CASE REPORT

Renal cell carcinoma metastases to the maxillary sinus

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SUMMARY

Metastasis of renal cell carcinoma (RCC) to the head and neck region is rare. We report the case of a 65-year-old man with history of RCC, presented 7 years after nephrectomy, adrenalectomy and lung metastasectomy for his primary tumour, with symptoms of nasal obstruction, postnasal drip, productive cough and pressure sensation in the left maxillary sinus. CT revealed a unilateral, irregular opacification in the left maxillary sinus with bony erosion of the infraorbital canal wall. A yellow cystic lesion was completely removed from the maxillary sinus during functional endoscopic sinus surgery and histopathological analysis confirmed the diagnosis of a metastatic RCC. Patient continued to be managed with his pre-existing treatment for advanced RCC.

BACKGROUND

Renal cell carcinoma (RCC) accounts for about 85% of primary renal tumours¹ and usually affects men aged between 30 and 60 years.² Clear cell renal cancer is the most common histological subtype of RCC and accounts for 70%–80% of all RCCs.³ RCC usually metastasises to regional lymph nodes, lungs, bones and liver,¹ but rarely to the head and neck region.⁴ We report a rare case of a male patient, with metastases of RCC to the maxillary sinus, 7 years after nephrectomy for primary RCC.

CASE PRESENTATION

A 65-year-old man presented with few years history of nasal obstruction and new onset of postnasal drip and intermittent productive cough following a recent cold. He also described pressure sensation in the left maxillary sinus but no smell disturbances. These symptoms persisted despite being treated with 6 weeks of maximum medical therapy for rhinosinusitis. He was diagnosed with RCC with hepatic and pulmonary metastasis (pT3a, cN2 and pM1) 7 years prior to this where he underwent chemotherapy, tumour nephrectomy and adrenalectomy (figure 1) as well as open metastasectomy of both lungs. He has been managed with targeted therapies (lenvima and everolimus) since then with partial remission. Ear, nose and throat examination showed a septal deviation to the right side and prominent middle turbinates. There were no intra-nasal signs of infection or nasal polyps.

INVESTIGATIONS

CT revealed a unilateral, irregular opacification in the left maxillary sinus (figure 2) with bony erosion of the infraorbital canal wall.

TREATMENT

He underwent functional endoscopic sinus surgery under general anaesthesia where endoscopic septoplasty and reduction of middle turbinate were first performed to optimise surgical access. Uncinectomy was then performed to allow opening and access to the left maxillary sinus. Macroscopically, a yellow cystic lesion was observed in the left maxillary sinus, which was completely removed. The operation was uneventful with no major bleeding and patient made good recovery without any significant postoperative complications.

OUTCOME AND FOLLOW-UP

Histological examination revealed fragments of a necrotic tumour compatible with clear cell RCC (figure 3). The epithelial nature of the necrotic cells could be confirmed by focally retained immunohistochemical staining of the necrotic cells with a pan-cytokeratin antibody. Due to patient's advanced disease stage, no additional treatment was added to his pre-existing management of metastatic RCC. Patient had a CT scan 3 months postoperatively, which showed no tumour recurrence. Clinical examination at his last follow-up (7 months after the surgery) did not show any signs of locoregional recurrence either.

Figure 1 Coronal CT scan of patient's thorax and abdomen showing evidence of previous left nephrectomy and adrenalectomy.

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Figure 2 Coronal and axial CT scan of the patient showing a unilateral, irregular opacification in the left maxillary sinus (arrow) with bony erosion of the infraorbital canal wall.

