



Renal Metastasis from Lung Cancer

Pedraza IA*, Pérez Holgado MV, Delgado Mingorance JI and de Alda AL

Hospital Don Benito Villanueva, Spain

Abstract

A 60-year-old patient underwent right pneumonectomy and mediastinal lymph nodes dissection in February 2021. The postoperative pathology confirmed squamous cell carcinoma (pT3N1M0, stage IIIA). After one year of disease-free interval he was admitted to the urology department suspecting primary kidney tumor vs. lung metastasis during a CT follow up. As the CT did not clarify the kidney mass a MRN was performed describing a solid 5 cm mass allocated on the lower pole right kidney (primary tumor vs. metastasis).

The patient underwent radical right laparoscopy nephrectomy and squamous cell cancer metastasis was confirmed (May 2022).

One month later he presented right leg pain, the ultrasound evidenced a 4 cm × 4 cm × 5 cm right soleus lesion with a positive biopsy for squamous cell carcinoma.

He started carbo/taxol/pembro, he has just received the fourth cycle.

Introduction

Lung carcinoma can produce metastases in any organ, being the most frequent locations: lung, pleura, bone, brain, pericardium and liver [1].

Renal metastasis from lung carcinoma is a rare entity and when it appears is usually asymptomatic with a dark prognosis [2].

Most studies on renal metastases are case reports, and there is a lack of systematic description of clinical features, diagnosis, treatment, and disease prognosis.

Case Presentation

A 60-year-old men ex-smoker, hypertension and DM, debuted in 2021 with lung cancer. He underwent right pneumonectomy and mediastinal lymph nodes dissection. The postoperative pathology confirmed squamous cell carcinoma, with for positives metastatic lymph nodes (pT3N1M0, stage IIIA) (February 21). After that he received 4 cycles of postoperative adjuvant chemotherapy with Cisplatin (80 mg/m²) and Vinorelbine (20 mg/m² d) without incidents.

After one year of disease-free interval, an abdominal pelvis CT scan showed an irregular mass in the lower pole right kidney 23.5 HU (Figure 1). As though CT did not clarify the mass so MRI was performed describing a solid 5 cm mass allocated on the lower pole right kidney, slightly hyperintense on T2, hypointense on T1, restricts diffusion and presents peripheral enhancement after contrast administration. No extension to the pararenal space is observed (Figure 2).

The patient was admitted to the urology department and suspecting primary kidney tumor vs. lung metastasis he underwent a laparoscopic radical right nephrectomy without complications (May 2022). He was discharged two days after the surgery. The postoperative pathological diagnosis showed the next report: Infiltration of the renal parenchyma and perirenal fat by squamous cell carcinoma (CK7-; CK20-, 34BE12+, p63+, p40+). Surgical resection margins: tumor free.

In June 2022, the patient presented right leg pain. The ultrasound evidenced a 4 cm × 4 cm × 5 cm right soleus lesion with a positive biopsy for squamous cell carcinoma.

Given the current situation, QT/IT (carbo/taxol/pembro) is started. The patient has just received four cycles.

Discussion

The kidney is the most common site of metastasis from lung cancer after liver, adrenals and brain. Between 30% to 60% depending on the series are bilateral [3]. But even so, the kidney

OPEN ACCESS

*Correspondence:

Irache Abáigar Pedraza, Hospital Don Benito Villanueva, Carretera Don Benito Villanueva s/n Km 3,5. 06400 Don Benito, Badajoz, Spain,
E-mail: irache.abaigar@salud-juntaex.es

Received Date: 11 Oct 2022

Accepted Date: 31 Oct 2022

Published Date: 07 Nov 2022

Citation:

Pedraza IA, Pérez Holgado MV, Delgado Mingorance JI, de Alda AL. Renal Metastasis from Lung Cancer. Clin Oncol. 2022; 7: 1960.

ISSN: 2474-1663

Copyright © 2022 Pedraza IA. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



Figure 1: CT, solid mass lower pole right kidney.



Figure 2: MRI. Solid 5 cm mass allocated on the lower pole right kidney.

continues to be an infrequent place for metastatic disease.

The biggest series of metastatic kidney disease are: The serie from MD Anderson Cancer Centre (Texas University), where report only 151 cases of renal metastasis from November 1985 to November 2013 [1].

The Adamy et al. [4] series: From July 1989 to July 2009, 3,472 patients underwent either a partial or radical nephrectomy at Memorial Sloan-Kettering Cancer Center. After a review Adamy et al. [4] identified 13 patients with solitary, isolated metastasis to the kidney. Five patients (38%) have a primary lung cancer.

The Chen et al. [5] series from 2003 to 2019 that report 35 patients with renal metastases from two centers Cancer Hospital of the University of the Chinese Academy of Sciences and three were diagnosed at the Affiliated Hospital of Xuzhou Medical University.

In both of the series the lung was the most common site of primary tumor. According to the knowledge that most common primary malignant tumor responsible for metastasis to kidney is the lung followed by the colorectum, lung, soft tissue, and thyroid [1].

There is a great difference in the window between the diagnosis of the primary tumor and renal metastasis. In some cases, they are diagnosed simultaneously, but most metastases appear after the progression of the primary tumor. Chen et al. [5] report the longest known time interval of kidney metastatic disease 156 months after lung cancer.

