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Case Report

A Case of Metastatic Renal Cell Carcinoma Presenting as an Isolated Maxillary Sinus Malignancy

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ABSTRACT:

Metastatic spread of renal cell carcinoma (RCC) to the head and neck region is rare. We report a case of a 58-year-old man who presented with right maxillary swelling, nasal obstruction and mild ptosis of right eye with history of surgically treated RCC one year back. The diagnosis of metastatic renal cell carcinoma to maxillary sinus was confirmed by radiographic and histopathologic investigations. Due to rarity and atypical clinical and radiographic appearance, such metastatic lesion in the maxillofacial region often poses a diagnostic challenge. A high probability of metastatic cancer should be considered when evaluating patients reporting with nasal or paranasal sinus mass especially if associated with symptoms suggestive of a neural involvement. An accurate early-stage diagnosis of metastatic RCC can considerably improve prognosis and survival rate in these patients.

Key words: Maxillary Sinus; Nasal Cavity; Neoplasm Metastasis; Carcinoma Renal Cell

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INTRODUCTION

Renal cell carcinoma (RCC) may present with diverse range of clinical manifestations and pose a diagnostic dilemma with its unusual presentations. The same is true for tumour recurrence and metastasis even after several years of primary tumour resection. RCC accounts for about 85% of primary renal tumours and usually affects men aged between 30 and 60 years.[1]Approximately 30% of patients with renal cell carcinoma present with metastatic lesions[2]. However, metastases to the paranasal sinuses are relatively rare.

Patients with sinonasalcavityneoplasms can be totally asymptomatic or demonstrate a wide range of clinical signs and symptoms, which include: nasal bleeding, nasal obstruction, facial pain / headache, nasal/ facial mass, proptosis, diplopia, cranial nerve impairment, nasal discharge and, rarely, vision impairment.[3] Hence, the clinical evaluation may not draw attention to a potential malignancy at the time of the initial presentation. In addition, these lesions might be mistaken with inflammatory or infectious diseases of the maxillary sinus and adjacent structures as a result of clinical and radiographic similarities. Therefore, early diagnosis requires a high degree of astuteness and, ultimately, histopathologic evaluation. In spite of their rarity, metastatic diseases of the maxillary sinus must also be considered in the differential diagnosis of these patients.

In this report, we present the case of a metastatic RCC of the maxillary sinus and nasal cavity which occurred one year after primary tumour resection.

CASE REPORT

A 58-year-old male patient reported to the outpatient department of Government Dental College, Kottayam, India with a history of swelling on the right maxillary region for 2 months. Swelling was not painful, but he experienced nasal obstruction frequently. He also added that his maxillary complete denture was ill fitting after the onset of swelling. His medical history revealed a radical left nephroureterectomy 1 year back due to clear cell renal carcinoma with left ureteric metastasis. Patient stated that he underwent uneventful dental extractions 8 years back and was currently using complete denture in maxillary arch. His family, social and personal histories were unremarkable. On

physical examination, a diffuse swelling of approximate size 5 cm × 3 cm on the right maxilla was evident. On palpation,the swelling felt fixed, firm and non-tender. Bilateral eye movements appear to be normal in all directions with mild ptosis of right eyelid. No other abnormalities were detected on extra oral examination nor was regional lymphadenopathy present.

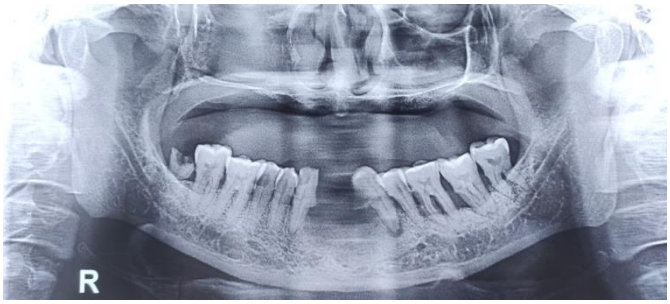
Intraorally, the swelling was extending to right buccal vestibule of completely edentulous maxillary arch adjacent to premolar-molar region (Figure 1).

Figure 1: Showing intra oral extension of swelling into buccal vestibule

A solitary ulcer of approximate size 0.2 cm with surrounding erythema was present over the surface of the swelling. The swelling was firm and non-tender with no palpable pulsation.

