ORIGINAL ARTICLE

Isolated scar-site metastasis after radical nephrectomy for localized renal cell carcinoma

Mutahir A. Tunio, Altaf Hashmi, Muhammad Mubarik, Rehan Mohsin

Abstract:
Scar-site metastasis following radical nephrectomy is an extremely rare manifestation and sporadically reported in the world literature, but an issue of concern for the urologists and radiation oncologists. The incidence of tumor seedling and scar-site metastases following conventional radical nephrectomies ranges from 0.9% to 1.8% which is comparable to port-site metastases after laparoscopic nephrectomies.
Herein, a rare case of scar-site metastasis, following an open radical nephrectomy in a 36 years old male with a stage pT2N0M0 and Fuhrman grade II renal cell carcinoma, is reported.

Keywords: Renal cell carcinoma, nephrectomy, scar recurrence

Introduction:
Renal cell carcinoma (RCC) has unpredictable and diverse behaviour. The incidence of RCC over last 20 years has progressively increased due to widespread use of modern imaging.[1] About 30-50% of patients are found to have metastases at diagnosis. While bone, lymph nodes, lungs and brain constitute expected 'homing' sites, metastasis may turn up at unusual locations.[2, 3]

The nephrectomy scar is very rare site of metastasis; only few case reports have been published.[4] Scar-site metastases following open nephrectomy are early recurrent metastatic lesions, which develop locally in the abdominal wall within the scar tissue with or without involment of underlying viscera.[5] Though rare complication, the incidence of tumor seedling and scar-site metastases following conventional radical nephrectomies ranges from 0.9% to 1.8% which is comparable to port-site metastases after laparoscopic nephrectomies.[6] In Pakistan, still the conventional open nephrectomies are commonly practicized because of its cost effectiveness and less endourology personnel in the country.

In this case report, a rare case of scar-site metastasis following an open radical nephrectomy in a 36 years old male with a stage pT2N0M0 and papillary renal cell carcinoma, is described.

Case report:
A 36 years old man presented 5 months history of gross hematuria and abdominal palpable mass. On general physical examination, the patient was malnourished, with abdominal examination was unremarkable. Baseline investigation including full blood count, urea and electrolytes, liver function tests and chest X-ray were normal. Abdominal computed tomography (CT) scan with intravenous contrast imaging demonstrated an approximately 5 x 3.5 x 4 cm sized solid mass in the lower pole of the right kidney. The mass was in close proximity to renal pelvis and was causing the extrinsic compression to right renal pelvis. Medially mass was abutting the right ureter and psoas muscle with intact fat planes. The renal vein and inferior vena cava were not involved. Differntial diagnosis was made renal cell carcinoma and transitional cell carcinoma of renal pelvis (fig.1). Further staging work up showed a negative CT chest and bone can.

Urology team did open radical right nephroureterectomy with cuff of bladder resection through right Gibson's incision. The final pathologic

Sindh Institute of Urology & Transplantation (SIUT), Karachi
MA Tunio
A Hashmi
M Mubarik
R Mohsin

Correspondence:
Mutahir A. Tunio
Assistant professor, Radiation Oncology, Sindh Institute of Urology & Transplantation (SIUT), Karachi
+92 21 9521 5752
drmutahirtonio@hotmail.com

Figure 1: *Abdominal computed tomography (CT) scan with intravenous contrast imaging demonstrated an approximately 5 x 3.5 x 4 cm sized solid mass in the lower pole of the right kidney.*

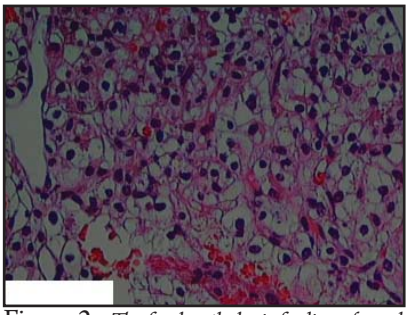

Figure 2: *The final pathologic finding of renal mass consisting with papillary cell type renal cell carcinoma.*

Figure 3: *On physical examination, there was hard fixed palpable superficial mass just at scar-site*

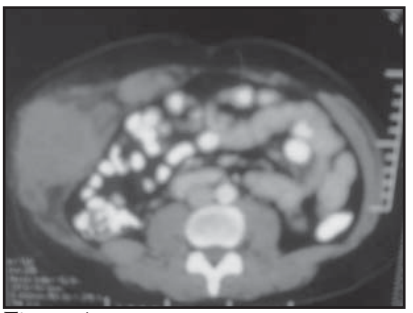

Figure 4: *CT abdomen showed 8.3 x 6.5 cm soft tissue mass involving scar tissue, subcutaneous region below hepatic level, right abdominal wall and rectus abdominus muscles*

finding of renal mass was consistent with papillary cell type renal cell carcinoma. Tumor was not infiltrating through the capsule. Hilar vessels, margins and bladder cuff were free of tumor (fig.2). Stage was made pT2N0M0.

