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Case Report *Volume 5 Issue 1*

SMARCB1 (INI-1) - Deficient Sinonasal Carcinoma: Case Report

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Abstract

SMARCB1 (INI-1) are rare and locally aggressive group of sinonasal tract malignancy. Less than 200 cases have been reported in the literature. Presentation of this group of tumours is very late with intraorbital and intracranial extensions. There is no definitive treatment protocol for this entity. We present a case of SMARCB1 (INH) - Deficient sinonasal tumour in a 51 year old female. Mass was diagnosed on Contrast enhanced computed tomography (CECT) and diagnostic nasal endoscopy (DNE). Biopsy and debulking was planned under general anesthesia. Intraoperative samples were sent for frozen section sampling and procedure was completed once diagnosis was made. Immunohistochemical staining was done which showed complete loss of INI-1. Patient was furthur referred to Oncologist for Chemotherapy and subsequent Radiotherapy. This condition is quite rare and presentation is also late. So early diagnosis and prompt management improves the treatment outcome and prognosis of the patient.

Keywords: Sinonasal Mass; SMARCB1; INI-Deficient Tumours; Nasal Cavity Malignancy; Sinonasal Tract Malignancy; Sinonasal Undifferentiated Carcinoma; Malignancy; INI-1 Deficient

Abbreviations: CECT: Contrast Enhanced Computed Tomography; DNE: Diagnostic Nasal Endoscopy; OPD: Out-Patient Department; EMA: Epithelial Membrane Antigen; INI-1: Negative for Integrase Interator 1; PET-CT: Positron Emission Tomography- Computed Tomography.

Introduction

Sinonasal tract malignancy accounts for 3%-5% of all the head and neck tumours. Squamosal cell carcinoma being the most common amongst them [1,2]. SMARCB1 is an emerging and rare pathology with very limited number of publications in literature. The necessity for early diagnosis and treatment for this pathology is owing to its late presentation, aggressive nature and high mortality rates [3].

Case Report

In this case report we present a case of 51 year old female patient diagnosed as SMARCB1. Patient presented in our out-patient department (OPD) with chief complaints of Left sided nasal blockage, epistaxis, left facial pain and headache since 6 months. DNE was done and a lobulated fleshy mass with ulcerative surface and intermittent areas of necrotic tissue and slough covering the mass was seen filling the left nasal cavity completely. CECT scan was done which showed soft tissue heterogeneously enhancing lesion in b/l ethmoids and protruding into the left nasal cavity and left maxillary sinus. Superiorly extending upto skull base with thinning and erosion of the same without intracranial extension. Biopsy, frozen section sampling and debulking was planned

under general anesthesia after obtaining all the basic blood tests and pre-anesthetic checkup. Intraoperatively Adequate biopsy samples were taken and sent for frozen section. Debulking was done using micro-debrider and posterior choana was freed of the obstruction. On Frozen section, high grade round cell tumour was diagnosed and samples were processed further for HPE and IHC examination. Once, sinonasal malignancy was confirmed, complete excision was avoided to prevent complications like CSF leak, bleeding and other intracranial/intraobital complications, as the spread of tumour was extensive and eroding the skull base. Haemostasis was achieved and Left nasal cavity was packed using 10 cm merocel nasal pack.

Nasal pack was removed after 3 days. HPE and IHC confirmed the diagnosis of SMARCB1 (INI-1) deficient sinonasal carcinoma. Tumour cells were strongly positive for Cytokeratin-20 (CK), P63 and epithelial membrane antigen (EMA) and negative for integrase interator 1 (INI-1), Vimentin, SOX-10 and Calponin. Patient was further referred to Oncologist for further treatment. Positron emission tomography (PET- CT) was done for staging of the tumour and IHC evaluation was further done for Ebstein bar virus detection in the tissues. PET-CT showed large FDG avid hyperdense lesion in Left nasal cavity 3.6x3.2x2.8cm, extending into left ethmoid sinuses. No neck nodes or distant metastasis was seen and tumour cells were negative for EBV-LMP1 IHC. Patient was started on Neoadjuvant Chemotherapy and was given 6 cycles of Injection Gemcitabine 1600mg and injection Cisplatin 600mg over a period of 3 months. After completion of the Chemotherapy, PET-CT scan was done which showed marked regression of the tumour size (1.3x0.9x 0.5cm) and good response to the treatment. Then Radiotherapy cycles were initiated. After 3 months on follow up DNE, on comparison with the preoperative DNE, tumour mass showed marked regression complete patent nasal passage. Patient was symptomatically relived from the nasal obstruction. Patient is kept on close monitoring and regular follow up by the oncology team.

Figure 1: Plain CT-PNS and CECT-PNS Coronal (A) & Axial (B) Sections: Soft tissue heterogenous lesion filling B/L Ethmoid sinuses with extension in left nasal cavity with its complete obliteration and protruding into the left maxillary sinus. Right maxillary sinus shows homogenous opacities. Thinning and remodelling of the nasal bones and the sinus walls is noted. Thinning and erosion of skull base without intracranial extension is noted.