DISCUSSION

The clinical course of primary RCC is often unpredictable⁵ where some patients had spontaneous regression⁶ while others presenting with metastases few years after resection of primary tumour.⁶ The rate of solitary late recurrences (more than 10 years) of RCC ranges from 4.7% to 11%.⁷ Alternatively, symptoms of tumour metastasis also can be the presenting sign which leads to the diagnosis of renal malignancy.^{8–13} In 7.5% of patients with RCC, head and neck metastases were the presenting complaint.⁸

Metastases of RCC to the head and neck region only account for about 15%–30% of all cases^{4,5} and the common sites involved in this region include the parotid glands, larynx, thyroid, mandible and paranasal sinuses.¹⁴ Metastases from RCC to the nose and paranasal sinuses are rare, with less than 100 cases being reported in the literature.⁸ A review of 98 paranasal metastases revealed that 54% of the cases originated from RCC with a predilection for the maxillary antrum (36%), ethmoid sinus (25%), frontal sinus (17%) and nasal cavity (11%).¹⁵ Sinonasal metastases are usually associated with metastasis to other organs while single site metastasis in the head and neck region from RCC is a rare occurrence.¹⁶

The metastatic deposits from RCC are normally vascular in nature and patients often present with epistaxis in 70% of cases.^{1,17} Other symptoms of RCC in paranasal sinus that has been described include nasal obstruction and facial pain.¹⁸

Figure 3 Biopsy from the sinonasal mucosa with completely necrotic metastasis of a clear cell renal cell carcinoma. In this Elastica van Gieson (EvG) staining for connective tissue, the characteristic nested growth pattern of clear cell renal cell carcinomas is clearly discernible. EvG, 100x.

Learning points

- ▶ Renal cell metastasis to the paranasal sinuses is possible even after many years following nephrectomy of the primary tumour.
- ▶ When evaluating patients with unilateral sinonasal symptoms without signs of infections, it is crucial to obtain a good medical and surgical history as patients' renal cell carcinoma (RCC) treatment may have occurred very long time ago.
- ▶ Clinicians should have high index of suspicion for RCC metastasis as a differential diagnosis in patients with history of RCC and presenting with epistaxis, nasal obstruction or facial pain.
- ▶ Clinicians should be careful with taking biopsies of such metastases, as they are normally very vascular.
- ▶ Surgical resection is the treatment of choice for this disease.

Clinical suspicion should be raised in patients with unilateral sinonasal lesion, unresponsive to medical management or with associated cranial neuropathies,¹⁹ and patients with such clinical presentations, combined with histories of RCC, should alert clinicians of the differential diagnosis of RCC metastasis.⁵

It is advisable to do a contrast CT scan of the paranasal sinuses to evaluate the vascularity of the lesion before planning for biopsy to avoid uncontrolled haemorrhage²⁰ as well as to determine the extent of the mass and delineate any bony breakdown.¹⁹

The role of surgery is to achieve adequate local resection, which allows for histopathological confirmation of diagnosis^{5,8} and appropriate short-term palliation of symptoms.⁴ Small localised disease in the paranasal region can be resected endoscopically to decrease postoperative morbidity, although in patients with more extensive diseases with intracranial or intraorbital extension, endoscopic-assisted craniofacial debulking or open approach may be required for adequate resection.²⁰

The 5-year survival of patients with systemic metastatic RCC was only 8%.²¹ On the other hand, the 5-year survival of patients after excision of solitary metastatic RCC lesions following nephrectomy was found to be 13%–35%,^{4,22} regardless of the time interval between nephrectomy and diagnosis of metastatic lesion.⁴ Despite the low survival rate, radical excision still provide the best hope for long-term survival in such patients.⁵

For patients unsuitable for surgery, other forms of treatment has been advocated, for example, chemotherapy and radiotherapy, although metastatic RCCs have relatively poor response to these agents.^{7,20} Other alternatives include immunotherapy (eg, interferon- α and interleukin-2) and targeted therapies.³

Contributors All authors contributed to this case report. The conception for this work was by YB. YB and NT treated the patient during this hospitalisation in the ENT department. KG performed the histological examination. NT collected the data and EHCW wrote the manuscript. All the coauthors revised the draft critically and approved it for publication.

Competing interests None declared.

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