CASE REPORT

Non-small cell lung carcinoma metastatic to the kidney

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Introduction: *Renal metastasis by non-small cell lung cancer is uncommon and usually described at autopsy.*
Case presentation: *We report the rare case of a 77-year-old man with localized non-small cell lung carcinoma who underwent extirpative surgery and 2 years later presented with gross hematuria and was noted to have a large infiltrating renal mass on computed tomography.*
Conclusions: *In patients with a prior history of resected localized non-small cell lung carcinoma, presence of a renal lesion should prompt the clinician to consider the possibility of metastasis. Further evaluation should consider this scenario.*

Key Words: non-small cell lung carcinoma, metastasis, nephrectomy, TTF-1

Case report

A 72-year-old man with no prior urologic history presented with gross hematuria, abdominal discomfort and anorexia. He had been treated 2 years earlier for Stage IB (T2N0M0) NSCLC by left upper lobectomy, Figure 1a, 1b.

Physical examination detected a palpable right upper quadrant abdominal mass. Urine cytology demonstrated atypia. Serum chemistries demonstrated a serum creatinine of 1.3 ng/dL (normal 0.4 ng/dL-1.4 ng/dL). Cystoscopy revealed no tumors.

Radiological investigation revealed an infiltrative right renal neoplasm with right renal vein and inferior vena caval thrombosis, retroperitoneal adenopathy and multiple hepatic nodules, Figure 2a, 2b. Chest and head computed tomography and bone scan were negative for metastases.

Biopsy of the hepatic nodules revealed metastatic large cell undifferentiated carcinoma, Figure 1c, 1d, prompting immunohistologic investigation to clarify the nature of the primary site. Immunohistochemical staining was positive for cytokeratins AE1/3, CK 5/6, CAM 5.2 and CK7, and carcinoembryonic antigen (CEA). The tumor did not stain for common leukocyte antigen (CD45RB), CD3, CD 10, CD20, and alpha feto-protein (AFP). Finally, the tumor stained positive for TTF-1 (seen in lung and thyroid cancer) thus favoring a lung primary and excluding lymphoma, renal cell carcinoma and transitional cell carcinoma.[2]

Radical nephrectomy and vena caval resection with node dissection was then performed. Grossly, the tumor obliterated Gerota's fascia and infiltrated the renal sinus and hilum, encasing and compressing the inferior vena cava. Pathological analysis demonstrated metastatic poorly differentiated adenocarcinoma, Figure 1e, 1f, extensively invading the perirenal fat and involving approximately 90% of the renal parenchyma. By immunoperoxidase

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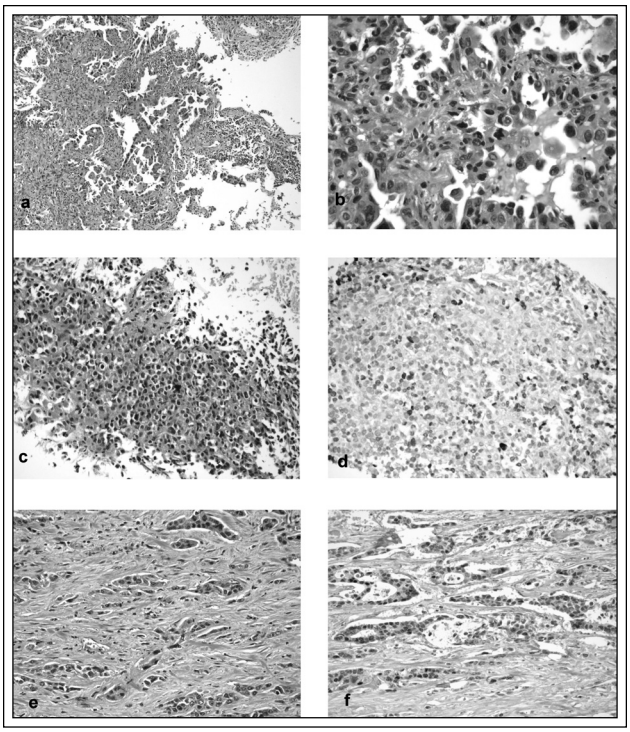

