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CASE REPORT OPEN ACCESS

Metastatic nose and paranasal sinus masses – A case series

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Abstract

Metastases to the nose and paranasal sinuses are unusual. These tumors are commonly seen in the 4th to 6th decades of life. The clinical presentation may be analogous to that of primary sino-nasal tumors. They usually present with common nasal and ocular symptoms due to which diagnosis may be missed and delayed. Hence, high level of suspicion is necessary for patients with known malignancies presenting with inconsistent or repeated nasal and ocular symptoms. Otorhinolaryngologists should be familiar with these metastases to paranasal sinuses from unusual primary elsewhere in the body, to evaluate and manage these tumors. Retrospective data was collected from the hospital records from 2020-2023. A total 14 cases of sino-nasal malignancies were identified. On further analysis three cases were found to be having distant metastases from primary sites such as kidney, breast and lymph nodes. We are reporting three metastatic malignancies. Each was systematically evaluated, confirming their origin as metastases from other primary sites. They were then managed appropriately.

Keywords: metastases; paranasal sinuses, renal cell carcinoma; breast carcinoma;non-Hodgkin's lymphoma; sinus surgery

Introduction

Metastases to the nose and paranasal sinuses are unusual [1]. The most common sinus involved is the maxillary sinus followed by the sphenoid, ethmoid, frontal sinuses and nasal cavity [2]. These tumors are most commonly seen in 4th to 6th decades of life [3]. Several primary malignant neoplasms of different organs can metastasize to nose and paranasal sinuses [5]. The most common one is clear cell renal cell carcinoma, accounting for almost half of the metastases [4]. It is followed by carcinoma breast, colon, thyroid, female genital tract, lymph nodes and brain [6, 7].

The clinical presentation may be analogous to that of primary sino-nasal tumors. Usually they presents with recurrent epistaxis, nasal obstruction, facial pain, proptosis, diplopia and impaired visual acuity [8].

Materials and methods

Retrospective data collected from hospital records of the Krishna Institute of Medical Sciences, Secunderabad, Telangana from 2020 to 2023. Around 233 patients underwent sinus surgery. Histopathology reports of specimens were reviewed. Most of the cases had infectious, inflammatory and allergic pathology. 14 cases were found to be having malignant etiology. Of them 11 cases were primary malignancies (Table 1), 3 cases were metastatic malignancies (Table 2). There were 9 males (64%), and 5 females (36%). They were aged between 14-80 years. The overall incidence of Sino-nasal malignancies was 1.4% (14 in 1000 cases). They were aged between 14-80 years. Which includes Esthesioneuroblastoma (14%), chondrosarcoma (7%), lymphoma (7%), carcinoma maxilla (7%), carcinoma ethmoids (7%), carcinoma of sphenoid sinus (7%),

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carcinoma nasopharynx (14%), recurrent carcinoma nasopharynx (7%), malignant mesenchymal tumor (7%), metastatic carcinoma (27%).

Table 1: Shows malignant neoplasms of nose and paranasal sinuses.

Malignant neoplasm	*Age (In years)*	*Sex*	*No. of cases*
Esthesioneuroblastoma	50	Male	1
Esthesioneuroblastoma	56	Female	1
Chondrosarcoma	26	Male	1
Lymphoma	40	Male	1
Carcinoma maxilla	80	Male	1
Carcinoma ethmoids	60	Female	1
Carcinoma sphenoid sinus	14	Male	1
Carcinoma nasopharynx	17,25	Male	2
Recurrent carcinoma nasopharynx	45	Female	1
Malignant mesenchymal tumor	34	Male	1
Total			11

Table 2: Shows metastatic masses of nose and paranasal sinuses.

Metastatic neoplasm	*Age*	*Sex*	*No. of cases*
RCC	50	Male	1
Non Hodgkin's lymphoma (Diffuse large B cell)	66	Female	1
Carcinoma breast	40	Female	1
Total			3

Among them we are reporting three metastatic nose and paranasal sinus masses. Which were evaluated in a systematic manner including clinical examination, diagnostic nasal endoscopy, radiological investigation and its management.

