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RESEARCH ARTICLE

An Infiltrative Squamous cell carcinoma of the sinonasal tract -A report of a rare case

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Abstract

Carcinomas of the sinonasal tract are very rare neoplasms that arise within the nasal cavity and the paranasal sinus. They present with nasal obstruction, facial pain, epistaxis or perforation of the sinus wall. Here we report of case of squamous cell carcinoma arising in the sinonasal tract of an elderly patient.

INTRODUCTION

Various types of cancer arise from the sinonasal tract. They are relatively rare malignancies accounting for less than 1% of all cancers and 5% of head and neck cancers.[1] The most common site of occurrence of the sinonasal malignancies is the maxillary sinus where 60-70% of the cancers develop, followed by the nasal cavity [2]. Squamous cell carcinoma is the most common histological type of these malignancies making up 60% of the cancers. [3] The most characteristic features of sinonasal squamous cell carcinoma (SNSCC) are that of an insidious onset and non-specific symptoms, [1] thus posing a challenge in early diagnosis. Symptoms like nasal obstruction, facial deformity, neurological symptoms like pain and cranial nerve paralysis may occasionally be encountered. Most cases are diagnosed at an advanced stage. [3]

Various etiological factors have been attributed to the development of this disease. They include viruses like Epstein Barr virus [4] and exposure to environmental agents like nickel dust, mustard gas, isopropyl oil, etc. [2] Wood dust inhalation has been found to increase the risk of SNSCC many times more. [5] The 5 year survival of SNSCC has been reported to be 30-40%. [6] Due to the presentation of most cases at an advanced stage, the prognosis is relatively poor. Treatment strategies include surgical intervention, radiotherapy and chemotherapy.[7]

We present a case of carcinoma arising in the sinonasal tract of a 54 year old male patient. The diagnostic work up carried out for the patient is also described in the article.

CASE REPORT:

A 54 year old male patient reported of an accident 3 months back when a coconut fell on his head and he fell on the left side of his face. 1 month after the incident he noticed a swelling on the same side. The swelling was associated with pain and was increasing in size over time. He complained of blood tinged discharge from his left nostril. He had visited a local hospital previously where he was prescribed medication for the same.

On extraoral examination gross facial asymmetry was noted with a swelling over the middle third of left side of the face extending from the corner of the left eye superiorly to the corner of the mouth inferiorly, ala of the nose medially to left malar region laterally. The skin over the swelling appeared normal with an obliteration of the nasolabial fold. Puffiness was evident in relation to the left infraorbital region along with narrowing of the left palbebral fissure.

Palpation divulged a tense, firm, compressible, tender swelling in that area. The overlying skin showed a slight rise in temperature but with no paresthesia or anesthesia.

On radiographic evaluation, an OPG showed diffuse radio-opacity in the left maxillary antrum (Fig 1) and routine blood examination revealed values within normal limits.

Gross examination:

Incisional biopsy was performed and on gross examination the lesional tissue was a soft tissue approximately measuring 5cm X 4cm in size, greyish brown in colour and firm in consistency.

Histopathology:

Histopathological evaluation of the tissue revealed sheets and strands of hyperchromatic, ovoid, blue tumour cells infiltrating a fibrocellular stroma. The tumour cells showed large pleomorphic nuclei with scanty cytoplasm, an aberrant nuclear cytoplasmic ratio and multiple mitotic figures (Fig 2) The stroma was composed of spindle shaped cells with hyalinization at places. Also evident were numerous lymphogranular bodies dispersed throughout the connective tissue. The lining epithelium was pseudostratified ciliated columnar showing features of dysplasia (Fig 3)

Differential diagnosis:

The extensive and infiltrating nature of the lesion pointed toward a malignancy.The exact nature of the tumour cells could not however be discerned in the routine hematoxylin and eosin stained sections. The possible differential diagnoses that were taken in consideration were lymphoma, peripheral primitive neuroectectodermal tumour (PNET) and sinonasal carcinoma. A panel of markers was employed to zero in on the diagnosis, which included leukocyte common antigen, chromogranin, and cytokeratin. The tumor cells showed immunohistochemical postiivity for cytokeratin (Fig 4) but were negative for leukocyte common antigen and for chromogranin Fig 5 and Fig 6).

Diagnosis and management:

Positivity for cytokeratin and negativity for the other markers confirmed a carcinoma. Thus correlating the clinical, histopathological and immunohistochemical findings we clinched a diagnosis of infiltrating, poorly differentiated sinonasal squamous cell carcinoma.

