

Case Report

Concurrent renal cell carcinoma in one kidney and complete stag horn stone in the opposite kidney- a case report.

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Abstract

The simultaneous occurrence of renal cell carcinoma (RCC) in one kidney & stag horn calculus in another kidney is rare combination. We report a 60-year-old man with concurrent large RCC in one kidney & a complete stag horn stone in the opposite kidney. He was admitted to the hospital because of occasional right loin pain and recently diagnosed hypertension leading to the diagnosis of right renal stone and incidental left renal solid mass in ultrasound scan. Contrast enhanced CT scan revealed 8cm x 6 cm irregular contrast enhanced solid mass(RCC)in the left kidney with extension to perinephric fat and 2.5 cm x 1.5 cm stag horn stone with two small caliceal calculi in the right kidney. Open extended pyelolithotomy(Rt) followed by Laparoscopic left radical nephrectomy were performed. Priority, nature of surgery, and post operative residual renal functional status were among the important considerations in this particular case.

Key words: Renal cell carcinoma, Renal stone, Laparoscopic radical nephrectomy, Pyelolithotomy.

Introduction

Renal cell carcinoma (RCC) accounts for 2% to 3% of all adult malignant neoplasms and is the most lethal of the urologic cancers. Traditionally, more than 40% of patients with RCC have died of their cancer, in contrast with the 20% mortality rates associated with prostate and bladder carcinomas^{1,2}. Because of the sequestered location of the kidney within the retroperitoneum, many renal masses remain asymptomatic and nonpalpable until they are advanced. The classic triad of flank pain, gross haematuria, and palpable abdominal mass is now rarely found. With the frequent use of noninvasive imaging for the evaluation of a variety of nonspecific symptoms, more than 50% of RCCs are now detected incidentally². Renal calculi are more common and may

be clinically silent even when large. Most of the renal stones are radio opaque but may be radiolucent when composed of uric acid. Approximately 50 % patients present between the ages of 30 & 50 years. Concurrent RCC in one kidney & stag horn calculus in another kidney is a rare combination. We are reporting a case of RCC in one kidney & complete stag horn stone in another.

Case presentation

A 60 years ex-army man from Pabna was admitted to urology department of KYAMCH with occasional right loin dull aching pain. Plain X-ray KUB showed right renal stag horn calculus with incidental left renal solid mass on ultrasonogram.

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He was non diabetic but recently diagnosed as hypertensive and started taking combination of amlodipine and atenolol. He had a thyroid surgery 23 years back followed by radiotherapy from outside the country; however we could not trace the histopathology and nature of thyroid surgery. Now he is euthyroid without thyroxin. He is an ex-smoker with history of 10 years smoking. His younger brother died of lung cancer.

His physical findings were unremarkable except a scar mark in the front of the neck.

Preoperative serum creatinine was $78.15\mu\text{mol/l}$ with $\text{eGFR}-93\text{ml/min/1.73m}^2$. Liver function tests and chest X-ray were normal. CT scan revealed an irregular contrast enhanced mass lesion measuring about $8\text{ cm X }6\text{ cm}$, involving the upper half of left kidney with extension to perinephric fat. No renal vein or IVC thrombus or enlarged retroperitoneal lymph node was reported. There was a $2.5 \times 2\text{ cm}$ stag horn stone with two other small calyceal calculi in the right kidney. However, both kidneys showed normal excretion. So in this clinical situation we have discussed with the nephrologists, senior urologist and with the patient, and opted for extended pyelolithotomy



Fig. 1: Plain X-ray KUB showing large right stag horn stone.

with DJ stenting for right renal stone which was performed first. There was 2 tiny residual stone & DJ stent in situ after 1st surgery and kidney function was stable.

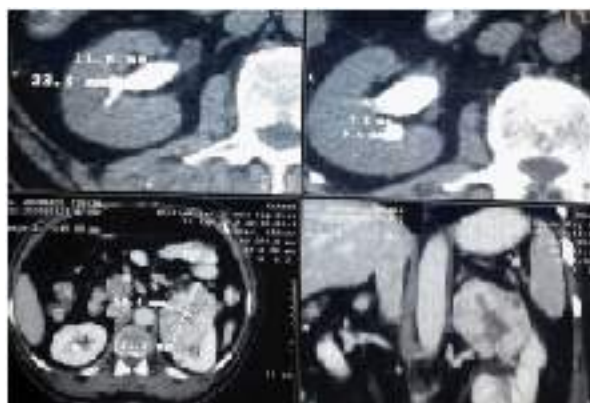


Fig. 2: Contrast CT scan showing right renal stone and left enhancing solid mass (RCC) with central necrosis.



Fig. 3: Lap radical nephrectomy ports and specimen retrieving incision site (arrow marked).

After 3 weeks he underwent laparoscopic left radical nephrectomy. Postoperative patient recovery was uneventful. There was no significant change in renal function status and his last recorded serum creatinine was 110.80 umol/l with eGFR was 68 ml/min/1.73m^2 . Histopathology revealed- RCC, Clear cell type, Fuhrman nuclear grade-G2, stage-PT3 No Mx (Robson stage..).



Fig. 4: Plain X-ray KUB region showing no residual stone (DJ stent in situ) 3 weeks after ESWL with titanium clips on the left side.

After 4 weeks we have performed ESWL for residual stone to maximize stone clearance of the single right kidney. DJ stent was removed 3 weeks after lithotripsy after checking stone clearance in plain X- ray.