Case 1

A 50-years-old male, an electrician by occupation presented to the outpatient department with the complaint of bleeding from the left nasal cavity since 2 days. He was also complaints of nasal obstruction since long time.

He had a history of renal cell carcinoma with extension into the adrenal gland on the right side for which he underwent radical right sided nephrectomy 2 years ago. He is a known case of diabetes and hypertensive on medication.

On nasal endoscopic examination (DNE) a pinkish vascular mass seen between the left middle turbinate and septum (Figure 1).

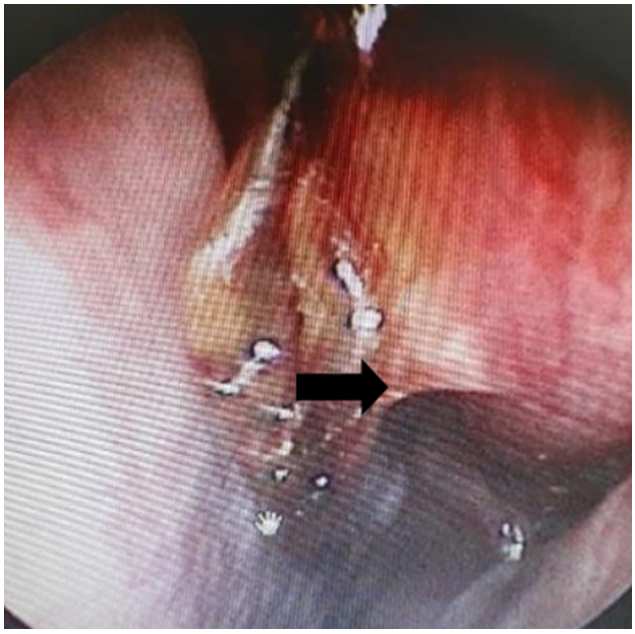

Figure 1: Diagnostic nasal endoscopy shows a pinkish mass in the left nasal cavity.

Computed tomography scan of nose and paranasal sinuses (CT PNS) revealed a heterogenous lesion involving nose and ethmoidal sinuses with intracranial extension (Figures 2).

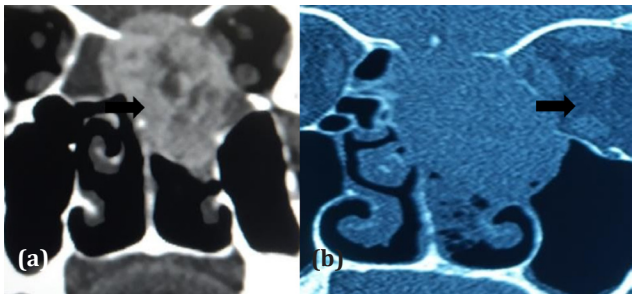

Figure 2a,b: CT scan coronal section shows a well-defined heterogenous lesion in the left nasal cavity with extension into the anterior cranial fossa superiorly, medial wall of left the orbit and maxillary sinus laterally and pushing the septum to the opposite side.

Mass resected endoscopically and the tissue sent for histopathological examination(HPE). It showed a tumor composed of nest of clear cells with vacuolated cytoplasm separated by a vascular septum (Figure3a). Immunohistochemistry (IHC) staining for PAX 8 was positive. All these features are suggestive of metastatic deposits of renal origin (Figure 3b).

