

## Case Report

# Primary urinary bladder amyloidosis: a case report and review of the literature

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**Abstract:** Objective: We aimed to improve the understanding and analysis of primary urinary bladder amyloidosis by discuss its clinical presentation, diagnosis and treatment. Method: We described one case of primary bladder amyloidosis and briefly discuss the management. We also conducted a systematic review of primary urinary bladder amyloidosis. Results: Transurethral resection was performed and follow-up cystoscopies to the present have been normal. Conclusion: In conclusion, primary urinary bladder amyloidosis is a rare disease which can be confused during evaluation with a bladder neoplasm. The preferred treatment approach is transurethral resection supplemented with intravesical dimethyl sulfoxide (DMSO) treatment. The incidence of recurrence is high; therefore follow-up examinations are essential after treatment is completed.

**Keywords:** Bladder, amyloidosis, diagnosis, treatment, DMSO

Primary urinary bladder amyloidosis, characterized by the extracellular deposition of fibrillin, is a rare disorder of protein metabolism with < 200 cases reported in the literature. Because urinary bladder amyloidosis shares a similar clinical presentation and cystoscopic appearance with bladder neoplasms, transurethral biopsy and Congo red staining is essential to exclude malignancy and to establish the nature of amyloidosis. Transurethral resection is the preferred surgical treatment with better clinical outcomes. We describe one patient with primary urinary bladder amyloidosis who was evaluated in our clinic in October 2014 and provide a systematic review of amyloidosis in terms of clinical presentation, diagnosis, pathologic characteristics, and treatment.

### Case report

A 74-year-old male was referred to the Hematuria Clinic for evaluation of a single episode of visible, painless hematuria. The bleeding was red in color, fresh, intermittent with no clotting, and was not associated with urgency, increased nocturnal frequency, hesitancy, fever, or abdominal pain. The gynecologic examination was normal and the complete blood count showed normal red blood cell indices. He underwent an

ultrasound of the ureters, kidneys, and bladder, which revealed a 1.4 cm × 0.6 cm nodular growth in the posterior wall of the urinary bladder. A CT scan confirmed thickening in the right lateral wall of the urinary bladder (**Figure 1**). A transurethral resection was performed that showed blood clots covering the lateral wall and mucosa of the anterior wall of the urinary bladder (**Figure 2**), where diffuse, yellow submucosal plaques with fragile mucosa were also observed. Amyloidosis in the epidermis and blood vessels was confirmed (**Figure 3**) with cystitis glandularis. He has since remained asymptomatic without progression of systemic amyloidosis. Follow-up cystoscopies performed to the present have been normal.

### Literature review

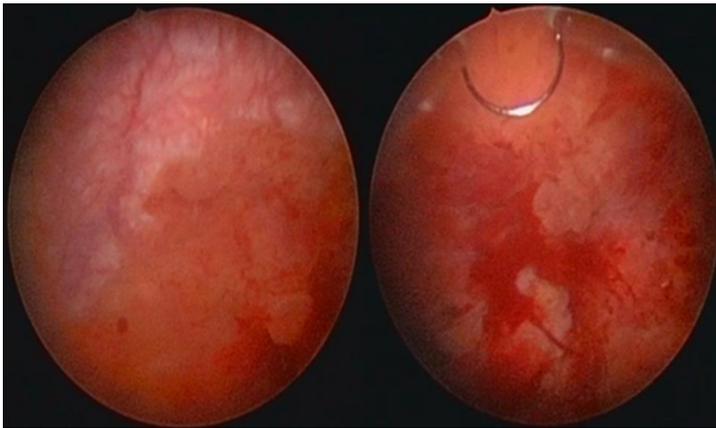
#### *Clinical presentation*

We reviewed 181 cases (120 males [66.3%]; 61 females [33.7%]; mean age, 57.4 years; range, 18-91 years) of primary urinary bladder amyloidosis reported in the literature (39 papers). One hundred fifty (83%) cases were referred to hematuria clinics, whereas irritative voiding symptoms were present in 32 patients. Twenty-one patients (11.4%) were referred for

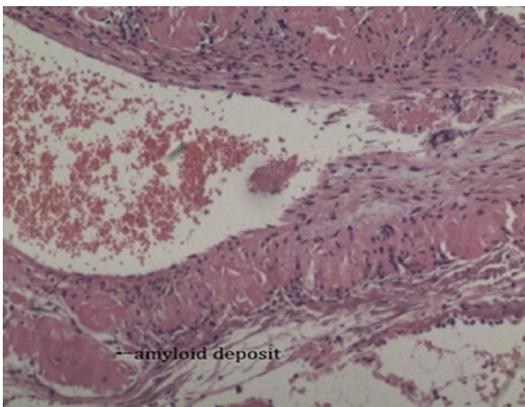
## A case of primary urinary bladder amyloidosis



**Figure 1.** Thickening of the right lateral wall of the urinary bladder on contrast-enhanced CT scan.



**Figure 2.** Amyloid deposit on the right lateral and anterior walls of the urinary bladder as visualized during cystoscopy.