On confirmation of the diagnosis, radical surgical resection was performed followed by radiotherapy and chemotherapy. The patient is currently under regular follow up for the past 6 months and is free of recurrence.

DISCUSSION:

Nasal and paranasal sinus malignancies are rare. When they occur, they are most commonly found in the maxillary sinus and nasal cavity. However they also occur in the ethmoid, sphenoid and frontal sinuses.[8]

The sinonasal tract may give rise to a broad range of tumours such as squamous cell carcinoma, esthesio neuroblastomas, sinonasal undifferentiated carcinomas, lymphomas, melanomas, alveolar rhabdomyosarcomas, solid adenoid cystic carcinomas, PNETs and small cell carcinomas. [9] Thus the diagnosis of any such tumour is not always straightforward, particularly if it has a small round blue cell tumour appearance in routine histology as was in our case. We considered lymphoma, PNET and SNSCC in the differential diagnosis.

Lymphoma of the nasal cavity and paranasal sinuses is a rare presentation of extranodal lymphoma, accounting for 0.17% of all malignant lymphomas.[10] The nasal cavity is the second most common site of extranodal lymphoma and is more frequently involved than the maxillary sinus. In the Asian population T-cell lymphomas are more common, whereas B-cell subtypes are typically more commonly seen in Western populations.[11] Histologically our case painted a picture similar to a lymphoma where multiple small round blue cells were evident, however on

immunohistochemical evaluation, negativity for leukocyte common antigen aided in eliminating lymphoma as the diagnosis.

PNET is a term used to describe a category of neoplasm of neuroectodermal origin with variable cell differentiation.[12] Earlier the term PNET was used for tumours arising in central nervous system. However in recent times the term PNET includes histologically similar but peripherally located tumours referred to as peripheral PNET. These tumours occur at any age, with a peak incidence in the adolescent years and have no gender predilection.[13] PNET of the head and neck region is very rare comprising of only 3% of the cases.[12]

Microscopically, they comprise of sheets of small round poorly differentiated cells with round to oval nuclei with scant cytoplasm, as was found in this case. Also found are well-defined Homer-Wright or Flexner-Wintersteiner rosettes [12] and histologic and immunohistochemical evidence of neuroectodermal differentiation.[13] The confirmation of diagnosis is by immunoreactivity for two or more neural markers.[12] We thus employed the neural marker chromagranin. However negative expression of this marker helped excluding PNET.

The possibility of SNSCC as the diagnosis could not be established merely by the exclusion of the aforementioned entities; hence cytokeratin expression was evaluated immunohistochemically. Positivity for this marker aided in confirming the diagnosis and we signed out as SNSCC.

SNSCC is the most common variant of the malignancies of the sinonasal cavity. They occur more commonly in males, with a 2.26:1 male-to-female ratio.[1]

The greatest problem that is encountered with SNSCC is the absence of symptoms for a long time due to the invasive growth into the sinus or the retromaxillary region where it does not cause early symptoms.[7] This contributes to a poor prognosis. This was in accordance with our case where the patient noticed a swelling only after an alleged fall.

Imaging techniques like CT scan and MRI are important for assessing patients with sinonasal cancer. Imaging is necessary for evaluating paranasal extension and possible intracranial spread, orbital involvement, infratemporal extension, spread to the nasopharynx, oropharynx or oral cavity, and perineural spread. [3]

A repertoire of studies has been conducted over the last few decades to assess the nature of these sinonasal cancers. Hoppe et al in their study on nasal and paranasal sinus malignancies found that squamous cell variety had the greatest propensity for recurrence and had the poorest overall survival among the cancers.[14] Alos et al found a subgroup of SNSCC to be associated with human papilloma virus infection and these tumours seem to have a significantly better prognosis.[15]

The treatment of SNSCC is usually based on the three therapeutic oncological strategies: radiotherapy, chemotherapy, and radical surgery. As the prognosis of SNSCC is usually poor due to late diagnosis, Kermer et al suggest that the most crucial factor is radical resection allowing for safe tumour margins.[7] Giri et al in their study on SCCs of the maxillary sinus found that the patients treated with a combination of surgery and radiotherapy had the longest disease free survival.[4] In agreement with these reports our patient underwent radical surgical resection followed by radiotherapy and chemotherapy.