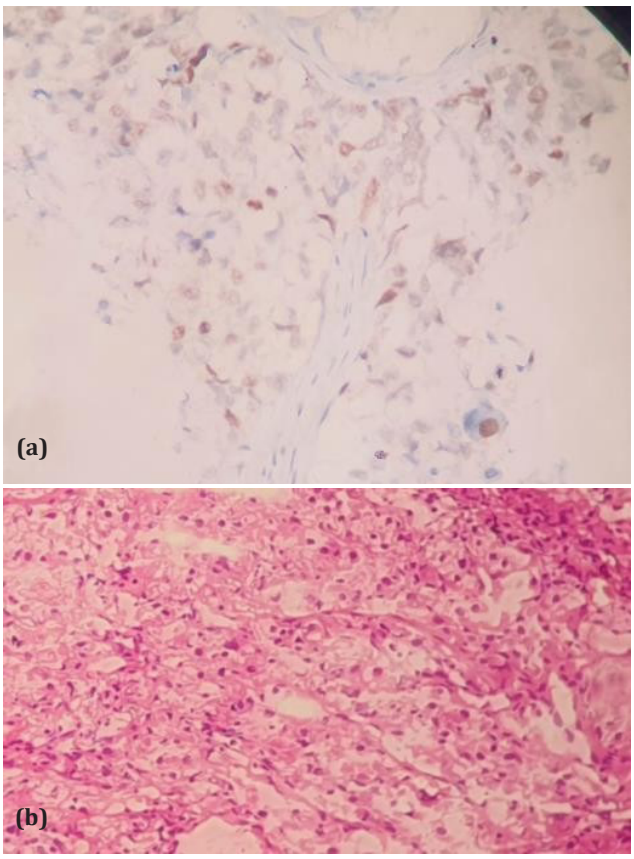

Figure 3: (a) Histological findings shows a tumor composed of a nest of clear cells with vacuolated cytoplasm separated by a vascular septum, H&E 400x magnification. (b) Immunohistochemistry shows nuclear positivity with PAX 8, 400x magnification.

He underwent PET CT which showed increased uptake in nose and para nasal sinuses, lung, iliac bone and adrenal gland (Figure 4).

It is suggestive of metastatic lesion. Patient was advised for further management, but he was reluctant to go for treatment.

Case 2

A 66-year-old female patient presented with complaints of cough with expectoration, intermittent fever and ptosis of left eye for the last 2 months. She was a known case of non-Hodgkin's lymphoma (NHL) and received chemotherapy 2 years ago.

Diagnostic nasal endoscopy shows mucopurulent discharge in the left nasal cavity. Patient was advised MRI brain and orbits, which revealed as left pan sinusitis with orbital involvement (Figure 5).

Endoscopic sinus surgery done and polypoidal mass in maxillary and ethmoid sinuses excised. The tissue sent for HPE. It revealed as malignant small round cell tumor, probably NHL (Figure 6). On IHC tumor shows strong positivity to CD 20, negativity to CD3 and pan-cytokeratin (Figure 7). All these features are in favor of diffuse large B-cell NHL.

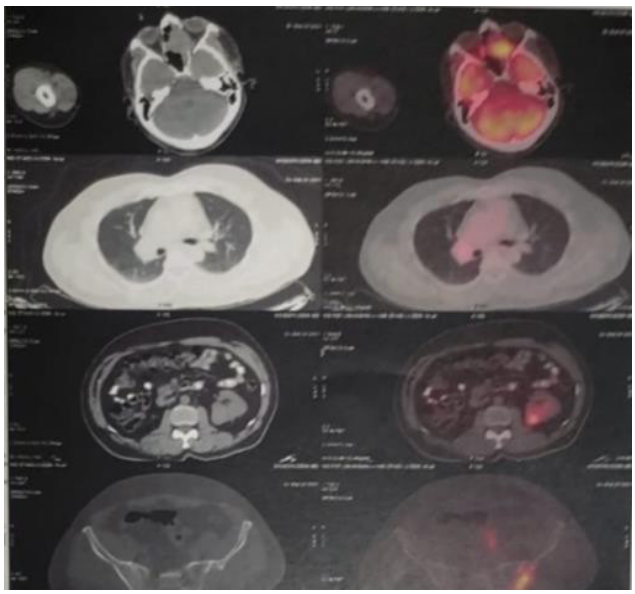

Figure 4: PET CT showing increased uptake suggestive metastasis to PNS, chest, iliac crest, and left adrenal glands.

