall (Fig. 1). There were no abnormalities except in the bladder. MRI also indicated an irregular and thick bladder wall and did not show invasion outside the bladder. Drip infusion pyelography (DIP) demonstrated bilateral ureteral dilatation.

The results of a physical examination were entirely normal except for atopic dermatitis of the bilateral elbows and neck.

His hemoglobin level on hospitalization was normal, as was his white cell count, which demonstrated a high rate of eosinophilis, 12.0%, in the differential diagnosis.

Transurethral resection of the bladder tumor (TUR-Bt)

Figure 1

Contrast-enhanced computerized tomography of the pelvis revealed a bladder wall mass. The solid black triangle indicates a thick bladder wall that was heterogeneously enhanced.
was performed to collect a biopsy sample under spinal anesthesia. Cystoscopy revealed edematous mucosal change of the bilateral and posterial bladder wall and a non-papillary lesion without a border. One lesion of the irregular mucosa was resected, and its pathological diagnosis was urothelial carcinoma, G3>G2, pT1. However, we diagnosed this case as invasive bladder cancer according to CT and MRI findings and performed total cystectomy with an ileal conduit. Pathological study of the sample obtained by total cystectomy demonstrated UC, G2, pTa-pT1 (Fig. 2), and marked infiltration of the submucosa and muscularis with eosinophils and chronic inflammatory cells was indicated (Fig. 3).

Discussion

Eosinophilic cystitis of the urinary bladder is a rare inflammatory disorder, first reported by Brown in 1960\(^1\), with an unknown etiology and is characterized by numerous eosinophilic infiltrations of the bladder, irritating voiding symptoms and negative urine culture. Patients with eosinophilic cystitis typically show symptoms of frequency, dysuria, gross hematuria, suprapubic pain and painful urination. Some patients have microscopic hematuria, urinary retention and nocturia\(^3\). Diagnosis can be made by histological examination of a biopsy specimen of the bladder. Histologically, the lamina propria is edematous, containing a mixed inflammatory infiltrate in which eosinophils are prominent\(^3\). Eosinophilic cystitis affects men slightly more often than women, with a male-to-female ratio of 1.3:1\(^6\). It is difficult to macroscopically differentiate eosinophilic cystitis from malignant bladder tumor\(^9\).

The cause of the disease remains unknown; however, one or more associated conditions are presumptively responsible, such as transitional cell carcinoma of the bladder with or without intravesical chemotherapy in 25% of cases, respiratory disease in 16% of cases, bladder outlet obstruction in 13%, and various medications in 8.5% of cases\(^9\). Hellstrom \textit{et al.}\(^6\) distinguished two groups of patients with eosinophilic cystitis. One group had a history of allergy and eosinophilia in peripheral blood and mainly consisted of women and children; the other group had a history of bladder injury, such as surgery, tumors and prostatic hyperplasia, and were largely elderly men. In adulthood, other common inflammatory or malignant bladder disorders that may precede or coexist with eosinophilic cystitis are thought to be involved in the etiology\(^9\).

The therapy is as follows: 1) removal of the allergen or discontinuation of medicine when an allergy is the clear cause; 2) administration of an antihistaminic agent and NSAIDs; 3) administration of steroids; 4) transurethral resection of the disorder lesion; or 5) administration of immunosuppressive agents, such as cyclosporine. When conservative treatment is ineffective, invasive treatment may be considered such as partial or total cystectomy.

This patient was diagnosed with invasive bladder cancer by imaging; however, the final diagnosis from the histological findings after total cystectomy was eosinophilic cystitis combined with superficial bladder carcinoma. Eosinophilic...
cystitis and proliferative cystitis should be considered in the
differential diagnosis of invasive bladder carcinoma by
imaging. Although Brunn’s nests are histologically charac-
teristic of proliferative cystitis\(^7\), they were not found in this
case, indicating that this was not proliferative cystitis.
Although eosinophilic infiltration was found in the stroma in
this case, submucosal eosinophilic infiltration was not
found. The marked eosinophil infiltration found in the acute
phase changes from histological chronic inflammation or
fibrosis in the early phase. As over one year passed between
symptom appearance and surgery, the histological findings
of unclear submucosal eosinophilic infiltration do not con-
ict with the diagnosis of eosinophilic cystitis.

If this patient had been diagnosed with eosinophilic cys-
titis coexisting with superficial bladder cancer, conservative
therapy combined with bladder instillation of BCG with
medication for eosinophilic cystitis might have been
selected; however, total cystectomy might have been chosen
because of incurable frequent urination and bladder pain.

In summary, we have presented a case of eosinophilic
cystitis coexisting with superficial bladder cancer that mim-
icked invasive bladder tumor. When invasive bladder cancer
is diagnosed by imaging, coexistence of eosinophilic cystitis
with superficial bladder cancer should be considered, as in
this case, if biopsy does not show invasive bladder cancer.

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