Fig 1: An orthopantomogram showing ill defined radiolucnecy in the left maxillary antrum

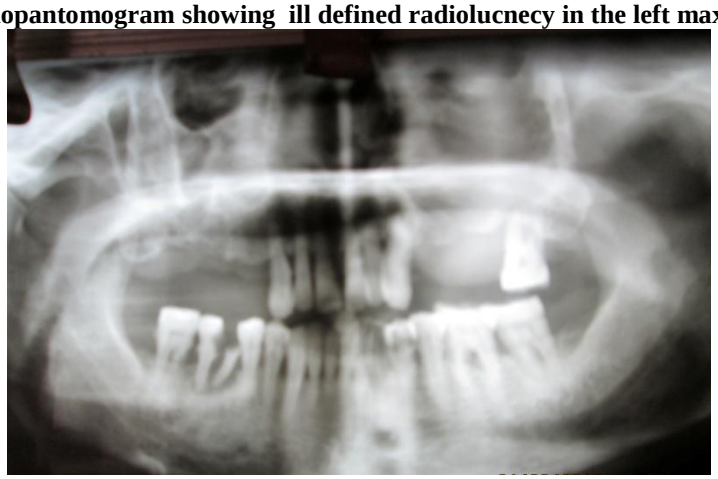


Fig 2: Photomicrograph showing sheets of hyperchromatic tumor cells in a cellular stroma (H &E 10 X)

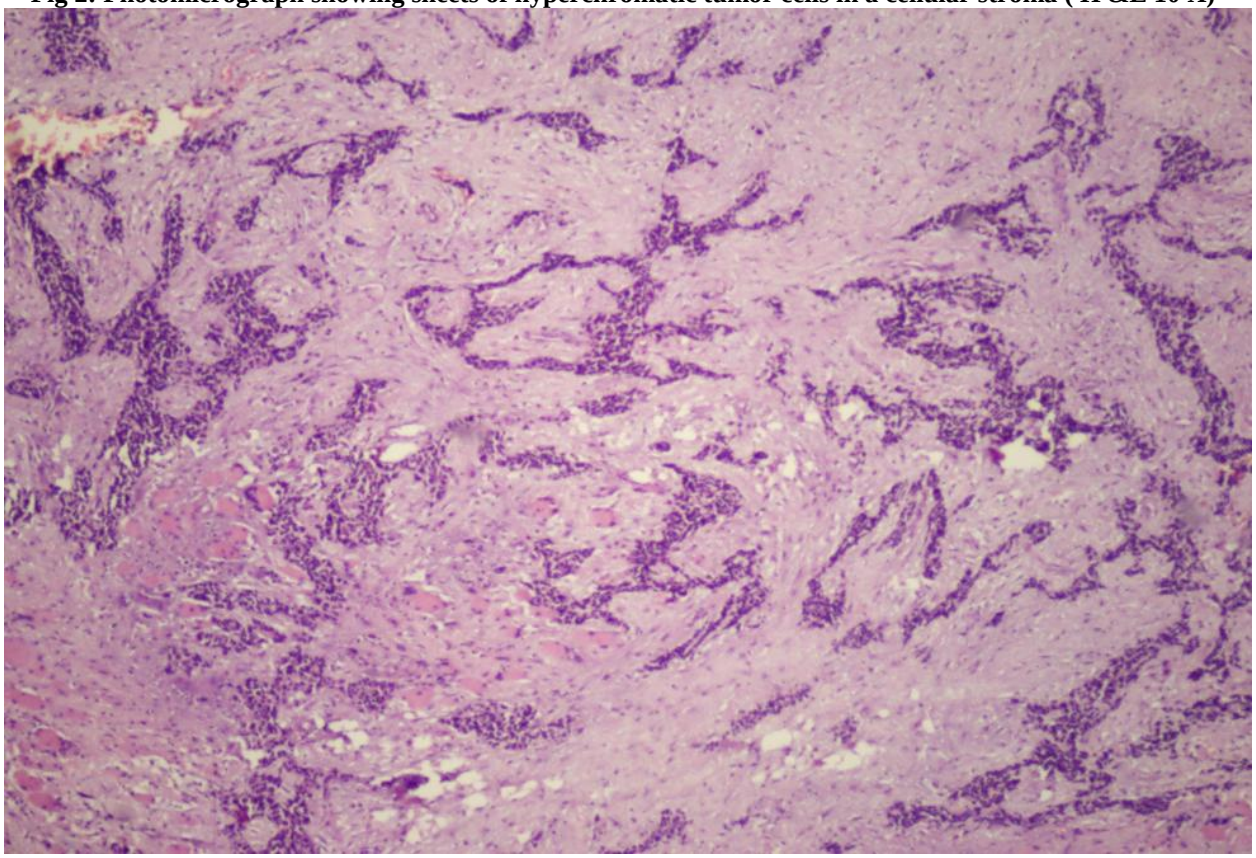


Fig 3: Photomicrograph showing pseudostratiified ciliated columnar repiratory epithelium showing dysplastic features H &E 20X)