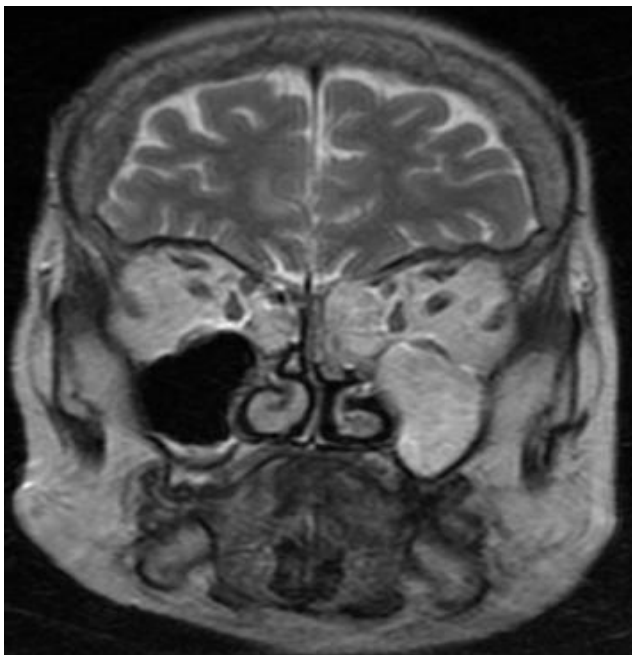

Figure 5: T2-weighted MRI brain and orbits coronal section shows hyperintense lesion involving left maxillary and bilateral ethmoidal sinuses.

She was referred to medical oncology department for further management as per the protocol.

Case 3

A 40-years-old female presented to the department with running nose, post nasal drip and headache for the past one month. She also had a history of right sided mastectomy followed by hormonal therapy for carcinoma breast 10 years ago.

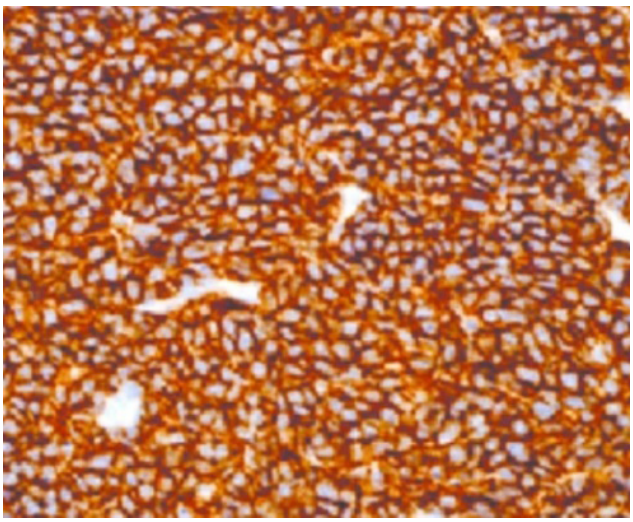

Figure 7: Immunohistochemistry shows positivity to CD 20. 400x magnification.

DNE shows mucopurulent discharge in the bilateral nasal cavities. CT PNS shows haziness in bilateral paranasal sinuses with heterogeneous opacities with the possibility of fungal sinusitis (Figure 8).

Endoscopic sinus surgery was done, tissue was taken from maxillary and ethmoidal sinuses and sent for HPE. It showed tumor deposits with gland formation, revealed as a metastasis from carcinoma breast (Figure 9). IHC shows neoplastic glands, which are ER-positive. Patient had received combination of chemoradiation.

Discussion

Metastases of primary tumors to the nose and paranasal sinuses are very rare [1]. The clinical presentation is similar to that of primary Sino-nasal tumors, so the diagnosis is often delayed.

In the literature review, renal cell carcinoma is the most common malignancy that metastases to the nose and paranasal sinuses [4]. It is followed by breast, colon, lung, stomach, prostate and lymph nodes have been reported [6, 7].