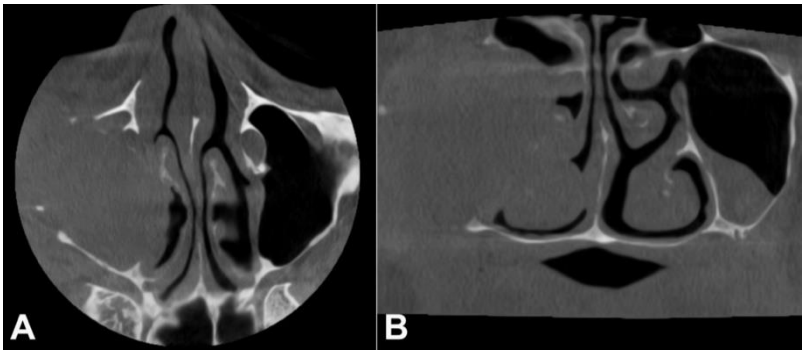
A panoramic radiograph showed haziness in the right maxillary sinus with ill-defined radiolucency involving the lateral wall and floor of maxillary sinus (Figure 2).

Figure 2: Panoramic radiograph showing haziness in the right maxillary sinus with loss of continuity of the walls



Cone beam computed tomography (CBCT) scan of maxillary sinus showed an ill-defined mass in right maxillary sinus infiltrating medially to nasal cavity breaching the lateral wall of the nasal cavity and superiorly into orbital floor. Anterior and lateral walls along with floor of the sinus also showed hypodensity suggestive of osteolytic areas (Figure 3).

Figure 3: Coronal (A) and Axial (B) section of CBCT scan showing a mass in the right maxillary sinus with extensive destruction of anterior, medial and posterolateral walls of sinus and infiltration into nasal cavity

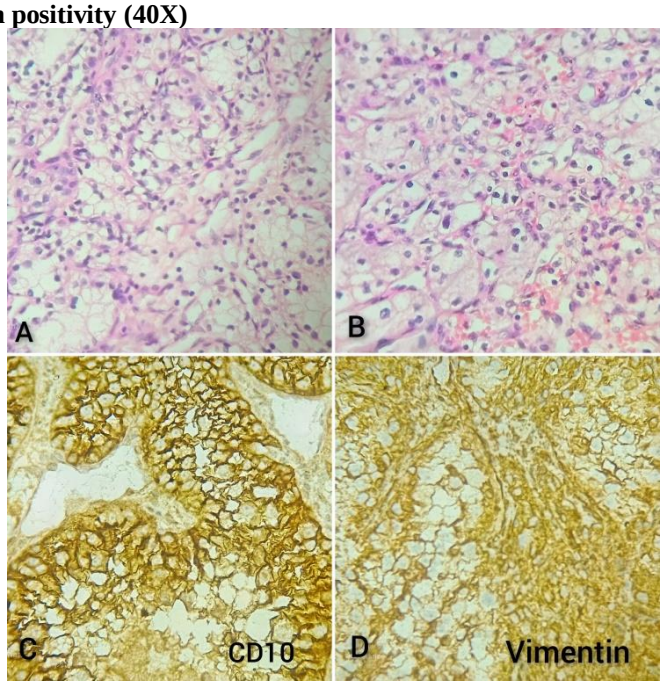


A mucosal thickening involving the lower part of left maxillary sinus was also noticed. The differential diagnosis considered included carcinoma of maxillary sinus, minor gland malignant neoplasm, fungal rhinosinusitis and metastatic malignancy.

The patient was referred to Otorhinolaryngology department for further evaluation and underwent

direct nasal endoscopy and biopsy under general anaesthesia. Histological examination showed fragments of cells arranged in nests. Individual cells exhibited abundant clear cytoplasm, well defined cytoplasmic border and central round dense nucleus. Mild nuclear atypia and polymorphism were evident with large sheets of necrosis and occasionally atypical mitoses. These findings were a consistent with clear cell renal cell carcinoma. Immunohistochemistry was positive for CD10 and Vimentin (Figure 4).

Figure 4: Histopathological and Immunohistochemistry photomicrographs. A – Histopathological sections from the sinonasal mucosa showing fragments of cells arranged in nests with abundant, clear cytoplasm, well defined cytoplasmic border and central round dense nucleus (H & E, magnification 40X); B – Previous histopathological sections from Nephrectomy tissue of left kidney, showing features of typical clear cell renal cell carcinoma (H & E, magnification 40X);C – Immunohistochemical staining of the metastatic lesion showing CD10 positivity (40X);D – Immunohistochemical staining of the metastatic lesion showing vimentin positivity (40X)



Patient underwent whole body PET – CT fusion imaging to rule out any other metastases which showed abnormal increased uptake of ^{18}F-FDG with ill – defined soft tissue thickening and almost complete opacification of the right maxillary sinus extending to the right nasal cavity.

Patient was referred back to otorhinolaryngology department for further treatment, andrefused chemoradiation therapy. The patient is currently on best supportive care, owing to his general health status and the recurrent metastasis.

