CASE REPORT

Isolated bladder schwannoma: a rare presentation

Samer Jallad, Samir Ghani, Mohammad Ali Omar, Hanif Motiwala

Department of Urology, Frimley Health NHS Foundation Trust, Slough, UK

Correspondence to
Samer Jallad,
samer.jallad@nhs.net

Accepted 30 January 2018

SUMMARY

Bladder schwannoma is a rare tumour arising from Schwann cells in nerve sheaths. It is usually more common in patients diagnosed with neurofibromatosis. However, isolated cases of urinary bladder schwannoma is incredibly rare, attributing to <0.1% of bladder tumours. A literature review and analysis revealed that it presents in adulthood, is mostly symptomatic and diagnosis is established histologically. We report a case of isolated bladder schwannoma in 25 year-old female who presented with dyspareunia.

BACKGROUND

Isolated bladder schwannoma is extremely rare.

CASE PRESENTATION

A 25-year-old woman with no past medical or surgical history presented to the gynaecologist with dyspareunia for several months. She did not have any lower urinary tract symptoms or any other abdominal or gynaecological symptom. The clinical examination did not reveal any abnormality. She was then investigated with an ultrasound scan of the pelvis that revealed a lesion within the bladder wall (figure 1) and subsequently referred to the urologist. In order to better characterise the lesion, she underwent an MRI scan, which again delineated a lesion within the bladder wall (figure 1). She subsequently underwent a rigid cystoscopic examination

Figure 2 Cystoscopy revealed a bladder lesion with normal covering mucosa.

under general anaesthesia and that showed a single smooth bladder lesion with normal overlying mucosa suggesting an intramural location (figure 2), and the lesion was resected transurethrally. The resected tumour chips were examined histologically (figure 3) and that showed spindle-shaped cells that are arranged in fascicles. The immunohistochemical profile revealed a diffuse strong cytoplasmic positivity by S-100 and also for CD56 but negative for CD34, SMA, desmin, HMB 45, melan A, chromogranin, synaptophysin and calretinin; suggesting a schwannoma. She did not have any stigmata of neurofibromatosis.

OUTCOME AND FOLLOW-UP

The dyspareunia symptom resolved after the resection. It is possible that the mass caused a pressure effect and dyspareunia. She was subsequently followed up with a flexible cystoscopy and ultrasound scan 6 months later; these did not show any evidence of recurrence.

DISCUSSION

Schwannoma, also known as neurilemmoma, is a slow-growing rare tumour of the myelinated nerves and as the name suggests, arises from Schwann cells. The common locations of these tumours are in the head and neck regions, though other organs can be affected.¹ It is usually more common in patients diagnosed with neurofibromatosis in 5%–18% of cases. Patients generally present in their adulthood between the ages of 20 years and 50 years with only 5% having onset in childhood or adolescence. The malignant transformation is extremely rare and can recur after incomplete resection.^{1 2}

Figure 1 Pelvic ultrasound (top images) investigating dyspareunia revealed a bladder lesion. T1-weighted (lower left) and T2-weighted (lower right) MRIs showing intramural bladder lesion.

To cite: Jallad S, Ghani S, Omar MA, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-223154

Figure 3 H&E staining revealed compact hypercellular Antoni A areas 'spindle shaped cells arranged in fascicles' (left). Immunohistochemical profile showed that these cells were S100-positive (middle) and CD56-positive (generally negative in neurofibroma and positive in schwannoma) (right), while negative for CD34, SMA, desmin, HMB 45, melan A, chromogranin, synaptophysin and calretinin suggesting the diagnosis of schwannoma.

The diagnosis of schwannoma is most often based on histology rather than on symptoms or on clinical grounds. The differential diagnosis of a bladder mass is usually concerning for transitional cell carcinoma, squamous cell carcinoma or adenocarcinoma. The rare possibility is neurofibromas, leiomyomas or schwannoma. Isolated cases of urinary bladder schwannoma are incredibly rare, attributing to less than 0.1% of all bladder tumours.³

Imaging in the form of CT scan and MRI scan have commonly been used in the evaluation of patients with a bladder mass. There are no characteristic features on imaging that may differentiate this from other urothelial cancers, though the bladder schwannoma can be isodense or hypodense to muscle.² On MRI scanning, the schwannoma and the bladder carcinoma are isointense on T1-weighted imaging and slightly hyperintense on T2-weighted imaging⁴ and so can't be clearly differentiated. Hence, the diagnosis of schwannoma relies on histological sampling or resection and this can be appreciated by the fact that all reported cases in the literature required an intervention in the form of biopsy, resection or partial cystectomy.

The histological evaluation is with H&E staining. The hallmark areas of Antoni A (more organised and composed of cellular spindle cells arranged in short bundles or interlacing fascicles) and Antoni B (hypocellular, less organised and containing more

Learning points

- Isolated bladder schwannoma is extremely rare.
- Review of literature revealed that most cases of bladder schwannoma were symptomatic.
- Diagnosis of bladder schwannoma is confirmed histologically.

myxoid loosely arranged tissue with high water content) might be seen.¹ On immunohistochemistry, a positive S100 is pathognomonic of a schwannoma.^{1,2}

The literature search revealed only 13 other reported cases of isolated bladder schwannoma.^{2–11} Table 1 summarises the patients' demographics, their presentation and their management. From the reported cases in literature, there does not seem to be a sex preference (six men: eight women). All reported cases were adults and the median age of reported isolated bladder schwannoma was 55 years (range 25–88 years), with our case being the youngest reported case at just 25 years of age.