**Figure 3.** Bladder biopsy with amyloid deposit (Hematoxylin & eosin, 10).

urinary irritation and 4 patients were referred for lumbago (**Table 1**).

### *Cystoscopic appearances*

The cystoscopic appearance of primary urinary bladder amyloidosis varies from a solid, circumscribed, elevated, sessile lesion to a grossly congested or ulcerated mucosa with petechial hemorrhage, which appears to be similar to a bladder neoplasm. Amyloidosis can occur anywhere along the urinary track, including the bladder wall with the triangle area and ureteral orifices, which can lead to uronephrosis and lumbago (**Table 2**).

### *Treatment*

The treatments for primary bladder amyloidosis as presented in the literature includes transurethral resection, partial bladder resection, intravesical dimethyl sulfoxide (DMSO) instillation only, and transurethral resection supplemented with DMSO instillation (**Table 3**). Transurethral resection with or without intravesical DMSO adjuvant therapy is the preferred approach for small, localized lesions [1-3]. When the affected area is very large or amyloidosis relapses frequently, radical surgery (part or total cystectomy) can be performed following transurethral resection [4-6]. According to the literature, it has been shown that DMSO instillation can improve the clinical symptoms with no serious side effects; however, the incidence of recurrence of amyloidosis of patients who underwent DMSO therapy only was frequent [7-9]. Therefore, we do not recommend this treatment approach to patients unless they will not accept resection surgery. In addition, Japanese physicians have reported that patients were treated effectively using an occlusive dressing technique therapy with DMSO, which could be an effective and safe way for patients who decline surgery.

## A case of primary urinary bladder amyloidosis

**Table 1.** Clinical features from systematic review of the literature

	Cases (n)
Gender	
Male	120
Female	61
Clinical presentation	
Painless gross hematuria	
Hematuria only	118
Associated with irritative voiding	32
Irritative voiding	21
Lumbago	4
No obvious hematuria observed	6

**Table 2.** Site of amyloidosis where deposits could occur

Location	Case No.
Bilateral	8
Triangle area	47
Posterior wall	35
Anterior wall	12
Top	11
Cervix vesicae	17
Ureters	8
Diffuse	18

**Table 3.** Treatments

Treatment	No. of case
Transurethral resection (TUR)	103
TUR + DMSO treatment	17
Part cystectomy surgery	33
Part cystectomy + DMSO	5
DMSO instillation only	12
Total cystectomy surgery	6
Occlusive dressing technique therapy using DMSO	2
Anti-inflammatory treatment	2
No treatment	2

### Recurrence

Although primary bladder amyloidosis mimics bladder neoplasms, the clinic outcomes were relatively better than malignancies. Seventy-six of 181 cases included follow-up information, in which no one died; however, the recurrence of amyloidosis was high (38 of 76). TUR supplemented with DMSO treatment was performed on most of the patients; however, for those

patients with large effected areas, radical surgery (partial or total cystectomies) was performed after TUH.

### Discussion

It is believed that primary urinary bladder amyloidosis arises from abnormal folding of protein, which is deposited as fibrils in the extracellular space [10]. Urinary bladder amyloidosis is classified into a primary type (AL), secondary type (AA), and hereditary type (ATTR). Based on a literature review, we have found that most cases of amyloidosis are the AL type and only a few cases are the AA type. Researchers formerly believed that the AA type was more responsible for secondary systemic amyloidosis; however, the AA type could also exit in primary urinary bladder amyloidosis based on the literature.

Most patients with primary urinary bladder amyloidosis present with painless gross hematuria, sometimes with or without irritative voiding symptoms. Urinary bladder amyloidosis, however, is easy to be mistaken for bladder neoplasm, therefore a biopsy is essential for confirmation. Congo Red staining is an easy and effective method of diagnosis. Having confirmed the diagnosis, more examination should be attempted to determine if there is amyloidosis involving other organs to exclude systemic amyloidosis.

Transurethral resection was performed on a majority of the patients. For patients with small-localized lesions, transurethral resection is the first choice. If the affected area is large, radical surgery can be performed. In addition, intravesical DMSO instillation can improve the clinical symptoms. For patients with large affected areas or recurrence of amyloidosis, DMSO instillation can be supplemented after the surgery. Based on the literature, we found that the incidence of recurrence was high, especially for the patients with large areas of amyloidosis. The main reason is that localized amyloidosis cannot be demonstrated by cystoscopy, and sometimes amyloidosis is commonly associated with chronic inflammation. For these patients, an occlusive dressing technique therapy using DMSO can be attempted and if not effective, radical surgery involving total cystectomy needs to be performed.

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### Conclusion

In conclusion, primary urinary bladder amyloidosis is a rare disease, which can be confused with a bladder neoplasm during evaluation. The preferred treatment approach was transurethral resection supplemented with intravesical DMSO treatment. The incidence of recurrence is high, therefore follow-up examinations are essential after treatment.

### Disclosure of conflict of interest

None.

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