Seven years after the nephrectomy for primary tumor, patient presented with right abdominal mass at scar-site. On physical examination, there was hard fixed palpable superficial mass just at scar-site (fig.3). The rest of examination was normal. The mass was expected as local recurrence (scar-site) of renal cell carcinoma. Fine needle aspiration cytology (FNAC) was consistant with metastatic renal cell carcinoma. CT chest and bone scan were negative for metastases. CT abdomen showed 8.3 x 6.5 cm soft tissue mass involving scar tissue, subcutaneous region below hepatic level, right abdominal wall and rectus abdominus muscles (fig.4). Patient received radical radiotherapy (total dose 6000 cGy in 30 fractions) to gross tumor volume followed by resection of the isloated scar-site recurrence. Patient was alive at his last follow up.

Discussion:

In Pakistan as well as in developing countries, for localized RCC, conventional transperitoneal nephrectomy is widely practicized with average time of 37.2 minutes taken to get control of renal pedicle, mean operative time of 129.44 minutes, average blood loss of 274.2 ml. and with mortality rate of 4%.[7] In recent years, with the widespread use of laparoscopic nephrectomies to treat RCC, questions have been raised about the oncologic safety of this surgical approach with special concern on local and port-site metastasis.[8] To date various randomized studies have shown no significant difference between the incidence of scar-site metastases (0.9–1.8%) following conventional open nephrectomies and the incidence of port-site metastases following laparoscopic nephrectomies.[9]

Scar-site or port-site metastasis following conventional and laparoscopic radical nephrectomy is very rare. A significant contributor to the delayed diagnosis is poor patient recall of the primary surgery, because a considerable time may elapse before metastases appear.[10] Our patient had lost to follow up after his first surgery for primary tumor. This resulted in vital missed link of history and failure to note the scar-site metastasis. However, the mechanism of the long dormancy of RCC (7 years in our patient from time of nephrectomy to appearance of scar-site metastasis) is particularly interesting and still unexplained.[11] Many studies have suggested the multifactorial pathogenesis for scar-site and port-site metastases of renal cell carcinoma after radical nephrectomy.[12] The well explored factors for Scar-site are natural tumor behavior, local wound factor, immune and stress response, and additonal laparoscopic factors for port-ste metastases.

Tumor cell dissemination is the most important factor in open nephrectomies. In 91% of all cases of patients who underwent open visceral surgery, vital tumor cells were found in blood taken from the wound site. Tumor cell concentration varies considerably from 10-10, 0000. These tu-

mor cells are certainly in a position to produce a tumor recurrence, since 60–75% of them are viable and 62% are capable of mitosis.[13] The risk factors for tumor cell dissemination could be the improper surgical technique (disruption of renal capsule) or manipulation during the surgery.

Though RCC is considered radioresistant, we offered radiotherapy to our patient prior to resection to minimize the need of surgical flap and for better cosmesis.

In conclusion, we believe that only proper preoperative assessment, along with careful handling during the surgery can reduce the scar-site metastases to a minimum.

References:

1. Tunio MA, Hashmi A, Rafi M. Need for a new trial to evaluate postoperative radiotherapy in renal cell carcinoma: a meta-analysis of randomized controlled trials.
2. Tunio MA, Hashmi A, Rafi M. Epistaxis and proptosis- Unusual primary manifestations of metastatic renal cell carcinoma. Pak J Med Sci 2009;25:1012-4
3. Tunio MA, Hashmi A, Rafi M. Renal cell carcinoma presenting as skin and ipsilateral testicular metastasis. Isra Medical Journal 2009;1:79-81
4. Siekierska-Hellmann M, Sworczak K, Lewczuk A, Blaut K, Boj E. Renal cell carcinoma with solitary metastases appearing during 18 years of follow-up. Postgrad Med J 1997 ;73:582-4
5. Schneider C, Jung A, Reymond MA, Tannapfel A, Balli J, Franklin ME, et al. Efficacy of surgical measures in preventing port-site recurrences in a porcine model. Surg Endosc 2001;15:121-5
6. Paolucci V, Schaeff B, Schneider M, Gutt C. Tumor seeding following laparoscopy. International survey. World J Surg 1999; 23:989
7. Ghaffar F, Sajid MA, Anwar K. Transperitoneal approach for radical nephrectomy: five years experience at Pakistan Institute of Medical Sciences, Islamabad, Pakistan. J Ayub Med Coll Abbottabad 2007;19:15-8
8. Vitagliano G, Castillo O, Pinto I, DÌaz M, Contreras M. Complications in laparoscopic transperitoneal partial nephrectomy. J Endourol 2006; 20:A10
9. Fahlenkamp D, Rassweiler J, Fornara P. Complications of laparoscopic procedures in urology: Experience with 2,407 procedures at 4 German centers. J Urol 1999; 162:765–70
10. Pitale SU, Sizemore GW, Bakhos R, DeJong SA, Flanigan RC, Emanuele NV. Renal cell carcinoma with metastasis to the thyroid gland. Urol Oncol 2000;5:173-5
11. Fentie DD, Barrett PH, Taranger LA. Metastatic renal cell cancer after laparoscopic radical nephrectomy: long-term follow-up. J Endourol 2000;14:407-11
12. Reymond MA, Schneider C, Kastl S, Hohenberger W, Kockerling F. The pathogenesis of port site recurrences. J Gastrointest Surg 1998;2:406-14
13. Fornara P, Zacharias M, Wagner S. Port-site metastases: fact or fiction? Urol Int 2003;71:136-42