Most commonly involved sinus by metastatic tumors is maxillary sinus followed by the ethmoids, frontal, sphenoid sinuses and nasal cavity [5]. They are usually present with common nose and ocular symptoms which includes epistaxis, nasal obstruction, facial pain, proptosis, diplopia, decreased vision and ptosis [8]. Metastatic tumors of PNS with primary tumor of unknown origin is very rare. It may reach the PNS by hematogenous, lymphogenous or vertebral venous plexus pathways [9].

Differential diagnosis of sino-nasal metastasis are primary tumors such as adenocarcinomas,

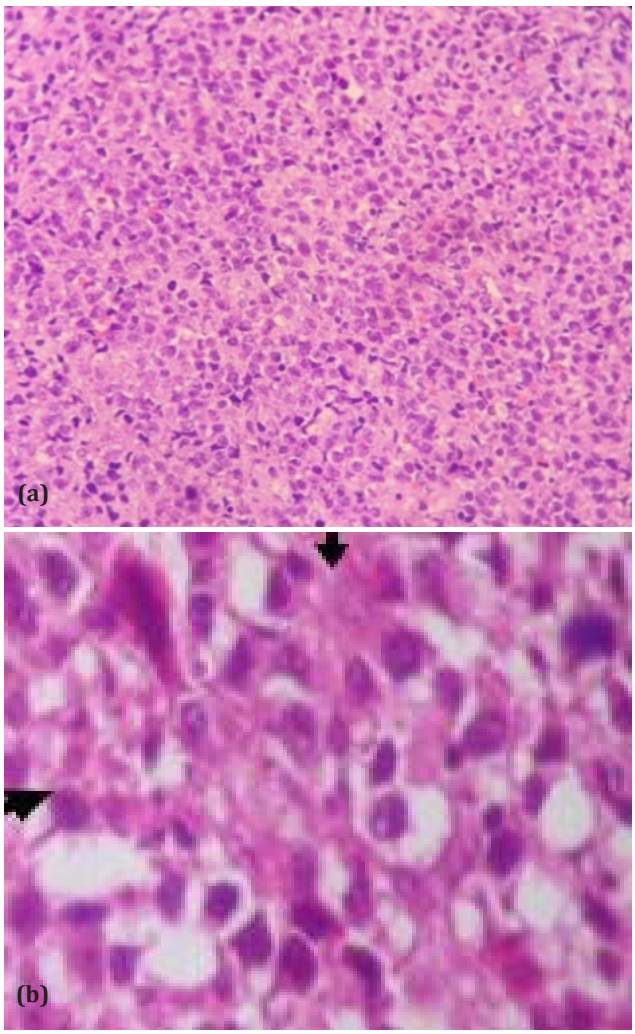

Figure 6: Histopathological examination shows sheets of neoplastic lymphoid cells, (a) 100x magnification, (b) 400x magnification.

hemangiopericytomas, melanomas, hemangiomas, angiofibromas and metastatic tumors from the breast, renal and lungs. Rarely, we can see systemic diseases such as Wegner's and midline granulomas [10].

CT and MRI of PNS may show either soft tissue masses involving the nose and paranasal sinuses or haziness seen in paranasal sinuses mirroring sinusitis. A definitive diagnosis requires a biopsy for confirmation,that may be obtained via endoscopic sinus surgery [11].

Aim of the treatment of these patients is to improve or maintain their quality of life. Treatment should be customized according to the tumor location and the general health of the patient. Surgery is probably the optimal treatment for patients with resectable sino-nasal metastases. For unresectable tumors, there are other available therapies, which include radiotherapy, chemotherapy, and immunotherapy. Radiotherapy is almost always the treatment of choice for local symptomatic control. The prognosis for patients with metastases to paranasal sinuses is generally poor [12].

