ORIGINAL RESEARCH PAPER
Volume-9 | Issue-5 | May-2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PARAGANGLIOMA OF URINARY BLADDER: A RARE ENTITY

Urology

Dr Mayank Jain* Assistant Professor, Address: Dept of urology, Institute of Nephrourology, Victoria hospital campus, K R market, Bengaluru, Karnataka - 560002. *Corresponding Author

Dr Sanjay R P Assistant Professor, Institute of Nephrourology.

Dr Sreenivas J Associate Professor, Institute Of Nephrourology.

Dr Anvesh A Senior Resident, Institute Of Nephrourology.

ABSTRACT

Urinary bladder pheochromocytoma is a rare entity. Hypertension, micturition syncope, and headache are the common presenting symptoms. Difficulty in diagnosis and risk of intraoperative hypertensive crisis makes it dreadful disease to treat. We present a case of 30 year old male presenting with hematuria but no hypertension or urinary complaints, mimicking urothelial carcinoma of bladder. Patient underwent partial cystectomy and is on regular uneventful follow-up of 1 year.

KEYWORDS

Paraganglioma, Micturition Syncope, Hematuria, Partial Cystectomy

INTRODUCTION:

Paraganglioma accounts for less than 0.1% of vesical tumours. It arises from the chromaffin cells in sympathetic chain in bladder wall. It is mostly symptomatic with hypertension, headache, post micturition syncope, hematuria or can be asymptomatic also. Once diagnosed surgery remain the mainstay of treatment. Long-term follow-up is mandatory for early diagnosis and treatment due to high recurrence rate.

CASE REPORT:

30 year old male patient with complaint of self remitting single episode of painless gross hematuria with clots. No history of micturition complaints, headache, coagulopathies, abdominal pain etc. Patient was non-smoker, on alcoholic, on hypertensive. Pulse 74/min, regular and Blood pressure 110/80 mm of Hg. Routine blood parameters were well within normal limits with normal renal function. CT scan of abdomen and pelvis revealed an intensely enhancing solitary polyploidal 4.8X3.8 cm mass in right postero-lateral wall of bladder infiltrating perivesical fat, but no lymphadenopathy **(Fig 1).** Cystoscopy showed features of high grade tumour with single, solid, hypervascular ulcerated growth with normal surrounding bladder mucosa. Transurethral biopsy specimen revealed features suggesting pheochromocytoma **(Fig 2)**. While Immunohistochemistry confirmed the diagnosis with strong positivity for synaptophysisn and chromognanin and low Ki67 **(Fig 3)**.Plasma metanephrine levels were not elevated. Considering diagnosis of pheochromocytoma patient underwent partial cystectomy .Intraoperatively it was a well circumscribed mobile tumour, in right postero-lateral wall of urinary bladder, free from surrounding structures with compressing of right vesicoureteric junction without any involvement **(Fig 4)**. Patient had 1 episode of transient hypertension as blood pressure shot up to 220/120 mm of Hg, which subsided once tumour was de-vascularised and didn't required any anti-hypertensive. Post-operative course was uneventful. Final histopathology revealed an ulceroproliferative growth with cells arranged in Zellballen pattern inferring to diagnosis of extra adrenal pheochromocytoma invading deep muscle. Ga-68 PET-CT showed no synchronous lesions (Stage T2bN0M0). On 1 year follow-up patient was symptom free with normal metanephrine levels and no radiological evidence of tumour.

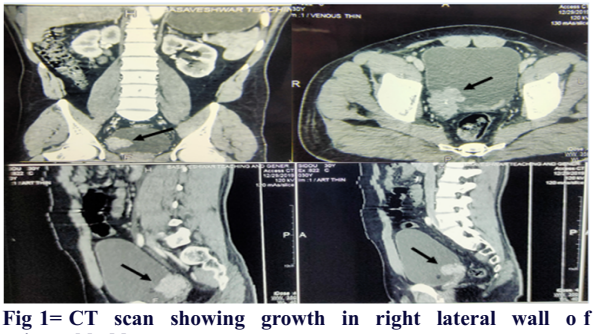

Fig 1= CT scan showing growth in right lateral wall o f urinary bladder

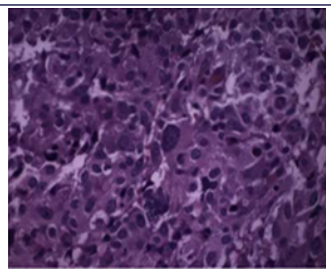

Fig 2= Large multinucleated giant cells with abundant granular cytoplas m arranged i n clusters and sheets s/o pheochromocytoma