In 13 out of the 14 reported cases of isolated bladder schwannoma, the mode of presentation was clearly described, of which, the majority were symptomatic and presented with either haematuria (45%), lower urinary tract symptoms (45%), recurrent urinary tract infections (10%), pelvic pain (10%) and/or dyspareunia (10%). In all, the diagnosis was established histologically and the majority of cases underwent surgical resection. The review highlights how varied the mode of presentation can be from asymptomatic incidental findings to urological, gynaecological or non-specific abdominal discomfort and can present at any age in adulthood.

Bladder schwannoma is a very rare benign bladder tumour and that typically presents at adulthood, is mostly symptomatic and requires histological sampling to establish diagnosis. One should look for the stigmata of neurofibromatosis in these patients, but rare isolated bladder schwannoma can occur.

Contributors SJ, MAO, SG and HM contributed to writing and editing the case report and the literature review and analysis.

Funding This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

© BMJ Publishing Group Ltd (unless otherwise stated in the text of the article) 2018. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

REFERENCES

- Pytel P, Anthony DC. Peripheral nerves and skeletal muscles. *Robbins and Cotran pathologic basis of disease*. 9th ed. Philadelphia: Elsevier Saunders, 2015:1246–9.
- Srinivasa Y, Bhat S, Paul F. Isolated Primary Schwannoma of Urinary Bladder. *J Clin Diagn Res* 2016;10:12–13.
- Mazdar A, Asseban M, Aboussalah H, et al. Schwannoma of the urinary bladder: a case report. *Pan Afr Med J* 2014;18:84.
- Mosier AD, Leitman DA, Keylock J, et al. Bladder schwannoma -- a case presentation. *J Radiol Case Rep* 2012;6:26–31.
- Wang W, Montgomery E, Epstein JI. Benign nerve sheath tumors on urinary bladder biopsy. *Am J Surg Pathol* 2008;32:907–12.
- Cummings JM, Wehry MA, Parra RO, et al. Schwannoma of the urinary bladder: a case report. *Int J Urol* 1998;5:496–7.
- Geol H, Kim DW, Kim TH, et al. Laparoscopic partial cystectomy for schwannoma of urinary bladder: case report. *J Endourol* 2005;19:303–6.
- Ng KJ, Sherif A, McClinton S, et al. Giant ancient schwannoma of the urinary bladder presenting as a pelvic mass. *Br J Urol* 1993;72:513–4.
- Gafson I, Rosenbaum T, Kubba F, et al. Schwannoma of the bladder: A rare pelvic tumour. *J Obstet Gynaecol* 2008;28:241–3.

Table 1 Literature summary of reported bladder schwannoma cases, demographics, presentations and managements. TURBT, transurethral resection of bladder tumour; BOTOX, botulinum toxin.

Author	Age (years)/sex	Presentation	Management
Srinivasa Y <i>et al</i> ²	45/M	Haematuria	TURBT
Mazdar Adil <i>et al</i> ³	50/F	Haematuria	TURBT
Mosier AD <i>et al</i> ⁴	31/M	Haematuria	Partial cystectomy
Wang <i>et al</i> ⁵	I. 69/M	Haematuria and recurrent infection	Local resection
	II. 56/F	Not documented	Local resection
Cummings JM <i>et al</i> ⁶	58/F	Urinary symptoms	Partial cystectomy
Geol Huh <i>et al</i> ⁷	35/M	Urinary symptoms	Partial cystectomy
NG K J <i>et al</i> ⁸	88/F	Urinary symptoms	Biopsy
Gafson I <i>et al</i> ⁹	52/F	Abdominal pain+urinary symptoms	Partial cystectomy
Fukui <i>et al</i> ¹⁰	50/F	Incidental	Partial cystectomy
Georgiadis <i>et al</i> ¹¹	33/M	Haematuria	TURBT
Zugail <i>et al</i> ¹²	57/M	Urinary symptoms	TURBT+BOTOX
Matsumoto <i>et al</i> ¹³	68/F	Incidental	Partial cystectomy
Current case report	25/F	Dyspareunia	TURBT

- 10 Fukui S, Kiba K, Shinohara M, *et al.* Schwannoma arising from the urinary bladder wall: a case report. *Hinyokika Kiyo* 2010;56:513–6.
- 11 Georgiadis G, Bonatsos V, Koulouris A, *et al.* Isolated peripheral nerve sheath tumour involving the urinary bladder neck. *J Clin Urol* 2016;9:59–61.
- 12 Zugail AS, Benadiba S, Ferlicot S, *et al.* Oddities Sporadic Neurofibroma of the Urinary Bladder. A Case Report. *Urol Case Rep* 2017;14:42–4.
- 13 Matsumoto Y, Waku N, Kawai K, *et al.* A case of primary schwannoma of the urinary bladder. *Hinyokika Kiyo* 2017;63:323–8.

Copyright 2018 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow