Sinonasal Carcinoma Mimicking Invasive Fungal Sinusitis: A Diagnostic Dilemma of an Extensive Paranasal Sinus Mass, a Case Report

İnvazif Mantar Sinüzitini Taklit Eden Sinonazal Karsinom: Yaygın Bir Paranazal Sinüs Kitlesinin Tanısal Bir İkilemi, Bir Olgu Sunumu

Nur Asma Sapiai1, Jeyasakthy Saniasiaya2, Hilma Hazmi3, Juhara Haron1, Baharudin Abdullah2, Faezatul Arbaeyah Hussain3

1Department of Radiology, Faculty of Medical Sciences, Universiti Sains Malaysia Health Campus, 16150 Kota Bharu, Kelantan, Malaysia
2Department of Otorhinolaryngology-Head & Neck Surgery, Faculty of Medical Sciences, Universiti Sains Malaysia Health Campus, 16150 Kota Bharu, Kelantan, Malaysia
3Department of histopathology, Faculty of Medical Sciences, Universiti Sains Malaysia Health Campus, 16150 Kota Bharu, Kelantan, Malaysia

ABSTRACT

Tumors of the paranasal sinuses are rare. Usually, patient’s presents at an advanced stage of the disease as the initial symptoms are nonspecific and the tumour remains indolent from any months or even years, leading to not only delay in diagnosis but a conundrum in diagnosing this entity. Herein we are reporting a case of sinonasal carcinoma in a gentleman which was initially diagnosed as invasive fungal sinusitis. Patient’s initial presentation as well as the radiological investigation led towards the diagnosis of chronic invasive fungal sinusitis. The histopathological examination of the lesion was suggestive of sinonasal carcinoma. We would like to highlight the challenge in diagnosis as well as the management of this entity.

Key Words: Sinonasal carcinoma, invasive fungal sinusitis

INTRODUCTION

Sinonasal malignancies comprises of only 3% of all head and neck cancers and 1% of all malignancies, with a peak incidence in the 5th to 7th decades. It is more predominant in the male as compared to the female (1, 2). Initial presenting symptoms of sinonasal tumour are non-specific including rhinorrhea, nasal blockage, and epiphora which oftentimes is neglected by both the patients and even the attending physicians. Apart from that, imaging findings are non-specific and may be misleading. Upon diagnosis, more than half of the tumours have reached an advanced stage with poor prognosis(1, 2).

CASE REPORT

A 57-year-old Malay gentleman with underlying hypertension was referred to our clinic with a one-month history of nose block, facial tenderness, headache and left-sided blood stained nasal discharge with an abrupt two days history of diplopia. According to the patient, the nose block was alternating, constant and progressively worsening, associated with minimal left-sided blood stained discharge. These were accompanied by severe sinus tenderness and occipital headache. There was however no fever, neck stiffness, fits or altered behaviour. Patient also denies any hyposmia, anosmia or cacosmia with no history of purulent nasal discharge.

Address for Correspondence / Yazışma Adresi: Nur Asma Sapiai, MD, Department of Radiology, Faculty of Medical Sciences, Universiti Sains Malaysia Health Campus, 16150 Kota Bharu, Kelantan, Malaysia E-mail: asmahannif@gmail.com
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On further questioning, patient claims that he has history of recurrent rhinorrhea, sneezing and nose itchiness but was not under any follow up or was not taking any nasal spray. His social history revealed that he is a chronic smoker.

Upon reviewing the patient, he was sitting comfortably under room air. Cold spatula test was reduced minimally bilaterally. Anterior rhinoscopic examination revealed no mass. Oropharynx and otoscopic examination were unremarkable. There was no neck swelling or tenderness. Nasoendoscopy revealed no mass, polyp or secretion with normal looking overlying mucosa. Extraocular muscle examination revealed restricted left lateral gaze. (Figure 1) Relative afferent pupillary defect was negative with no proptosis seen. Other cranial nerves apart from 6th nerve were all intact. There was also no facial tenderness.

We proceeded with computer tomography of brain and paranasal sinus which revealed heterogeneously enhancing soft tissue lesion with evidence of bone destruction in the sphenoid sinus, extending anteriorly to the nasal cavity, ethmoid and frontal sinuses, causing total obliteration of the nasal cavity; superiorly extending into the sellar cistern, laterally obliterating cavernous sinus, posteriorly extending into the prepontine region. The similar lesion is also seen in the bilateral maxillary sinuses. The overall lesion extension appears to be more on the left side (Figure 2).

Bony erosion and destruction is seen involving the walls of the paranasal sinuses, sphenoid wings, superior part of clivus, dorsal sella, anterior clinoid processes, ethmoidal bones, lamina papyraces, nasal bone, right body of pterygoid as well as its plates, right zygoma, right zygomatic arch, palatine bone, maxilla bone and bilateral orbital floor (Figure 3).
In the light of patient’s history, clinical and imaging, provisional diagnosis of chronic invasive fungal sinusitis was made. Patient was started with intravenous Amphotericin-B. He subsequently underwent limited septoplasty along with bilateral functional endoscopic sinus surgery. Intraoperatively, the nasal cavity revealed no suspicious lesion, no fungal hyphae or thick mucin, however upon entering the sphenoid sinus, it appeared to be filled with mass which was friable and bleed upon touch. Biopsy was taken from the sphenoid sinus and all over the nasal cavity which was sent for histopathological examination and for fungal studies. Post-operatively, patient was well, there was no evidence of cerebrospinal fluid leak, no worsening diplopia or proptosis and no epistaxis. The fungal culture sent was negative. Patient was then changed to intravenous antibiotics and the Amphotecin-B was withheld as there was evidence of liver impairment. Patient was subsequently discharged home after five days with oral antibiotics and analgesics. The histopathological examination report was consistent with sinonasal undifferentiated carcinoma (Figure 4). Upon subsequent follow-up the ophthalmoplegia worsen as it involved the right side.

