

Mediastinal Metastasis 10 Years after Primary Renal Cell Carcinoma

—A Report of a Case and a Review

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Abstract

Late recurrence of renal cell carcinoma (RCC), arbitrarily defined, as >10 years post-nephrectomy, is rare. Here we review 43 reports comprising 467 cases. Metastasis occurred between few months and 45 years. We report a new case with a 10-year interval to metastasis.

Keywords

Renal Cell Carcinoma, Late Metastasis, Mediastinum

1. Introduction

The incidence of late recurrence of metastatic RCC is 11% in patients surviving for 10 years after the initial diagnosis [1]. T-stage, grade and sarcomatoid differentiation independently dictate the risk of tumor recurrence. Recurrences (distant and/or local) could represent more than half of the cases [2]. The mean and median time to recurrence varies from series to series (Table 1) [1]-[43]. It ranges from few months to decades [24].

Late recurrence of renal cell carcinoma (RCC), arbitrarily defined, as >10 years post-nephrectomy, is rare [24]. Here we review previous cases and report one new case.

2. Methods

We reviewed the databases of PubMed and Hinari for reports in English, searched using the keywords “kidney”, “carcinoma”, “renal cell”, “nephrectomy”, “recurrence”, and “neoplasm metastasis”. We identified 43 articles,

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Table 1. A review of 467 cases: all the studies were of level of evidence 5 [1]-[43].

Ref	Cases/Sex	Age	Interval to metastasis in years	Cell type	Site of metastasis	Treatment	Outcome
1	3/1M/2F	45 - 64	6 - 8	Clear cell Papillary Clear cell	Right thigh Right atrium & ventricle Bladder	Radical excision Excision TURBT	NR 1 y Died after 6 m NR 3 y
3	1/M	77	10	Clear cell	Prostate	Sunitinib	Marked regression
4	1/F	76	18	Clear cell	Brain	Stereotactic radiation	Died after six years
5	1/F	52	10	Clear cell	Thyroid	Hemithyroidectomy & partial internal jugular vein resection	Had pancreatic metastasis
6	1/M	83	12	Metastatic RCC	Parotid and Cerebellum	Superficial parotidectomy & stereotactic ablation	Free of disease
7	1/M	65	20	Metastatic RCC	Falx (meningeal)	Total removal & radiochemo therapy	In good condition at 4 months
8	1/M	76	7	Clear cell	Perianal lesion	Surgical removal	Has also had a lesion adjacent to the occipital horn of the left lateral ventricle
9	1/F	65	20	Metastatic RCC	Extra-axial Cerebral	Removal of tumor	Had Lung metastasis
10	1/M	61	19	Clear cell	Cerebral* & Thyroid	Total excision and Left hemi thyroidectomy	Fourteen months after surgery no neurological deficit
11	1/M	63	11	Clear cell	Left Parotid	Left parotidectomy	NR at 4 years
12	1/M	50	3	Metastatic RCC	Thyroid	Total thyroidectomy	NR
13	1/F	56	11	Metastatic RCC	Thyroid and Parotid	Parotidectomy and resection of thyroid metastasis	NR at 2 years
14	1/F	59	10	Metastatic RCC	Parotid	Superficial parotidectomy	Developed RCC of Left kidney had Radical nephrectomy, now on dialysis NR at 18 months
15	1/M	83	10	Clear cell	Submaxillary gland	Excision of right submaxillary gland	NR at 1 year
16	1/M	77	15	Clear cell	Brain	Partial excision then Gamma knife surgery	Right hemiparesis disappeared, Sensory aphasia continued. Rehabilitated
17	1/M	65	19	Metastatic clear cell	Buccal mucosa	Surgical removal	NR at 6 years
18	1/F	54	16	Metastatic clear cell	choroid plexus	Stereotactic excision surgery	no neurological deficit at 3 weeks
19	1/F	80	9	Clear cell	Thyroid	Hemithyroidectomy	Developed Body and head of the pancreas masses. No further treatment was proposed due to patient's age and comorbidities
20	1/F	87	19	Metastatic clear cell	Thyroid	Hemithyroidectomy	NR at 28 months
21	1/M	57	4½	RCC	Renal fossa	Surgical removal	Left lung metastasis removed, 9 th right rib lesion on bisphosphonates, with a good response so far.
22	28/M 16/F = 44	55 - 71	Median time 7.7 years	41 Clear cell 1 Chromophobe 2 Multiple	Lung, bone, pancreas, mediastinum, adrenal, thyroid, lymph nodes, brain	33 Metastectomy 14 Systemic therapy	Median overall survival 6.1 years
23	29/M 12/M = 41	38 - 76	63 - 234 months	Mostly clear cell	Lung, liver, bone, brain, retroperitoneal lymph node, adrenal	22 Metastectomy 26 Systemic therapy	The 5-year cancer-specific survival rate after recurrence was 73.7%
24	1/M	84	45	Metastatic clear cell	Renal bed, liver, lung		Sudden death 8 hours after biopsy