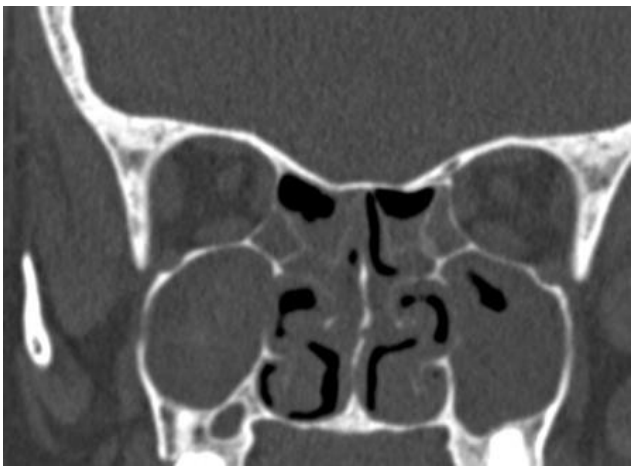

Figure 8: CT PNS coronal section showing heterogenous opacities involving bilateral maxillary sinuses with extension into bilateral ethmoidal sinuses.

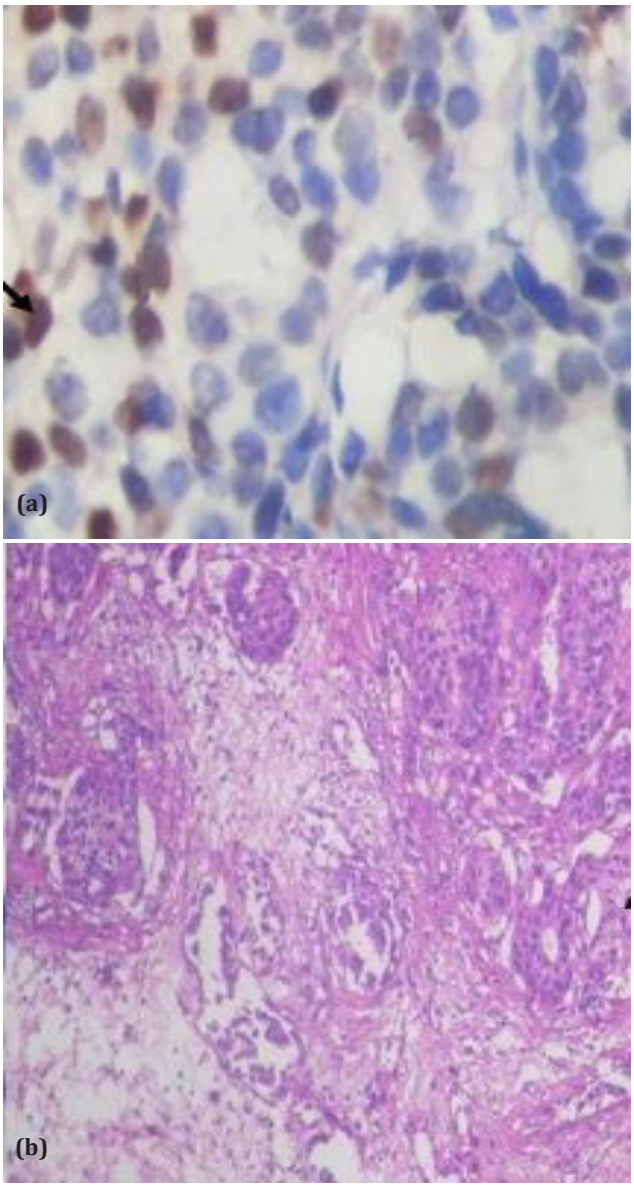

Figure 9: (a) Histopathological examination shows tumor deposits with gland formation 100x magnification, (b) Immunohistochemistry shows neoplastic glands which are ER-positive 400x magnification.

Conclusion

Any patient with primary malignancy elsewhere in the body may present with nasal and ocular symptoms. The symptoms may not be specific to the underlying neoplasm and if they are not responding to regular treatment, evaluate the patient with a systematic approach. This includes clinical, endoscopic, radiological and histopathological examination to rule out the possibility of metastasis from primary tumor. Early diagnosis of such metastases will considerably change the prognosis if the intervention is not delayed.

Conflicts of interest

Authors declare no conflicts of interest.

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