Discussion

Despite the high prevalence of stone disease there was few report of synchronous presentation of renal cancer with renal calculus & J. W lee et al reported a case of ipsilateral RCC and TCC in one kidney and contralateral renal stone³. Combination of RCC in One kidney and stag horn calculus in another kidney is very much rare. We could not find any record. Surgery remains the mainstay for curative treatment of RCC. Expression of multidrug resistance, also known as P-glycoprotein contributes to the refractory nature of RCC to several conventional chemotherapeutic agents (Fojo et al, 1987 ; Kakehi et al, 1988 ; Mickisch, 1994). Radiotherapy works only for palliation of metastatic lesion, not for primary tumour. Radical nephrectomy is the primary treatment for localized RCC. Its goal is to achieve the removal of tumor and to take a wide margin of normal tissue. Robson and colleagues (1969) established radical nephrectomy as the "gold standard" curative operation for localized RCC with their report of 66% and 64% overall survival for stages I and II tumors, respectively⁴. Laparoscopic radical nephrectomy has emerged as a less morbid alternative to open surgery in the management of low- to moderate-volume (8 to 10 cm or smaller), localized RCCs with no local invasion, renal vein involvement, or lymphadenopathy⁵.

Nephron- sparing surgery in the form of partial nephrectomy could be an imperative indication, however size and extent of tumour was not favorable in this case. The major disadvantage of Nephron sparing surgery for RCC is the risk of postoperative local tumor recurrence in the kidney that was operated on, which has been observed in 4% to 6% of patients^{6,7}. Other disadvantages are hemorrhage, urinary leakage, fistula formation, renal artery thrombosis.

Therefore, we have considered clearance of stone loaded right kidney first; to maximize functional recovery of this benign kidney that will remain with the patient after radical nephrectomy of opposite malignant one. We have performed extended pyelolithotomy because standard PCNL has increased risk of nephron loss and bleeding from renal vascular injury. Blood loss is more common in too medial punctures, multiple punctures, and punctures into kidneys with abnormal anatomy⁸.

Neoplastic kidney was removed laparoscopically. Laparoscopic radical nephrectomy is associated with diminished postoperative discomfort and faster recovery, and costs compare favorably with the open approach⁹. Available outcome data suggest that cancer-specific survival after laparoscopic radical nephrectomy is comparable to that after open radical nephrectomy^{10,11,12,13}.

Conclusion

Concurrent diseases involving both kidneys are not uncommon, especially for stone disease. However, large RCC like this one where radical nephrectomy seems mandatory and other kidney function is jeopardized by stag horn stone; treatment planning could be critical. This is a unique case where both oncological safety and functional outcome issues were taken into account. Basically, we have discussed one way of managing this case, while other possible alternatives could be a matter of debate.

References

1. Landis et al., 1999. Landis SH, Murray T, Bolden S, Wingo PA: Cancer statistics: 1999. CA Cancer J Clin 1999; 49:8-31.
2. Pantuck et al., 2001b. Pantuck AJ, Zisman A, Belldegrun AS: The changing natural history of renal cell carcinoma. J Urol 2001; 166:1611-1623.

3. J W Lee, M J Kim et al: Ipsilateral synchronous renal cell carcinoma and transitional cell carcinoma. *Journal of Korean Medical Science*, 1994; 9(6): 466-470
4. Robson CJ: Radial nephrectomy for renal cell carcinoma. *J Urol* 1963; 89: 37.
5. Meraney et al., 2000. Meraney AM, Gill IS, Savage SJ, et al: Oncologic adequacy of laparoscopic radical nephrectomy. *J Urol* 2000; 163(suppl):787.
6. Morgan and Zincke, 1990. Morgan WR, Zincke H: Progression and survival after renal-conserving surgery for renal cell carcinoma: Experience in 104 patients and extended follow-up. *J Urol* 1990; 144:852.
7. Licht et al., 1994. Licht MR, Novick AC, Goormastic M: Nephron sparing surgery in incidental versus suspected renal cell carcinoma. *J Urol* 1994; 152:39.
8. Sampaio, 1996. Sampaio FJB: Surgical anatomy of the kidney. In: Smith AD, Badlani GH, Kavoussi LR, et al ed. *Smith's Textbook of Endourology*, St Louis: Quality Medical; 1996:153-184.
9. Meraney and Gill, 2002. Meraney AM, Gill IS: Financial analysis of open versus laparoscopic radical nephrectomy and nephroureterectomy. *J Urol* 2002; 167:1757-1762.
10. Cadeddu et al., 1998. Cadeddu JA, Moore RG, Nelson JB, et al: Laparoscopic nephrectomy for renal cell cancer: Evaluation of efficacy and safety: A multicenter experience. *J Urol* 1998; 159:147.
11. Dunn et al., 2000. Dunn MD, Portis AJ, Shalhav AL, et al: Laparoscopic versus open radical nephrectomy: A 9-year experience. *J Urol* 2000; 164:1153-1159.
12. Meraney et al., 2000. Meraney AM, Gill IS, Savage SJ, et al: Oncologic adequacy of laparoscopic radical nephrectomy. *J Urol* 2000; 163(suppl):787.
13. Yoshino et al., 2005. Yoshino Y, Ono Y, Hattori R, et al: Long-term cancer control of laparoscopic radical nephrectomy for renal cell carcinoma. *J Urol* 2005; 173:296.