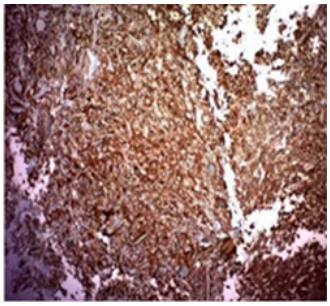

Fig 3=Immunohisto chemistry showing expression of synaptophysin and Chromogranin A

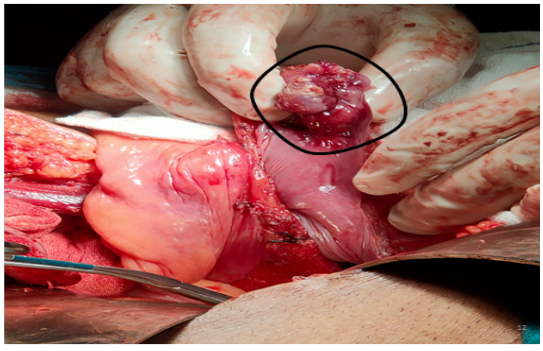

Fig 4= Ulcerproliferaive growth with normal surrounding mucosa away from ureteric orifice.

DISCUSSION:

Paraganglioma or pheochromocytoma is rare entity and incidence of extra-adrenal pheochromocytoma is less than 10 % and even rarer is bladder paraganglioma. Extra-adrenal paraganglioma can occur in skull base and neck as well as within the mediastinum and periaortic

region.{1,2} It is mostly seen in younger population in second to fourth decade of life with mostly in females .Paraganglioma incidence is around 3 per million population{3}, 0.05% of all bladder tumours and less than 1% of all pheochromocytomas . In genitourinary system nearly 80% develops in bladder followed by urethra (12.7%), renal pelvis (4.9%), and lastly ureter (3.2%). {4}

First case of paraganglioma of urinary bladder was described by "Zimmerman in 1953" where he presented a case of 73 year old woman with painful hematuria and hypertensive crisis .{5} Almost 50% of the patients presents with hypertension, haematuria and 'micturition syncope'. Catecholamine's hyper secretion is responsible for most of the symptoms of paraganglioma. {6} Post micturition syncope occur secondary to over distended bladder, defecation, sexual activity, or bladder instrumentation. It can cause hematuria or clot retention, if bladder mucosa is breached. It can be hormonally non-functional and asymptomatic in 17% cases. {7} Bladder paraganglioma generally is a benign tumour but around 10 % of these can be malignant ,presenting as local extravesical spread or metastatic spread to pelvic lymph nodes or lungs. {6}

These tumours originate from neuroendocrine cells of sympathetic nervous system located in wall of urinary bladder; with dome and trigone of bladder being most commonly encountered location. On histopathology, tumour cells appear as large polygonal cells with abundant granular cytoplasm arranged in a Zellballen pattern, surrounded by a fibrous network rich in blood vessels. Nested variant of urothelial carcinoma is the most important differential diagnosis. {8, 9} Immunohistochemistry for neuroendocrine markers like chromogranin A, neuron specific enolase and synaptophysin establishes the diagnosis. Plasma metanephrine levels helps as a screening tool for suspected case of paraganglioma. Ultrasonography or cross-sectional imaging(CT Scan) can quantify the disease in bladder and it extension in surrounding tissues {4}.Preferably a sub mucosal tumour the cystoscopy will demonstrate an intravesical bulge in wall of bladder with normal/yellow overlying unbreached mucosa . I-131 MIBG (Methyllidobenzylguanidine) scan has high sensitivity (90%) and specificity (nearly 100%) hence used specially in metastatic or recurrent cases. I-131 MIBG is an analogue of norepinephrine and is absorbed well by paraganglioma tissue {1, 8}. PET scan has higher accuracy than MIBG scans in localising lesions due to higher spatial resolution. {10}