Continued

25	1/M	61	7	Metastatic clear cell	Submandibular and Thyroid Glands	Submandibular gland was excised total thyroidectomy	NR at 6 months
26	1/N/A	N/A	10	Metastatic clear cell	Gastric metastasis	Wedge resection of gastric wall was performed	NR at 18 months
27	1/M	60	19	Metastatic clear cell	Gastric fundus	Wedge resection of the stomach	NR at 12 months
28	1/F	76	17	Metastatic clear cell	Thyroid	Left thyroid lobectomy	No further metastatic disease was identified
29	1/F	80	12	Metastatic clear cell	Thyroid	hemithyroidectomy	NR at 5 years
30	1/M	70	18 months	Metastatic clear cell	Thyroid	Total thyroidectomy	N/A
31	1/F	62	13	Granular cell type RCC	Renal fossa	Resected en bloc a-interferon	NR at 16 months
32	310 129F/F 181/M	Median age at surgery 61.8	Minimum 5 years after surgery	259 Clear cell	Local recurrence Lung Thorax Bone Brain Lymph nodes Abdomen Pancreas Liver Thyroid gland Adrenal gland Dermis	Surgical and Systemic treatment	Median Follow up after surgery 120 (93 - 149) months
33	30/ N/A	Median age 56	12.4	Clear cell	Lung Kidney Bone Brain Pancreas Lymph node Adrenal gland Liver	16 Surgical treatment 16 chemotherapy 11 Immunotherapy 5 Radiotherapy	NR 9 patients (2011) Patients >56 years old had worse survival than younger patients
34	1/ N/A	<60	18 months	RCC	13 Cerebral metastasis	Surgical removal and stereotactic Beam irradiation therapy	the patient is in good health at 13 years
35	1/M	66	25	Clear cell	Lung and pleura	Resection and irradiation	Died 26 years after removal of the primary lesion
36	1/F	76	4	Mixed clear and granular cell	Duodenum and colon	Interferon	She is still alive 1 year later
37	1/M	70	17	Metastatic clear cell	Upper right arm Pancreas Thyroid	Total excision Whipple's operation total thyroidectomy	NR at 54 months
	1/F	54	19	Metastatic RCC	Contra lateral kidney Pancreas	right nephrectomy and distal pancreatectomy, Dialysis	NR at 8 months
38	1/M	65	23	Clear cell	Gastric metastasis	wedge resection of the gastric wall.	NR at 2 months
39	1/M	70	26	Metastatic RCC	Rectum Right lung mediastinum	Interleukin 2 and interferon Snare resection Local radiation	Died after 8 months
40	1/M	78	5	Metastatic clear cell	Gastric metastases	Electrosurgical snare resection	Died after 6 months
41	1/M	68	10	Metastatic clear cell	Gastric and pancreatic metastasis chest, paraaortic lymph-adenopathies, liver	Splenectomy and distal pancreat-ectomy, IL-2, total gastrectomy lymphadenectomy omentectomy, esophago-jejunostomy, chemotherapy	Died after 3 months
42	1/F	66	2	Metastatic RCC	Stomach, lung, liver	Palliative laparoscopic wedge resection	No symptoms at 8 days
43	1/F	54	9	Metastatic RCC	Duodenum	Radical subtotal gastrectomy	NC at 10 months
Present	1/F	70	10	Metastatic RCC	Mediastinum	Sutant (Sunitinib)	The patient is in good health at 6 months

*Two recurrences occurred, with interval of 3 and 19 years after primary RCC; RCC: renal cell carcinoma; NR: no recurrence; Y: years; N/A: not available.

comprising 467 cases (**Table 1**).

We describe one new case.

3. Report of Case

The patient is a seventy-four-year old female from Iraq. There is a history of long-standing hypertension and atrial fibrillation and was put on warfarin since 2005. She had cholecystectomy then right radical nephrectomy for renal cell carcinoma in 2006. She had CVA in 2009 without residuals.

She presented recently with cough and shortness of breath for one-month duration. Her cough was severe and more at night. It was productive of small brownish sputum, which became yellowish later. There was orthopnea too. There is bilateral lower limbs swelling and shortness of breath, which was not related to exertion. There was no weight loss or night sweats.

Chest X-ray showed Right mediastinal versus paramediastinal well defined opacity, congested perihilar vessels, and mild bilateral pleural effusion (**Figure 1**).

Serum creatinine was normal. CT-scan with contrast enhancement (**Figures 2-4**) showed a large heterogeneously enhancing solid lesion with irregular central necrosis measuring about 6.7 cm seen in the right side of mediastinum located posterior to the superior vena cava and the aortic arch. It was superior to the right pulmonary artery and lateral to the trachea. There is no evidence of hilar or mediastinal lymph node enlargement. There is collapse consolidation of the lower lung lobes seen with air bronchogram and right-sided pleural effusion. A small left-sided pleural effusion with atelectasis of the basal lung tissue is also noted. The rest of lung fields are clear. A small cystic nodule measuring about 1 cm is seen in the right lobe of thyroid gland. Chest wall and rib cage are unremarkable.

Bone Scan showed multiple abnormal areas of increased radiotracer uptake involving skull, both shoulder joints, right 5th rib anteriorly, several ribs anteriorly at costo-chondral junction, lower lumbar spine, proximal end of right humerus, sternum, bilateral sterno-clavicular joints, and both knee joints. Right kidney is not visualized

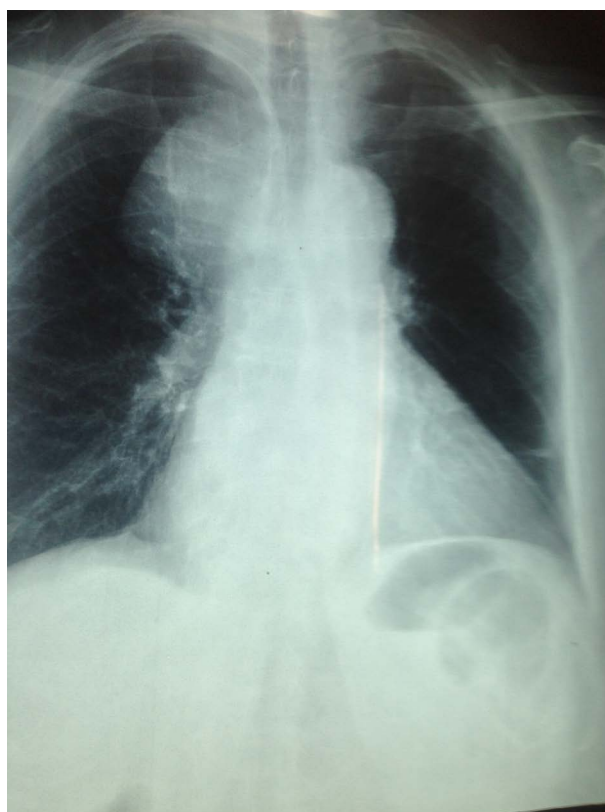


Figure 1. Chest X-ray showed right mediastinal versus paramediastinal well defined opacity, congested perihilar vessels, and mild bilateral pleural effusion.

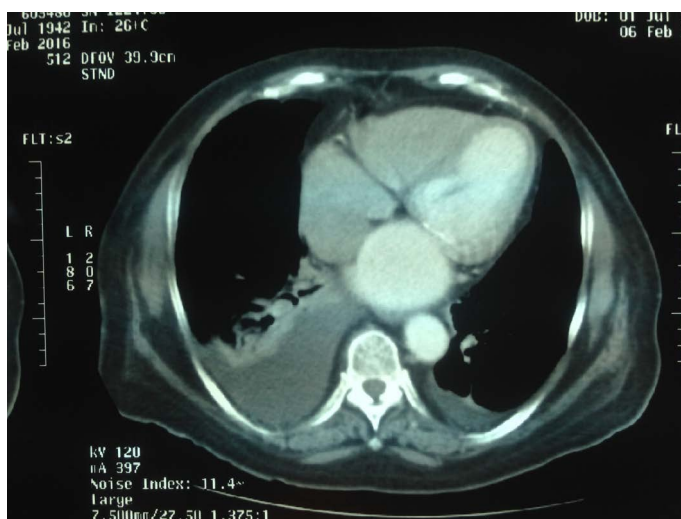


Figure 2. CT-scan with contrast enhancement showed a large heterogeneously enhancing solid lesion with irregular central necrosis measuring about 6.7 cm seen in the right side of mediastinum located posterior to the superior vena cava and the aortic arch. It was superior to the right pulmonary artery and lateral to the trachea. There is no evidence of hilar or mediastinal lymph node enlargement. There is collapse consolidation of the lower lung lobes seen with air bronchogram and right-sided pleural effusion. A small left-sided pleural effusion with atelectasis of the basal lung tissue is also noted. The rest of lung fields are clear.

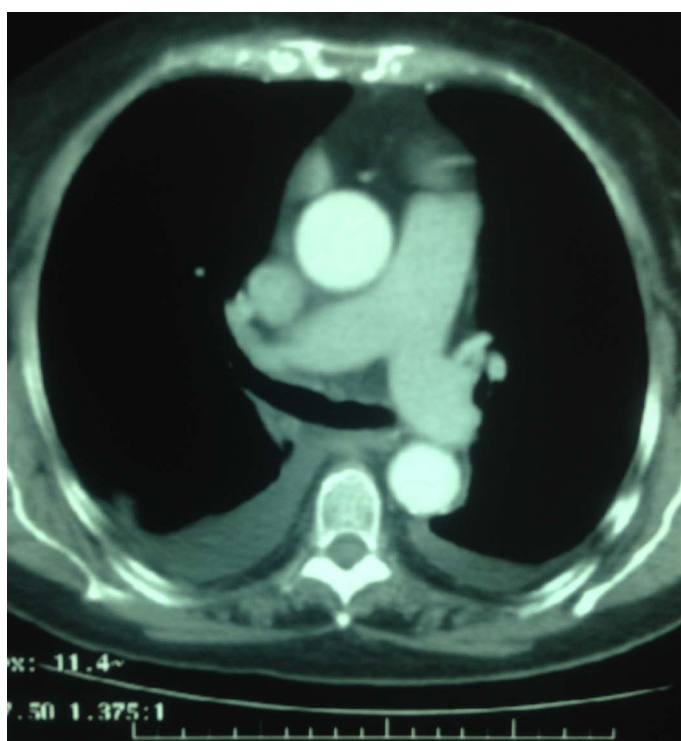


Figure 3. CT-scan with contrast enhancement showed a large heterogeneously enhancing solid lesion with irregular central necrosis measuring about 6.7 cm seen in the right side of mediastinum located posterior to the superior vena cava and the aortic arch. It was superior to the right pulmonary artery and lateral to the trachea. There is no evidence of hilar or mediastinal lymph node enlargement. There is collapse consolidation of the lower lung lobes seen with air bronchogram and right-sided pleural effusion. A small left-sided pleural effusion with atelectasis of the basal lung tissue is also noted. The rest of lung fields are clear.



Figure 4. CT-scan with contrast enhancement showed a large heterogeneously enhancing solid lesion with irregular central necrosis measuring about 6.7 cm seen in the right side of mediastinum located posterior to the superior vena cava and the aortic arch. It was superior to the right pulmonary artery and lateral to the trachea. There is no evidence of hilar or mediastinal lymph node enlargement. There is collapse consolidation of the lower lung lobes seen with air bronchogram and right-sided pleural effusion. A small left-sided pleural effusion with atelectasis of the basal lung tissue is also noted. The rest of lung fields are clear.

(Rt. Nephrectomy). There is high target to soft tissue uptake ratio throughout the skeleton, with increased uptake along both lower limbs. Appearances are consistent with metabolic bone disease, pulmonary hypertrophic osteoarthropathy secondary to intra thoracic mass, renal osteodystrophy and osteoporosis. There was no scintigraphic evidence of bone metastasis.

US abdomen and pelvis findings: The liver showed normal echogenicity and echotexture, no visible focal lesions or megaly. Right nephrectomy and cholecystectomy were obvious.

The right renal bed shows no masses. The left kidney shows increased parenchymal echogenicity with lobulated contour, it measures 9.6 cm-length, no stones, masses, or hydronephrosis. Small right-sided pleural effusion is noted. The visualized portions of the pancreas and retroperitoneal area appeared normal. The spleen has normal sonographic appearances. The urinary bladder has no luminal defects. The uterus shows no masses and the pelvis shows no cysts or masses.

ECG showed atrial fibrillation. ECHO showed left and right atrium enlargement. Ejection fraction was 65%.

Under ultrasound guidance aspiration of about 300 cc of bloody right pleural effusion was performed. There was segmental collapse of right lower lobe. The cytology was negative for malignant cells.

CT-guided Truocut needle biopsy from that mass was taken and the specimen sent for histopathology. No pneumothorax occurred and there was only lung contusion.

The histopathological diagnosis was compatible with metastatic renal cell carcinoma. **Figure 5(a)** and **Figure 5(b)** show renal cell carcinoma—low and high power view (magnification $\times 40$ and $\times 400$ respectively) showing optically clear cytoplasm and sharp cell membranes.

Figure 6 shows Pancytokeratin (AE1/AE3)—showing positive cytoplasmic staining—Ventana Benchmark—high power view (magnification $\times 400$).

Figure 7 shows CD10 (CALLA)—showing membrane staining of tumor cells—Ventana Benchmark—high power view (magnification $\times 400$).

Figure 8 shows Vimetin immunohistochemical stain showing positive cytoplasmic staining of tumor cells (Ventana Benchmark)—high power view (magnification $\times 400$).

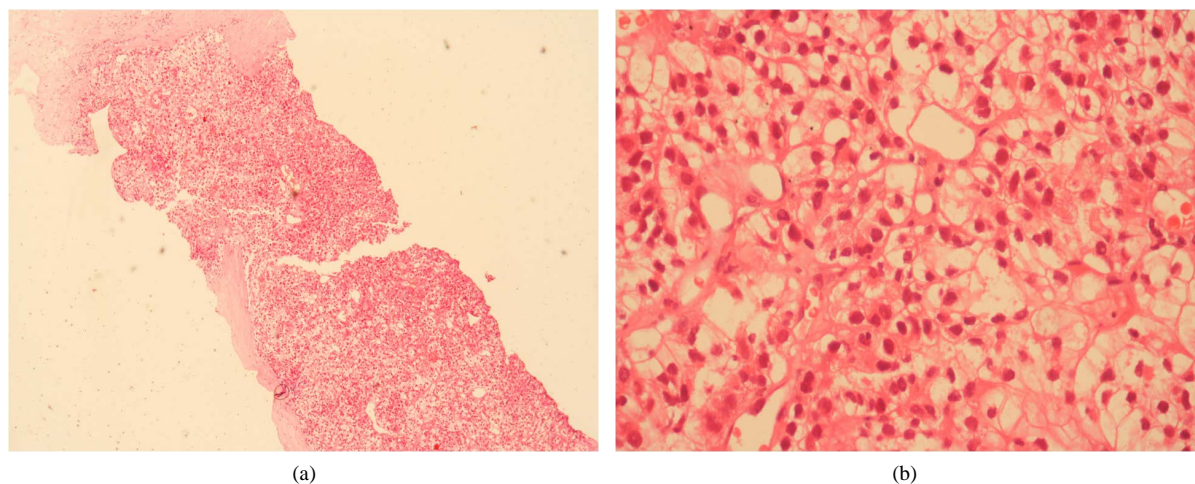


Figure 5. Shows renal cell carcinoma—low and high power view (magnification $\times 40$ and $\times 400$ respectively) showing optically clear cytoplasm and sharp cell membranes.

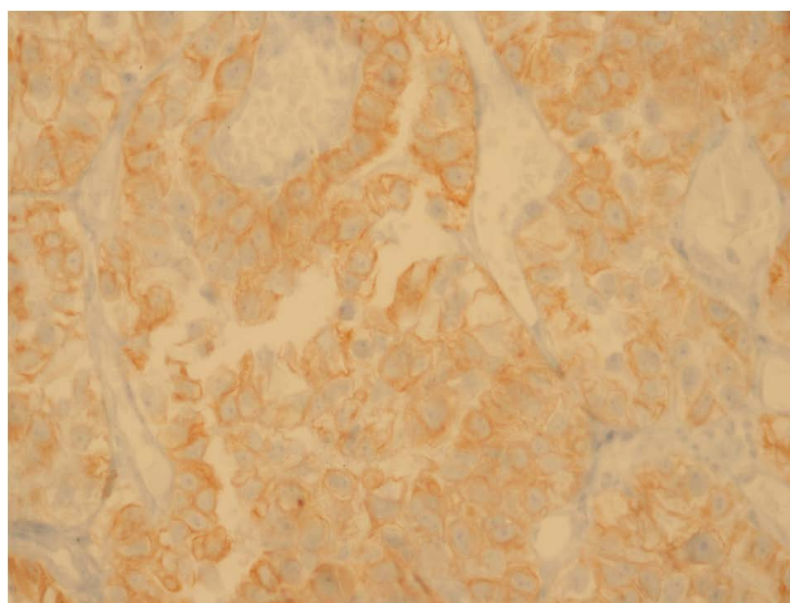


Figure 6. Shows pancytokeratin (AE1/AE3)—showing positive cytoplasmic staining—Ventana Benchmark—high power view (magnification $\times 400$).

She was put on Sutant (Sunitinib) 50 mg orally 1×1 for 4 weeks then another cycle for 4 weeks with 2 weeks interval in between.

4. Discussion

Renal cell carcinoma (RCC) is the most common renal malignancy (approximately 90% of cases) with high metastatic potential. Most of these tumors are incidentally discovered at abdominal imaging and usually carry a better prognosis owing to early-stage disease. Approximately 20% of patients will go on to develop metastatic disease within the first 3 to 5 years after treatment of the primary tumor. Sites of metastases include the lungs, liver, bone, and brain, contra lateral kidney renal fossa, rectum and stomach [6] [27] [31] [35] [37] [39].

Brain metastasis occurs in 3.9% - 24% of patients with renal cell carcinoma (RCC), with an average interval from nephrectomy to brain metastasis of 1 to 3 years. A few cases have been reported where brain metastasis occurred following a delay of 15 to 20 years after a nephrectomy for RCC [4] [9] [10] [16].

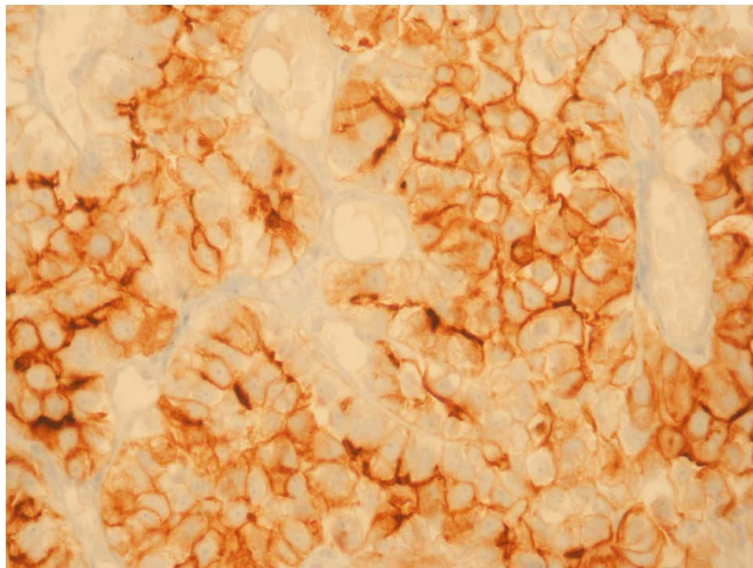


Figure 7. CD10 (CALLA)—showing membrane staining of tumor cells—Ventana Benchmark—high power view (magnification $\times 400$).

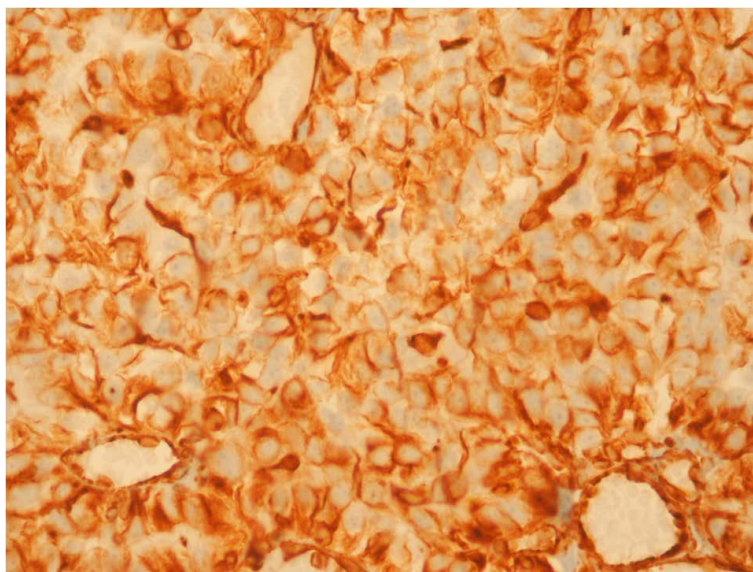


Figure 8. Vimetin immunohistochemical stain showing positive cytoplasmic staining of tumor cells (Ventana Benchmark)—high power view (magnification $\times 400$).

Thyroid and salivary glands metastasis was reported at 10 and 19 years after nephrectomy for renal cell carcinoma [5] [13]-[15] [20] [28]. Also falx metastasis was described 20 years afterward right nephrectomy for renal cell carcinoma. Dural metastases after renal cell carcinoma are very rare [7].

Metastatic non-colorectal cancer of the anal canal is a rare entity. To date, only four cases have been described in the literature. It can present as a hemorrhoid [8].

A rare case of RCC metastasis in the parotid gland was described eleven years after the initial diagnosis [11]. Metastasis of renal cell carcinoma to the buccal mucosa occurred 19 years after radical nephrectomy [17].

Walter and Gellespie reported the longest known clinical disease-free interval of 36 years in 1960 [24]. However, Helene Tapper *et al.* [24] reported the 45-year interval between nephrectomy and clinical recurrence of RCC. It appears to be the longest on record [24]. McNichols *et al.* reported a recurrence rate of 11% in a series of 506 patients. This estimate is based on 18 late recurrences in 158 patients who were followed over a period of

24 to 37 years. Since most of the patients (348) in this series died from other causes, the actual recurrence rate may be less than 11% [24].

This report presents a mediastinal mass consistent with metastatic RCC 10 years after successful treatment of the primary RCC. Clearly, this is rare, but the case serves to remind the need for vigilance in dealing with cases having a history of previous malignancy. The case presented confirms the possibility that this rare event may present even 10 or more years after nephrectomy has been performed.

Renal cell carcinoma contains glycogen, making it PAS-positive and diastase-negative.

Additionally, RCC shows immunohistochemically positive staining with keratin and vimentin and CEA negativity, supporting the diagnosis of metastatic RCC.

It is well known that solitary metastasis and a greater interval between the primary treatments to the appearance of the metastasis are favorable prognostic factors in RCC [14].

We offered adjuvant treatment (Sunitinib), because of patient's poor general condition. Treatment was well tolerated. Sunitinib is an oral inhibitor of tyrosine kinases, including vascular endothelial growth factor receptor and platelet-derived growth factor receptor, and has been associated with higher response rates and longer progression-free survival in patients with metastatic RCC as compared to interferon and might also show activity in the adjuvant and neoadjuvant setting [3].

RCC patients require long-term follow-up, to assist in early detection of metastasis and early treatment.

References

- [1] Chawla, A., Mishra, D., Bansal, R. and Chundra, M. (2013) Rare Sites of Delayed Metastasis in Renal Cell Carcinoma. *BMJ Case Reports*, **2013**, bcr2013009971. <http://dx.doi.org/10.1136/bcr-2013-009971>
- [2] Sameh, W.M., Hashad, M.M., Eid, A.A., Abou Yousif, T.A. and Mohammed, A. (2012) Recurrence Pattern in Patients with Locally Advanced Renal Cell Carcinoma: The Implications of Clinicopathological Variables. *Arab Journal of Urology*, **10**, 131-137. <http://dx.doi.org/10.1016/j.aju.2011.12.007>
- [3] Fokt, R.-M., Templeton, A., Gillessen, S., Ohlschlegel, C., et al. (2009) Prostatic Metastasis of Renal Cell Carcinoma Successfully Treated with Sunitinib. *Urologia Internationalis*, **83**, 122-124. <http://dx.doi.org/10.1159/000224882>
- [4] Choi, W.H., Koh, Y.-C., Song, S.W., Roh, H.G. and Lim, S.-D. (2013) Extremely Delayed Brain Metastasis from Renal Cell Carcinoma. *Brain Tumor Research and Treatment*, **1**, 99-102. <http://dx.doi.org/10.14791/btrt.2013.1.2.99>
- [5] Pickhardt, P.J. and Pickard, R.H. (2003) Sonography of Delayed Thyroid Metastasis from Renal Cell Carcinoma with Jugular Vein Extension. *AJR*, **181**, 272-274. <http://dx.doi.org/10.2214/ajr.181.1.1810272>
- [6] Kolokythas, A., Weiskopf, S., Singh, M. and Cabay, R.J. (2015) Renal Cell Carcinoma: Delayed Metachronous Metastases to Parotid and Cerebellum. *Journal of Oral and Maxillofacial Surgery*, **73**, 1296-1303. <http://dx.doi.org/10.1016/j.joms.2015.01.017>
- [7] Montano, N., Puca, A., Pierconti, F. and Larocca, L.M. (2007) Extremely Delayed Falx Metastasis from Renal Cell Carcinoma. *Neurology*, **68**, 1541. <http://dx.doi.org/10.1212/01.wnl.0000261253.45209.97>
- [8] Davies, J.R.L., Smith, G., Cornaby, A.J., Thomas, T. and Lamparelli, M.J. (2015) Delayed Recurrence of Renal Cell Carcinoma Presenting as a Haemorrhoid. *Journal of Surgical Case Reports*, **3**, rjv022.
- [9] Bademci, G. (2008) Extremely Delayed Renal Cell Carcinoma Metastasis Mimicking Convexity Meningioma. *Turkish Neurosurgery*, **18**, 400-403. <http://dx.doi.org/10.4321/s1130-14732008000600008>
- [10] Roser, F., Rosahl, S.K. and Samii, M. (2002) Single Cerebral Metastasis 3 and 19 Years after Primary Renal Cell Carcinoma: Case Report and Review of the Literature. *Journal of Neurology, Neurosurgery, and Psychiatry*, **72**, 257-258. <http://dx.doi.org/10.1136/jnnp.72.2.257>
- [11] Hosn-Centenero, S.A., Coll-Anglada, M., Pradillos-Garcés, A. and Salinas-Duffo, D. (2014) STUDYA Rare Case of Renal Cell Carcinoma Metastasis in the Parotid Gland Eleven Years after the Initial Diagnosis. *Acta Otorrinolaringológica Española*, **65**, 375-377. <http://dx.doi.org/10.1016/j.otorri.2013.03.005>
- [12] Citgez, B., Uludag, M., Gurbulak, E.K., Ozguven, B.Y., et al. (2011) Thyroid Metastasis of Renal Cell Carcinoma. *World Journal of Endocrine Surgery*, **3**, 93-95. <http://dx.doi.org/10.5005/jp-journals-10002-1066>
- [13] Shi, J.-L., Zhou, J.-Q. and Li, J.-P. (2015) Renal Clear Cell Carcinoma with Thyroid and Parotid Metastases: A Case Report. *Oncology Letters*, **10**, 2617-2619. <http://dx.doi.org/10.3892/ol.2015.3549>
- [14] Göğüs, Ç.A., Kiliç, Ö., Tulunay, Ö., Tulunay, Ö. and Bedük, Y. (2004) Solitary Metastasis of Renal Cell Carcinoma to the Parotid Gland 10 Years after Radical Nephrectomy. *International Journal of Urology*, **11**, 894-896. <http://dx.doi.org/10.1111/j.1442-2042.2004.00902.x>
- [15] Moudouni, S.M., Tligui, M., Doublet, J.D., Haab, F., Gattegno, B. and Thibault, P. (2006) Late Metastasis of Renal

- Cell Carcinoma to the Submaxillary Gland 10 Years after Radical Nephrectomy. *International Journal of Urology*, **13**, 431-432. <http://dx.doi.org/10.1111/j.1442-2042.2006.01318.x>
- [16] Sadatomo, T., Yuki, K., Migita, K., Taniguchi, E., Kodama, Y. and Kurisu, K. (2005) Solitary Brain Metastasis from Renal Cell Carcinoma 15 Years after Nephrectomy. *Neurologia Medico-Chirurgica (Tokyo)*, **45**, 423-427. <http://dx.doi.org/10.2176/nmc.45.423>
- [17] Gil-Julio, H., Vázquez-Alonso, F., Fernández-Sánchez, A.J., Puche-Sanz, I., Flores-Martín, J.F. and Cózar, J.M. (2012) Metastasis of Renal Cell Carcinoma to the Buccal Mucosa 19 Years after Radical Nephrectomy. *Case Reports in Oncological Medicine*, **2012**, Article ID: 823042. <http://dx.doi.org/10.1155/2012/823042>
- [18] Kadrian, D. and Tan, L. (2004) Single Choroid Plexus Metastasis 16 Years after Nephrectomy for Renal Cell Carcinoma: Case Report and Review of the Literature. *Journal of Clinical Neuroscience*, **11**, 88-91. <http://dx.doi.org/10.1016/j.jocn.2002.09.002>
- [19] Macedo-Alves, D., Koca, P., Soares, V., Gouveia, P., Honavar, M. and Taveira-Gomes, A. (2015) Thyroid Metastasis from Renal Cell Carcinoma—A Case Report after 9 Years. *International Journal of Surgery Case Reports*, **16**, 59-63. <http://dx.doi.org/10.1016/j.ijscr.2015.09.004>
- [20] Kihara, M., Yokomise, H. and Yamauchi, A. (2004) Metastasis of Renal Cell Carcinoma to the Thyroid Gland 19 Years after Nephrectomy. *Auris Nasus Larynx*, **31**, 95-100. <http://dx.doi.org/10.1016/j.anl.2003.09.002>
- [21] De Jesus, C.M.N., Casafus, F.A.S. and Agostinho, A.D. (2008) Surgical Treatment of Renal Cell Carcinoma Recurrence at the Renal Fossa Following Radical Nephrectomy. *Sao Paulo Medical Journal*, **126**, 194-196. <http://dx.doi.org/10.1590/S1516-31802008000300011>
- [22] Adamy, A., Chong, K.T., Chade, D., Costaras, J., Russo, G., Kaag, M.G., Bernstein, M., Motzer, R.J. and Russo, P. (2011) Clinical Characteristics and Outcomes of Patients with Recurrence 5 Years after Nephrectomy for Localized Renal Cell Carcinoma. *The Journal of Urology*, **185**, 433-438. <http://dx.doi.org/10.1016/j.juro.2010.09.100>
- [23] Park, Y.H., Baik, K.D., Lee, Y.J., Ku, J.H., et al. (2012) Late Recurrence of Renal Cell Carcinoma > 5 Years after Surgery: Clinicopathological Characteristics and Prognosis. *BJU International*, **110**, E553-E558. <http://dx.doi.org/10.1111/j.1464-410X.2012.11246.x>
- [24] Tapper, H., Klein, H., Rubenstein, W., Intriore, L., Choi, Y. and Kazam, E. (1997) Recurrent Renal Cell Carcinoma after 45 Years. *Clinical Imaging*, **21**, 273-275. [http://dx.doi.org/10.1016/S0899-7071\(96\)00042-3](http://dx.doi.org/10.1016/S0899-7071(96)00042-3)
- [25] Miah, M.S., White, S.J., Oommen, G., Birney, E. and Majumdar, S. (2010) Late Simultaneous Metastasis of Renal Cell Carcinoma to the Submandibular and Thyroid Glands Seven Years after Radical Nephrectomy. *International Journal of Otolaryngology*, **2010**, Article ID: 698014. <http://dx.doi.org/10.1155/2010/698014>
- [26] Saidi, R.F. and Remine, S.G. (2007) Isolated Gastric Metastasis from Renal Cell Carcinoma 10 Years after Radical Nephrectomy. *Journal of Gastroenterology and Hepatology*, **22**, 140-144. <http://dx.doi.org/10.1111/j.1440-1746.2006.04335.x>
- [27] Sugawara, H., Ichikura, T., Ono, S., Tsujimoto, H., et al. (2010) Isolated Gastric Metastasis from Renal Cell Carcinoma 19 Years after Radical Nephrectomy. *International Journal of Clinical Oncology*, **15**, 196-200. <http://dx.doi.org/10.1007/s10147-010-0025-1>
- [28] Wilkinson, L., Tervit, G. and Bloxham, C. (2008) Metastatic Renal Cell Carcinoma to the Thyroid Gland Presenting 17 Years after Nephrectomy. *Diagnostic Histopathology*, **14**, 408-410. <http://dx.doi.org/10.1016/j.mpdhp.2008.06.013>
- [29] Chin, C.J., Franklin, J.H., Moussa, M. and Chin, J.L. (2011) Metastasis from Renal Cell Carcinoma to the Thyroid 12 Years after Nephrectomy. *Canadian Medical Association Journal*, **183**, 1398-1399. <http://dx.doi.org/10.1503/cmaj.092152>
- [30] Fuente Bartolomé, M., Osorio Silla, I., Gutiérrez Samaniego, M., Martínez Pueyo, J.I. and de La Cruz Vigo, F. (2014) Metastasis en tiroides de carcinoma renal de células claras. *Endocrinología y Nutrición*, **61**, 296-297. <http://dx.doi.org/10.1016/j.endonu.2013.12.002>
- [31] Takashi, M., Hibi, H., Ohmura, M., Sate, K., Sakata, T. and Ando, M. (1997) Renal Fossa Recurrence of a Renal Cell Carcinoma 13 Years after Nephrectomy: A Case Report. *International Journal of Urology*, **4**, 508-511. <http://dx.doi.org/10.1111/j.1442-2042.1997.tb00294.x>
- [32] Brookman-May, S., May, M., Shariat, S.F., Xylinas, E., et al. (2013) Features Associated with Recurrence beyond 5 Years after Nephrectomy and Nephron-Sparing Surgery for Renal Cell Carcinoma: Development and Internal Validation of a Risk Model (PRELANE Score) to Predict Late Recurrence Based on a Large Multicenter Database (CORONA/SATURN Project). *European Urology*, **64**, 472-477. <http://dx.doi.org/10.1016/j.eururo.2012.06.030>
- [33] Miyao, N., Naito, S., Ozono, S., Shinohara, N., et al. (2011) Late Recurrence of Renal Cell Carcinoma: Retrospective and Collaborative Study of the Japanese Society of Renal Cancer. *Urology*, **77**, 379-384. <http://dx.doi.org/10.1016/j.urology.2010.07.462>
- [34] Heckl, S., Braun, K., Debus, J. and Kunze, S. (2003) Cerebral Metastasis after Primary Renal Cell Carcinoma. *Journal*

- of *Neurology, Neurosurgery & Psychiatry*, **74**, 141. <http://dx.doi.org/10.1136/jnnp.74.1.141>
- [35] Bradham, R.R., Wannamaker, C.C. and Pratt-Thomas, H.R. (1973) Renal Cell Carcinoma Metastases 25 Years after Nephrectomy. *JAMA*, **223**, 921-922. <http://dx.doi.org/10.1001/jama.1973.03220080051019>
- [36] Lee, J.G., Kim, J.S., Kim, H.J., Kim, S.T., et al. (2002) Simultaneous Duodenal and Colon Masses as Late Presentation of Metastatic Renal Cell Carcinoma. *The Korean Journal of Internal Medicine*, **17**, 143-146. <http://dx.doi.org/10.3904/kjim.2002.17.2.143>
- [37] Sotiropoulos, G.C., Lang, H., Liu, C., Brokalaki, E.I., et al. (2005) Surgical Treatment of Pancreatic Metastases of Renal Cell Carcinoma. *Journal of the Pancreas*, **6**, 339-343.
- [38] Namikawa, T., Iwabu, J., Kitagawa, H., Okabayashi, T., et al. (2012) Solitary Gastric Metastasis from a Renal Cell Carcinoma, Presenting 23 Years after Radical Nephrectomy. *Endoscopy*, **44**, E177-E178. <http://dx.doi.org/10.1055/s-0031-1291751>
- [39] Dellon, E.S. and Gangarosa, L.M. (2006) Hematochezia Due to a Renal Cell Carcinoma Metastasis to the Rectum: A Case Report and Review of the Literature. *Revista de Gastroenterología de México*, **71**, 316-318.
- [40] Pezzoli, A., Matarese, V., Boccia, S., Simone, L. and Gullini, S. (2007) Gastrointestinal Bleeding from Gastric Metastasis of Renal Cell Carcinoma, Treated by Endoscopic Polypectomy. *Endoscopy*, **39**, E52. <http://dx.doi.org/10.1055/s-2006-945127>
- [41] Riviello, C., Tanini, I., Cipriani, G., Pantaleo, P., et al. (2006) Unusual Gastric and Pancreatic Metastatic Renal Cell Carcinoma Presentation 10 Years after Surgery and Immunotherapy: A Case Report and a Review of Literature. *World Journal of Gastroenterology*, **12**, 5234-5236.
- [42] Costa, T.N., Takeda, F.R., Ribeiro Jr., U. and Ceconello, I. (2014) Palliative Laparoscopic Resection of Renal Cell Carcinoma Metastatic to the Stomach: Report of a Case. *World Journal of Surgical Oncology*, **12**, 394. <http://dx.doi.org/10.1186/1477-7819-12-394>
- [43] Chang, W.-T., Chai, C.-Y. and Lee, K.-T. (2004) Unusual Upper Gastro-Intestinal Bleeding Due to Late Metastasis from Renal Cell Carcinoma: A Case Report. *The Kaohsiung Journal of Medical Sciences*, **20**, 137-141. [http://dx.doi.org/10.1016/S1607-551X\(09\)70098-1](http://dx.doi.org/10.1016/S1607-551X(09)70098-1)



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