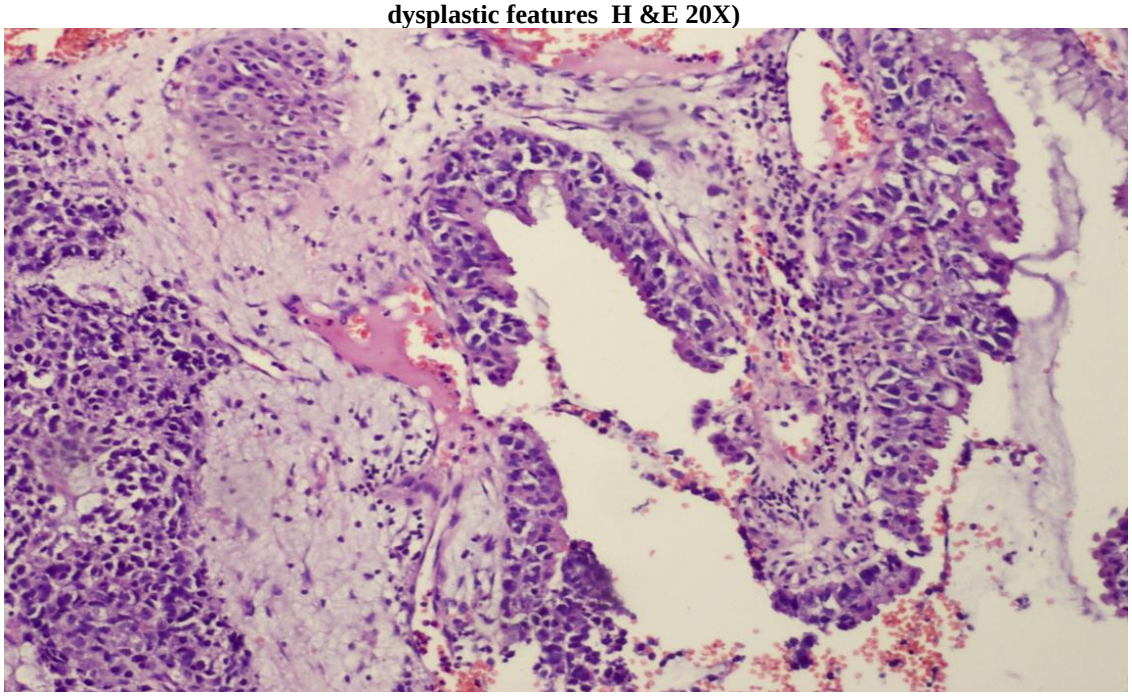


Fig 4: Photomicrograph showing tumor cells negative for Leukocyte common antigen. (anti LCA IHC 10 X)