We proceeded with magnetic resonance imaging (MRI) of brain which revealed lobulated heterogeneous enhancing mass occupying the entire sinus cavity with infiltration into the cavernous sinus, clivus, suprasellar, prepontine cistern and into the bilateral cheek muscle and hard palate. The lesion is also seen partly encasing the cavernous part of right internal carotid artery posterolaterally, however both the internal carotid arteries are patent. (Figure 5) The mass is also seen extending into the left optic canal with compression of the intracanalicular part of left optic nerve. The intraorbital and intracanalicular right optic nerve appears normal. The globes, extraocular muscles and superior ophthalmic veins appears normal. Patient was subsequently counselled and referred to the oncology department for further management.

**DISCUSSION**

Sinonasal malignancy are rare, and represents less than 3% of all head and neck cancers and 0.8% of all human cancers(1). Among them, approximately 55% originates in the maxillary sinus, 35% in the nasal cavity, 9% in the ethmoid and 1% in the frontal and sphenoid sinuses. With the exception of non-epithelial tumors, sinonasal cancer is a disease that affects adults, being more frequent in men above 50 years of age. Our patient discussed is a male in his 6th decade of life. Squamous cell carcinoma (SCC) is the most prevalent tumour which comprises of more than 50% of all malignant sinonasal tumors. Other sinonasal tumours include adenocarcinoma, melanoma, adenoid cystic carcinoma, esthesioblastoma and sarcomas of bone or soft tissue. The prognosis of these tumors largely depends on the tumor location, histological features and stage of the disease upon presentation(2).

Early symptoms of sinonasal carcinoma are often nonspecific, and may be confused with allergies or sinus infection and are often neglected for a long time. As the tumor grows, it may cause nasal blockage, epistaxis and purulent nasal discharge. Larger tumors can cause patient presented with severe headache or blurring of vision along with loosening of teeth(1, 2).
Our patient presented with a short one-month history of nasal blockage, facial tenderness, headache and left-sided blood stained nasal discharge with an abrupt two days history of diplopia. However, upon further questioning, patient claims that he has recurrent symptoms of rhinorrhoea, sneezing and nose itchiness but was ignored by the patient.

Imaging plays an important role in aiding the primary team to identify the exact location of the tumour and its extension for surgical mapping, to differentiate malignant tumor from benign disease including fungal sinusitis, and to detect presence of lymph nodes. Although predicting tumor types with imaging alone is not always reliable, radiological features that increases the likelihood of malignancy includes unilateral presentation of the symptom, bony involvement, presence of an extensive soft tissue component, soft tissue necrosis and even lymphadenopathy. Cranial CT scan helps to define the extent of the tumor, assess the degree of bony destruction, and also to rule out intracranial extension(3). Signs of malignancy on CT include osteolysis of sinus walls, heterogeneous opacity of the sinus or nasal cavity with heterogeneous enhancement post-contrast. CT scan has a higher accuracy at determining both bony remodeling and erosion of the skull base and sinuses and demonstration of orbital invasion due to its ability to evaluate both the bony orbital wall and adjacent fat. All these can be achieved by performing a cranial CT scan for the patient(1).

However, these findings may also masquerade invasive fungal sinusitis. Hyperattenuating soft-tissue lesion is seen on non-contrast CT within one or more of the paranasal sinuses(4). It may be presented as mass-like and mimic a malignancy with destruction of the sinus walls and extension beyond the sinus confines. Mottled lucencies or irregular bone destruction may also seen in the paranasal sinuses. There may also be sclerotic changes in the bony walls of the affected sinuses representing chronic sinus disease(5, 6). Differentiation between chronic invasive fungal sinusitis and malignant neoplasm may not be possible based on imaging findings. CT helped us in arriving at preliminary diagnosis, but histopathological examination of biopsied tissue gave a definitive diagnosis.

Magnetic resonance imaging (MRI) has also the advantage for imaging of these diseases with optimal tissue contrast and able differentiates neoplasm from adjacent inflammation. It can give superior soft tissue delineation in the adjacent infratemporal fossa, masticator space, and also in evaluation of perineural, intra-orbital and intra-cranial spread(1).

Sinonasal carcinoma is very difficult to treat associated with a poor prognosis. One reason for these poor outcomes is the late presentation and dilemma in diagnosis of the mass mimicking invasive fungal sinusitis. The close anatomic proximity of the nasal cavity and paranasal sinuses to vital structures such as the skull base, brain, orbit, cavernous sinus and carotid artery also contributing factor for this outcome. Therefore, the definitive diagnosis of a paranasal sinus tumour is by histology and biopsy samples for this purpose can be obtained with the aid of nasal endoscopy, in addition to viewing the tumour(1, 2).

CONCLUSION

Diagnosis of paranasal sinus malignancies requires a high index of suspicion among clinician and also radiologist. In cases of persistent or progressively worsening sinonasal symptoms, early radiological imaging and histopathological confirmation are very important in order to institute appropriate treatment. Therefore, these will increase the chances of survival among these patients.

Conflict of interest
No conflict of interest was declared by the authors.

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