Diagnosis of vesical paraganglioma is difficult preoperatively, because of a lack of definitive non-invasive tool. In diagnosed cases partial cystectomy with clear margins often leads to cure. Adequate anti-hypertensive and volume expanders are cornerstone for preoperative workup. {8}In lack of preoperative/intraoperative suspicion transurethral resection can be curative. For larger masses radical cystectomy with urinary diversion is to be offered. Surgery is considered gold standard treatment modality as tumour is located submucosally, hence difficult to control extent of resection; multiple layers of bladder wall are involved ; higher incidence of recurrence and finally irrigation fluid can incite release of catecholamine's and aggravates hypertensive crisis(tumour irritation syndrome).{11} For advanced and metastatic cases palliative therapy can be given. Very large tumour, ≥T3 disease, multifocality and DNA ploidy are poor prognostic indicators. {12} Chemotherapy with cyclophosphamide, vincristine, and dacarbazine (The Averbuch protocol) and radiation therapy with131I-MIBG radiation therapy imparts good efficacy for the treatment of MIBG-avid metastasis {13}. Regular follow-up is mandatory due to late recurrences as late as 10 years. It should include cystoscopy, plasma or urinary tests and imaging study. Follow-up at 1`month, 3 month post-surgery, then every six months for two years. Furthermore if regional or metastasis are documented then cross-sectional imaging of the abdomen/pelvis should be performed every three months for one year, then every six months for one year, then yearly for three years. At least annual follow-up is required and ideal follow-up is life long. {4, 7}

CONCLUSION:

Vesical paraganglioma is a rare entity. Thorough clinical history, presence of hypertension, biochemical, radiological investigations and cystoscopy with histopathology are paradigm in diagnosis. High degree of suspicion is necessary for diagnosis to avoid perioperative morbidity. Surgical treatment i.e. partial cystectomy is the gold standard for treatment in most of the cases and lifelong annual follow-up is mandatory.

REFERENCES:

1. Dahm P, Gschwend JE. Malignant non-urothelial neoplasms of the urinary bladder: A review. Eur Urol. 2003;44:672–81. [PubMed: 14644119]
2. Elder EE, Elder G and Larsson C: Pheochromocytoma and functional paraganglioma syndrome: No longer the 10% tumor. J Surg Oncol. 89:193–201. 2005.
3. Peng, C., Bu, S., Xiong, S., Wang, K., & Li, H. (2015). Non-functioning paraganglioma occurring in the urinary bladder: A case report and review of the literature. Oncology Letters, 10, 321-324. https://doi.org/10.3892/ol.2015.322
4. Pheochromocytoma of the urinary bladder: a systematic review of the contemporary literature Jonathan A Beilan et al.BMC Urology2013,13:22 http:// www. biomedcentral. com/ 1471-2490/13/22
5. Zimmerman IJ, Biron RE, Macmahon HE:Pheochromocytoma of theurinary bladder.N Engl J Med1953,249:25–26.
6. Panichi S, Dell'Anna G, Innocenti P, Nesi G:Paraganglioma of the bladder:report of a case.Annali Italiani Di Chirurgia1999,70:937–939
7. Paraganglioma of urinary bladder.Pal et al .Urol Ann. 2015 Jul-Sep; 7(3): 402–404. doi: 10.4103/0974-7796.152058: 10.4103/0974-7796.152058. PMCID: PMC4518387 PMID: 26229338
8. Al-Zahrani AA. Recurrent urinary bladder paraganglioma. Adv Urol. 2010 912125. [PMCID: PMC2905915] [PubMed: 20672008]
9. Sheps SG, Jiang NS, Klee GG, van Heerden JA. Recent developments in the diagnosis and treatment of pheochromocytoma. Mayo Clin Proc. 1990;65:88–95. [PubMed: 1967325]
10. Pacek et al –Functional imaging of endocrine tumours:role of positron emission tomography..Endocr Rev.25:568-580.2004
11. Tsai CC, Wu WJ, Chueh KS, Li WM, Huang CH, Wu CC, Lee MH, Chen SM:Paraganglioma of the urinary bladder first presented by bladder bloodytamponade: two case reports and review of the literatures.Kaohsiung J Med Sci2011,27(3):108–113.
12. Deng JH, Li HZ, Zhang YS, Liu GH:Functional paragangliomas of theurinary bladder: a report of 9 cases.Chin J Cancer2010,29(8):729–734.PubMed PMID: 20663319.
13. Averbuch SD, Steakley CS, Young RC,et al:Malignant pheochromocytoma:effective treatment with a combination of cyclophosphamide,vincristine, and dacarbazine.Ann Intern Med1988,109(4):267–273.