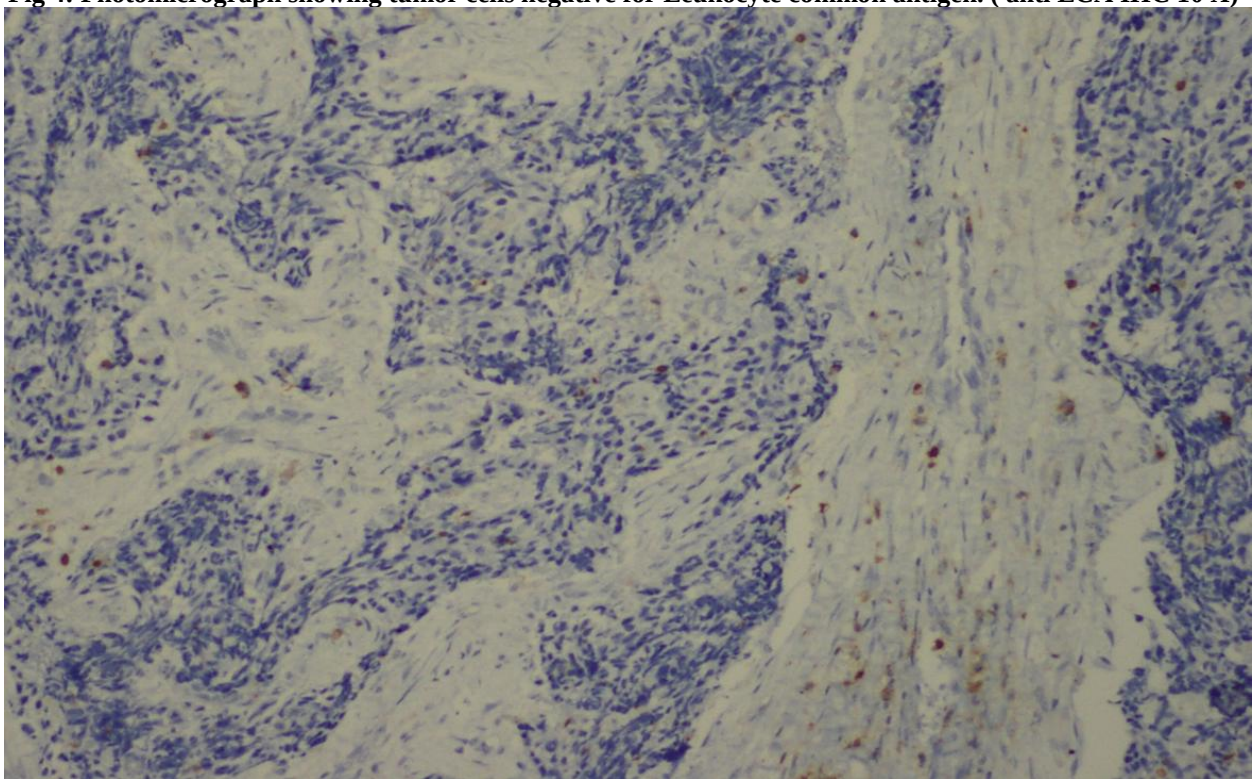


Fig 5: Photomicrograph showing tumor cells negative for Chromagranin (anti- Chromogranin IHC 20X)