Figure 1. Primary NSCLC (a) hematoxylin-eosin (H&E) (10x-magnification) and (b) H&E (40x-magnification). NSCLC liver metastasis (c) H&E (20x-magnification). (d) TTF1 nuclear staining in metastatic NSCLC liver metastasis (20x-magnification). NSCLC kidney metastasis (e) H&E (20x-magnification). (f) TTF1 expression in NSCLC kidney metastasis (20x-magnification).

staining the tumor was positive for TTF-1 supporting the diagnosis of metastatic carcinoma from a lung primary.[2] The patient recovered but died 10 months later from progressive metastatic NSCLC.

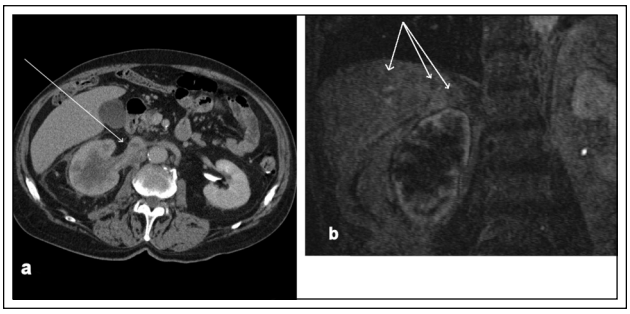

Figure 2. (a) Computed tomography scan of renal mass and vena caval extension (arrow). (b) Magnetic Resonance Imaging demonstrating multiple hepatic nodules (arrows) in addition to the renal mass.

Discussion

Although anatomic resection is the preferred curative modality for patients with stage I and II NSCLC, long-term survival in NSCLC remains poor. The 5 year survival rate of patients who undergo complete surgical resection is only 40%-50%, with recurrence rates of approximately 30% in stage I and greater than 50% of stage II patients, and most recurrences being distant and occurring within 2 years of surgery.[3] The brain is the most common site of metastatic recurrence followed by bone, liver, and adrenal glands.[4]

Renal metastasis from NSCLC is extremely rare and is restricted to a few anecdotal case reports in the literature.[1,5-7] Even when present, renal metastases are usually part of disseminated disease. Management has to be individualized and nephrectomy may be offered to select patients with need for palliation or otherwise in the absence of dissemination. In patients where the primary tumor is itself unresectable or in the presence of disseminated disease, treatment is aimed at palliation of symptoms. The important point is that, in patients who had otherwise undergone curative treatment for primary NSCLC, presence of a renal lesion should alert the clinician to the possibility of metastasis and subsequent evaluation and treatment should consider this scenario. □

References

1. Finke NM, Aubry MC, Tazelaar HD, Aughenbaugh GL, Lohse CM, Pankratz VS, Deschamps C. Autopsy results after surgery for non-small cell lung cancer. Mayo Clin Proc 2004;79:1409-1414.
2. Bejarano PA, Baughman RP, Biddinger PW, Miller MA, Fenoglio-Preiser C, Al-Kafaji B, Di Lauro R, Whitsett JA. Mod Pathol 1996;9:445-452.
3. Nesbitt JC, Putnam JB Jr, Walsh GL et al. Survival in early-stage non-small cell lung cancer. Ann Thorac Surg 1995;60:466-472.
4. Deslauriers J, Gregoire J. Clinical and surgical staging of non-small cell lung cancer. Chest 2000;117(4 Suppl 1):96S-103S.
5. Marcos Sanchez F, Viana Alonso A, Albo Castano I, Arbol Linde F, Juarez Ucelay F. [Renal metastasis from non-small cell lung carcinoma][Spanish]. An Med Interna 2004;21:257-258.
6. Yoshino I, Yohena T, Kitajima M, Ushijima C, Nishioka K, Ichinose Y, Sugimachi K. Survival of non-small cell lung cancer patients with postoperative recurrence at distant organs. Ann Thorac Cardiovasc Surg 2001;7:204-209.
7. Ambrogi V, Tonini G, Mineo TC: Prolonged survival after extracranial metastasectomy from synchronous resectable lung cancer. Ann Surg Oncol 2001;8:663-666.