The initiation of the metastasis process is conditioned by many factors including gene expression and cellular components. The selection of the susceptible metastatic organ is associated with tumor-induced determination of the microenvironment, named Pre-Metastatic Niches (PMNs). The PMNs initiation and organization prior to CTCs seeding involves various environmental components, signaling factors and tumor-secreted vesicles [6]. From the beginning it was suggested that there was a lymphatic dissemination but the appearance of metastatic deposits on the kidney on cortical nodules has demonstrated the hematogenous seeding of the tumor cells [3]. Besides in the new era of molecular genetic studies, it is known that the genetic alterations in lung cancer may also influence the locations of metastases. As for the kidney, overexpression of NFIB in the mouse model increased kidney metastases. Elevated NFIB levels could simply increase metastatic seeding ability or tumor growth, but it is also possible that NFIB upregulation provides an additional

advantage for growth in that specific microenvironment [7].

Metastatic lung carcinoma to the kidney has usually been reported as autopsied findings [4]. But actually, thanks to the new era diagnosis system vast majority of them, despite being asymptomatic, are recognized during a TC follow up. Only about 15% of them produced symptoms as if a kidney tumor was. Olsson et al. [8] describe in their series that 80% of the patients with renal metastases were asymptomatic, 12% with hematuria and 5% with flank pain. Adamy et al. [4] describe 15% of patients were symptomatic. In the present case the patients did not have any symptoms, and it was detected by a follow up CT.

It has been described that renal metastatic CT images are generally small, multiple, bilateral, with less exogenous growth and generally located in the renal capsule [9].

The American Lung Association informs public that the survival rate in patients with metastatic lung cancer is lower comparing to other leading cancers. The 5-years survival rate metastatic lung cancer accounts for approximately 4% [10].

Standardized treatment protocols of solitary renal metastases remain unclear.

Previous biopsy confirmatory to surgery is not clear. Adamy et al. [4] reported that only 3% had a previous biopsy. Zou et al. [1] describe only 17% of patients who underwent a previous biopsy. Chen et al. [5] performed a renal biopsy in 16 patients (45.7%).

Surgery is considered the standard of care in many patients with renal masses. But there are no clearly established guidelines for tumors metastatic to the kidney.

On one way, the advantages of surgical treatment are: Relieve symptoms, reduce tumor load, and if there are no other metastasis places, it may achieve a radical effect.

On the other way, the disadvantages could be that: surgery can worsen the poor physical patient condition, can worsen renal function and affect the initiation of systemic treatment and can delay the time until systemic treatment, because of the slow surgical recovery. All of that may lead to disease progression.

However, as for the recurrent disease in lung SCC, the treatment outcome and prognosis are not optimistic.

The factors that have been correlated with a favorable prognosis are: control of the primary site, confirmed solitary metastatic disease,

good performance status, metachronous lesions, and a longer disease-free interval [11].

Both Adamy's [4] and Chen's [5] studies seem to indicate that the patients who benefit from surgery are those who have a single metastasis in the kidney. So, surgery could significantly prolong the OS. However, there was no perspective randomized comparison study between surgical vs. nonsurgical treatments in the management of solitary metastatic disease.

Conclusions

- Renal metastasis is uncommon.
- Most of renal metastasis is asymptomatic.
- Most of them are detected by enhanced abdominal CT.
- Nephrectomy can be an option for highly selected patients.
- Prognosis is very poor.

References

1. Zhou C, Urbauer DL, Fellman BM, Tamboli P, Zhang M, Matin SF, et al. Metastases to the kidney: A comprehensive analysis of 151 patients from a tertiary referral centre. *BJU Int.* 2016;117(5):775-82.
2. Srisung W, Mankongpaisarnrung C, Warraich I, Sotello D, Yarbrough S, Laski M. Carcinoma of the lungs causing enlarged kidneys. *Proc (Bayl Univ Med Cent)* 2015;28(2):221-3.
3. Ounigbo WI. The spread of lung cancer to the kidneys. *Cancer.* 1958;11(4):737-9.
4. Adamy A, Bodman CV, Ghoneim T, Favaretto RL, Bernstein M, Russo P. Solitary, isolated metastatic disease to the kidney: Memorial Sloan-Kettering cancer centre experience. *BJU Int.* 2011;108(3):338-42.
5. Chen J, Qi N, Zhu S. Metastases to the kidney: An analysis of 35 cases and a review of literature. *Front Oncol.* 2021;10:632221.
6. Peinado H, Zhang H, Matei IR, Costa-Silva B, Hoshino A, Rodrigues G, et al. Pre-metastatic niches: Organ-specific homes for metastases. *Nat Rev Cancer.* 2017;17(5):302-17.
7. Semenova EA, Kwon M, Monkhurst K, Song JY, Bhaskaran R, Krijgsman O, et al. Transcription factor NFIB is a driver of small cell lung cancer progression in mice and marks metastatic disease in patients. *Cell Rep.* 2016;16(3):631-43.
8. Olsson CA, Moyer JD, Laferte RO. Pulmonary cancer metastatic to the kidney a common renal neoplasm. *J Urol.* 1971;105(4):492-6.
9. Honda H, Coffman CE, Berbaum KS, Barloon TJ, Masuda K. CT analysis of metastatic neoplasms of the kidney. Comparison with primary renal cell carcinoma. *Acta Radiol.* 1992;33(1):39-44.
10. Wender R, Fontham ETH, Barrera E, Colditz GA, Church TR, Ettinger DS, et al. American cancer society lung cancer screening guidelines. *CA Cancer J Clin.* 2013;63(2):107-17.
11. Karagiouzis G, Koulaxouzis G, Tomos P, Spartalis ED, Konstantinou F, Charpidou A, et al. Solitary metastasectomy in non-small cell lung cancer. *J BUON.* 2012;17(4):712-8.