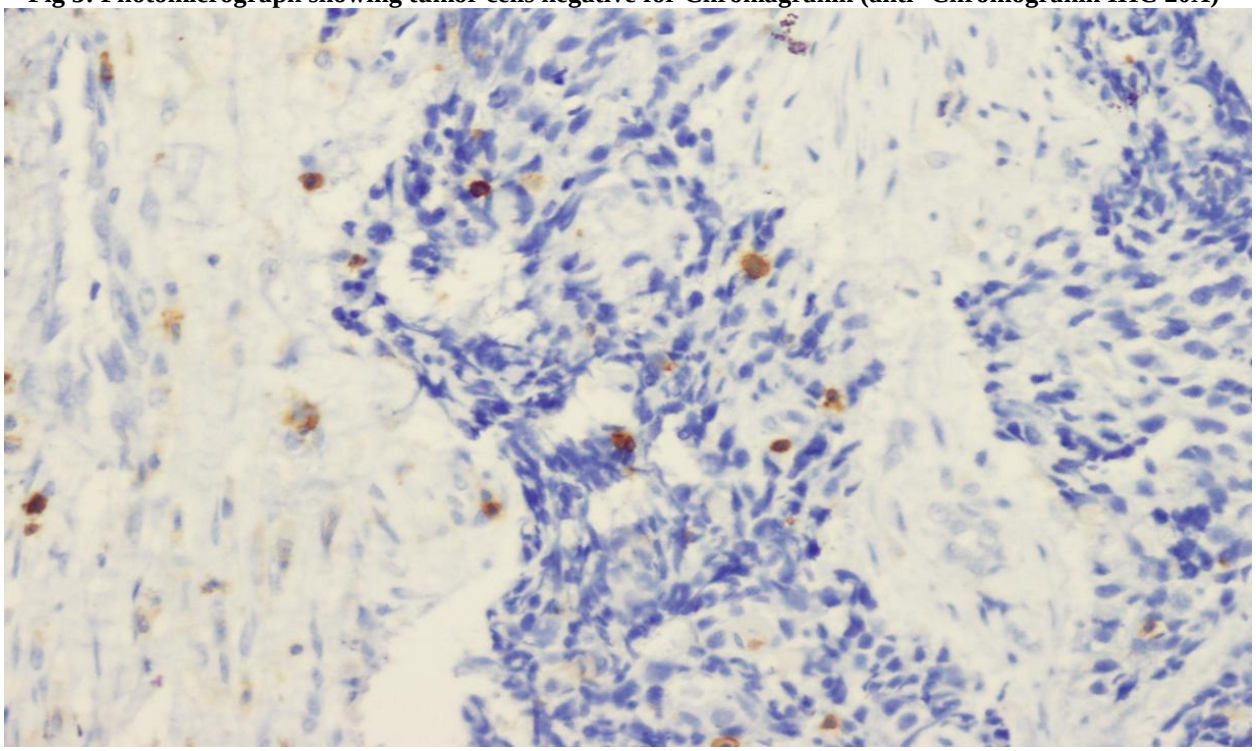
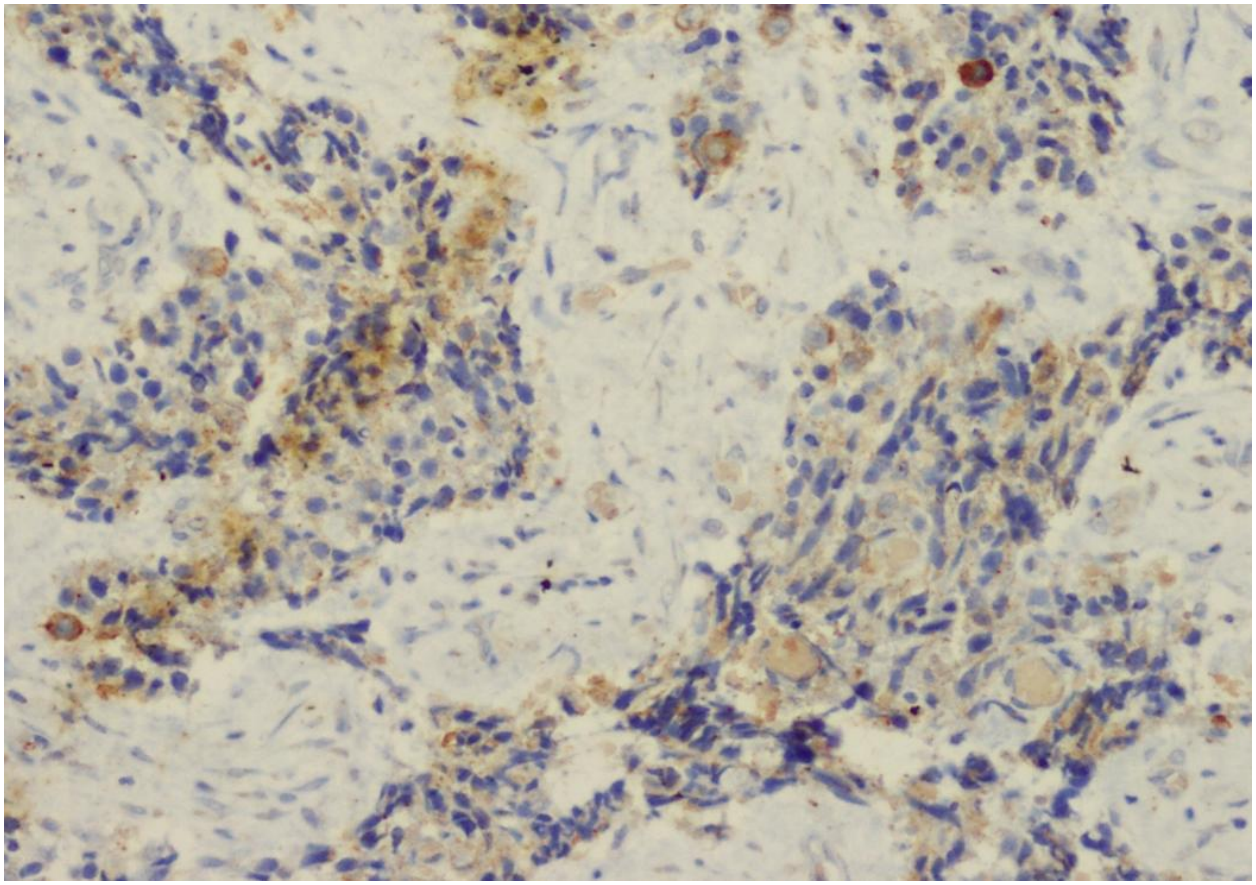


Fig 6: Photomicrograph showing tumor cells postive for Cytokeratin (anti- Pancytokeratin IHC 20X)



CONCLUSION:

SNSCC is the most common malignancy of the sinonasal cavity. Management of this cancer is still a challenge today due to a late clinical onset and anatomic limitations.[7] The overall incidence of SNSCC has fortunately been declining over the past three to four decades. However despite the decrease in incidence the overall survival has not been on the rise.[1]

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