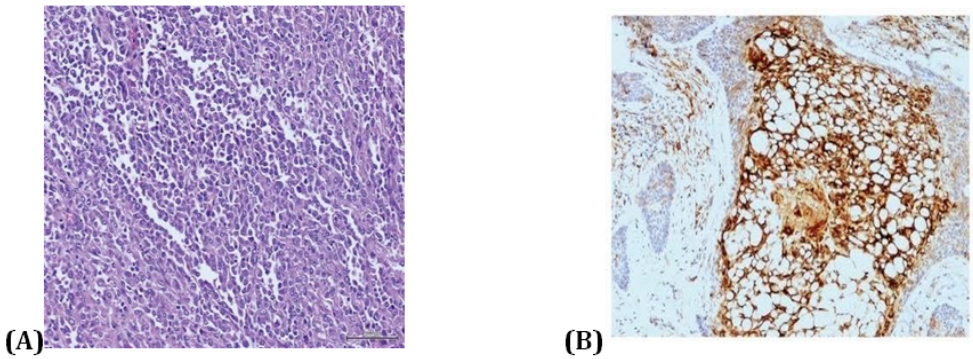

Figure 2: (A) HPE: Tumour cells are round to oval with pleomorphic hyperchromatic nuclei and scanty eosinophilic cytoplasm. Poorly differentiated Rhabdoid morphology. Stroma shows lymphocytic infiltrates admixed with few plasma cells. (B) IHC: Tumour cells are strongly CK positive and EMA positive. Tumour cells show complete loss of nuclear expression for INI-1 (SMARCB-1).

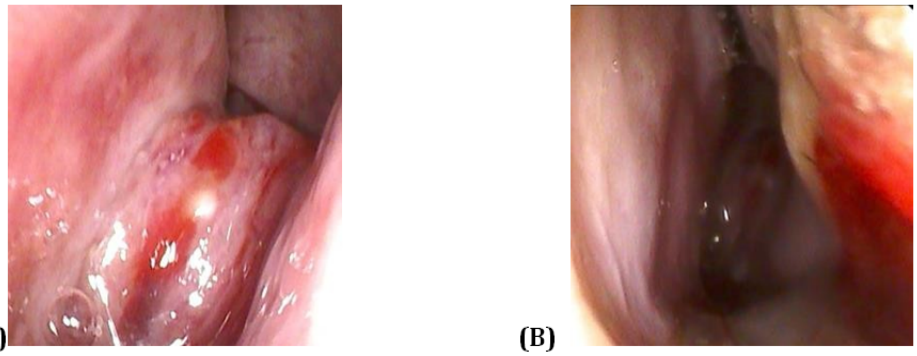

Figure 3: (A): Preoperative DNE with nasal mass completely obstructing left nasal cavity (B): Postoperative and Post CT/RT DNE (After 3 months) showing regression of the mass with patent nasal passage.

Discussion

SMARCB1 (INI-1) deficient sinonasal tract malignancy is a rare entity accounting for very less number of case reports reported in the literature. It was first described in the literature in 2014. Due to limited data on the epidemiology, clinical presentation, diagnosis and treatment protocols, these groups of tumours are enlisted in the category of undifferentiated carcinoma in the fourth edition of world health organisation classification [1]. SMARCB1 is an essential component of SWItch/sucrose non-fermentable (SWI/SNF) protein complexes responsible for cellular differentiation and proliferation. Thus SWI/SNF forms integral part of tumour suppressor genes and most of the head and neck malignancy associated with SWI/SNF, have SMARCB1 OR SMARCA4 mutation [2]. Till date only 100 cases have been documented in pathology literature [3]. This group of sinonasal malignancy is known for its rapid extensive and expansile spread and advance stage of presentation.

This type of sinonasal malignancy is encountered in elderly population in the age group of 50 years-70 years with male preponderance. Presenting symptoms are headache, facial pain, nasal obstruction and epistaxis [2,3]. On radiological imaging, heterogenous mass causing extensive bony destruction of the nasal cavity and the paranasal sinuses should raise suspicion of the aggressive subtype of sinonasal malignancy like SMARCB-1 [2-4]. Definitive diagnosis can be made only on HPE and IHC. Biopsy should be preferably taken from multiple sites to prevent false negative results and also avoid delay in treatment [3,4]. Evolution of IHC stains, recently, have made the diagnosis more accurate and helps in differentiating between different subset of the disease. IHC marker for SMARC-B1, is completely absent in 100% of the cases, making the diagnosis more accurate [4,5]. Tumour morphology shows variability and diversity with basaloid being the most common variant. Plasmacytoid/rhabdoid being the second most common and undifferentiated carcinoma is the third common morphological variant [6]. In our case report, Rhabdoid morphology was seen on HPE. Definitive treatment protocols have not been narrated due to limited data available. Mainstay treatment plan reported in literature is surgical excision and biopsy followed by adjuvant radiation therapy or concurrent chemoradiotherapy [7,8]. Alternate treatment plan is induction chemotherapy followed by surgery or chemoradiotherapy. Targetted therapy is gaining acceptance in management of head and neck malignancy. Advent of molecular biomarkers and targeted therapies can be promising for this kind of intractable malignancy. In this malignancy, absence of SMARCB1 gene upregulates EZH2 activity, which upregulates oncogenic protiens like myc, WNT/b-catenin. Tazemetostat, is an effective inhibitor of EZH2. Risks and benefits of targeted therapies is under trial. Male sex and advanced disease are poor prognostic factors according to the literature [9-12].

Conclusion

SMARCB1 (INI-1) deficient sinonasal tract malignancy are rare group of entity. Presentation of this tumour is often late, with extensive spread of the disease and bony involvement. Preoperative biopsy often gives false positive results due to extensive necrosis and oedema of the sinonasal tissues. Definitive treatment protocols are not yet formed for this group of tumours. CECT and MRI imaging is investigation of choice. Multisitie biopsy and HPE and IHC examination gives the definitive diagnosis. Evolution of IHC stains, INI-1, which is absent in 100% of these tumours, increases the accuracy of the diagnosis. Upfront surgery followed by chemotherapy and radiotherapy or Induction chemotherapy followed by surgery and/ or chemoradiotherapy are the mainstay treatment options available for these tumours. Evolution of biomarkers and targeted therapies can be a useful tool in diagnosing and treating this condition.

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