DISCUSSION

Malignancies from almost any primary site can metastasize to the jaws, but those from the breast, lung, kidney and prostate do so most frequently. In males, primary cancers of the lung are the most common neoplasmsto metastasize to the jaws, followed in frequency by prostatic and renal cancers. In females, jaw metastasis most commonly originates from breast primaries followed by primaries of the adrenal and genitalia.[4-6]Primary tumours of the nasal cavity and paranasal sinuses are rare, constituting less than 3% of upper aero digestive tract malignancies, and less than 1% of all malignant tumours.[7]RCC can metastasize to any region of the body, with prevalence for lungs, liver and bone.[8] According to a study by Choong et al, which included 912 consecutively presenting patients, locations in the sinonasal cavity account for fewer than 1% of all RCC metastases,[9] which is far lower than the rate for lung, bones, and liver metastases.

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%).[10,11] When a malignant condition is suspected in the paranasal sinuses, a primary malignancy native to the location is the first possibility, but metastatic lesions from other primary sites should also be considered. Even though it is rare, renal cell carcinoma should be considered when investigating metastatic lesions in this region.Sinonasal metastases are usually associated with metastasis to other organs. Single-site metastasis of RCC in the head and neck region as in the current case is a rare occurrence.

The clinical outcome of primary RCC is often unpredictable: while some patients have spontaneous regression, others present with metastases a few years

after resection of the primary tumour.[12]In some cases, the first clinical manifestations of the primary neoplasms are actually a consequence of the metastatic tumour, leading to the diagnosis of renal malignancy.In 7.5% of patients with RCC, head and neck metastases were the presenting complaint**.** The rate of solitary late recurrences (more than 10 years) of RCC ranges from 4.7% to 11%.[13]The median time before a relapse after nephrectomy is 15 months, and 85 % of relapses occur within 3 years.[14]

Renal cell carcinoma is frequently found to invade the local vascular network by direct extension into the interlobular, arcuate and interlobar veins and even thrombus the renal vein.[15] Therefore, haematogenous spread of this disease through the systemic circulation is probable route of distant metastasis.There are two intravascular routes for renal cancer to metastasize to the nasal and paranasal sinuses. One is the caval route in which tumor cells travel through the inferior vena cava, the right heart, the lungs, the left heart and the maxillary artery to reach the nasal and paranasal sinuses.[16] The other is the vertebral plexus route, in which tumor cells do notflow into the inferior vena cava, but travel through the venous, the intracranial venousplexus and the cavernous venous plexus to reach the nasal and paranasal sinuses. Haematogenous spread via Batson's venous plexus may explain the metastasis to head and neck region without involvement of lung, liver or brain. Lymphatic spread via the regional lymphatics and the thoracic duct are also suggested as possible route of metastasis.[8, 10]

Clinical features of the condition may vary significantly. In a review of 53 cases of sinonasal metastasis by Bastier et al, the most common symptoms leading to the diagnosis were epistaxis (54.7%), nasal obstruction (37.7%), facial pain / headache (17 %), nasal/ facial mass (17 %), proptosis (13.2 %), diplopia (11.3 %), cranial nerve impairment (9.4 %), nasal discharge (7.5 %) and, rarely, vision impairment(3.8%). Epistaxis is frequently encountered as the tumour is hypervascular due to the presence of abundant sinusoids.[3]

Diagnostic confirmation is provided by histologic examination supported by immunohistochemical staining of the biopsy specimen. Once the diagnosis of metastatic RCC is confirmed, the abdomen should be screened by USG and CT. Other common sites of RCC metastases (lungs, brain, and bones) should be screened as well.

Prognosis of metastatic RCC is poor and depends mostly on the TNM staging, invasion of lymphatics and vessels, nuclear grading, necrotic and sarcomatoid component. The 5-year survival of patients with systemic metastatic RCC was only 8%. 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%, [17] regardless of the time interval between nephrectomy and diagnosis of a metastatic lesion. Despite the low survival rate, radical excision is considered as the best treatment plan for long-term survival in such patients.[18]In unresectable cases, other options like radiotherapy, chemotherapy and immunotherapy should be considered. However, metastatic RCCs have a relatively poor response to these modalities. Palliative radiotherapy decreases the bulk of tumour and thus the incidence of epistaxis.

CONCLUSION

This case report aims to highlight the addition of metastatic renal cell carcinoma as a differential diagnosis in patient presenting with aggressive sinonasal mass. A good clinical history, proper radiological evaluation and histopathologic examination are necessary to establish the diagnosis. Even though the prognosis of metastatic RCC is poor, early diagnosis of metastasis can considerably limit perioperative complications and improve survival rate.

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