



Case Report

A 65– year old female with synchronous HIV and Extramedullary Plasmacytoma of Maxillary sinus

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Abstract

Extramedullary plasmacytoma in the head and neck region is a rare malignant neoplasm comprising approximately 3% of all the plasma cell neoplasms and less than 1% of head and neck tumors. This extraskeletal lesion is a unifocal, monoclonal, neoplastic proliferation of plasma cells. Some investigators believe that this lesion represents the least aggressive part of the spectrum of plasma cell neoplasms which extends to multiple myeloma.

Therefore, plasmacytoma is believed to have clinical importance. We report a case of extramedullary plasmacytoma in the right maxillary sinus of a 65–year–old HIV positive female as a clinical rarity with review of the relevant literature.

Keywords

Plasma cell neoplasms; extramedullary plasmacytoma; maxillary sinus

Introduction

Plasma cell neoplasms (PCNs) in the head and neck region constitute a rare group of disorders. It is characterized by monoclonal proliferation of plasma cells and presence of monoclonal immunoglobulins (M–component) in the serum. PCNs occurring in the head and neck region are classified as three disorders: Extramedullary plasmacytoma (EMP), solitary plasmacytoma of bone and manifestations of multiple myeloma.⁽¹⁾ These three disorders represent distinct manifestations of one disease continuum. The clinical and radiological findings are vital in diagnosis and patient management. Thus distinguishing one disorder from other has significant implications for treatment and survival.⁽²⁾

EMP is a rare malignant neoplasm representing approximately 3% of all plasma cell neoplasms and less than 1% of head and neck tumors.^(3,4) The upper respiratory tract, due to its rich content of lymphatic tissue is the most common site for an extramedullary plasmacytoma, accounting for about 80% cases. Only few cases of extramedullary plasmacytoma of the head and neck region associated with HIV

positive patients are reported in the literature. We report a case of extramedullary plasmacytoma of maxillary sinus in a 65–year–old HIV positive female as a clinical rarity.

Case report

A 65–year–old female presented to our department with a chief complaint of extraoral swelling in the right facial region and an intraoral soft tissue mass. Physical examination revealed moderate well defined swelling in the right facial region. (Fig. 1) The swelling was soft and non tender on palpation. On intraoral examination protruding mass from right maxillary sinus obliterating the right upper buccal vestibule and a palatal swelling was noted. (Fig. 2) The mass was smooth, non–tender and soft on palpation. It was pink in color with typically intact mucosa. Occlusal indentations could be seen as red

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Figure 1. Diffuse swelling on the right side of face resulting in facial asymmetry



Figure 2. Protruding mass from right maxillary sinus with typically intact mucosa and occlusal indentations (arrow heads).

patches. There was no cervical lymphadenopathy. She was positive for hypertension and non-insulin-dependent diabetes mellitus.

The orthopantamograph (OPG) of the patient showed floating teeth (14 and 18) with gross destruction of the floor of right maxillary sinus. (Fig. 3) PNS radiograph showed opacification over right maxillary sinus and nasal fossa with

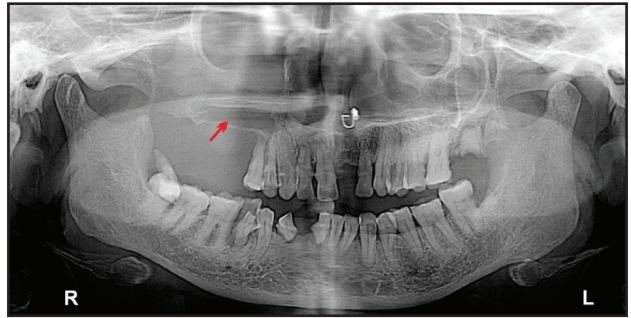


Figure 3. Orthopantamograph (OPG) of the patient showing destruction of floor of right maxillary sinus (arrow).

destruction of posterolateral wall of right maxillary sinus. A computed tomography scan with contrast showed a large rounded, well defined moderately heterogeneously enhancing soft tissue attenuation lesion in the right maxillary sinus with destruction of anterior wall, medial wall, floor and extension into right nasal cavity causing its near complete obliteration. There was erosion along the lateral wall of maxillary sinus with possible extension into the infratemporal fossa. There was thinning and upward bulging of floor of right orbit with erosions at places. The lesion had extended into right ethmoid and frontal sinus with destruction of intrasinus septae. (Fig. 4a, 4b, 4c) Erosion involving right medial and lateral pterygoid plates was also noted.

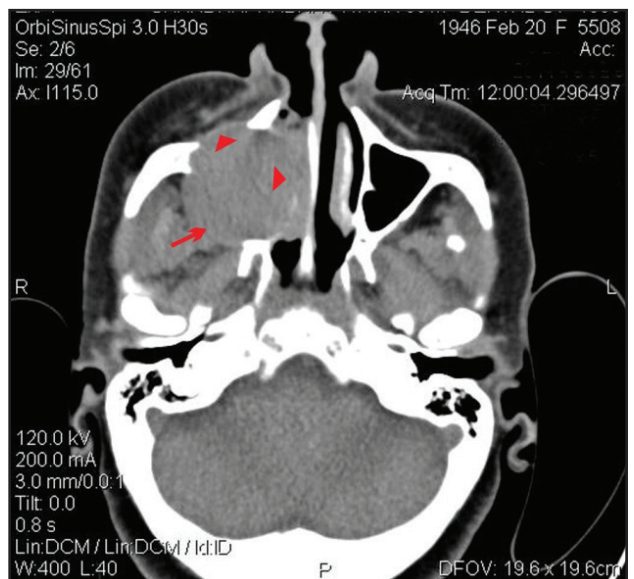


Figure 4a. Axial contrast view showing moderately heterogeneously enhancing soft tissue lesion with destruction of anterior wall (arrowhead), posterolateral wall (arrow), medial wall (arrow head) of right maxillary sinus with extensions into nasal cavity.

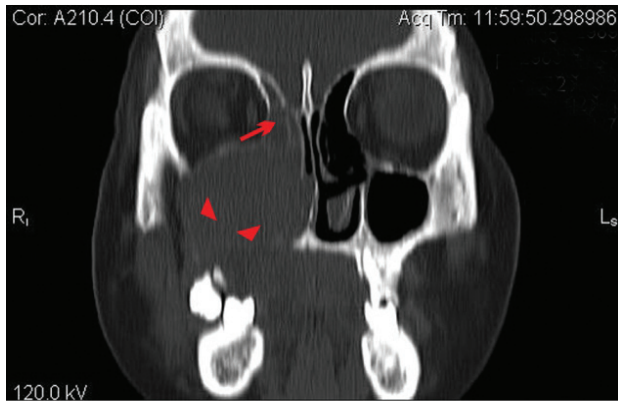


Figure 4b. Coronal view showing destruction of floor of right maxillary sinus (arrowhead), lateral wall (arrowhead), medial wall along with upward bulging of floor of right orbit and extensions into ethmoid sinus (arrow).

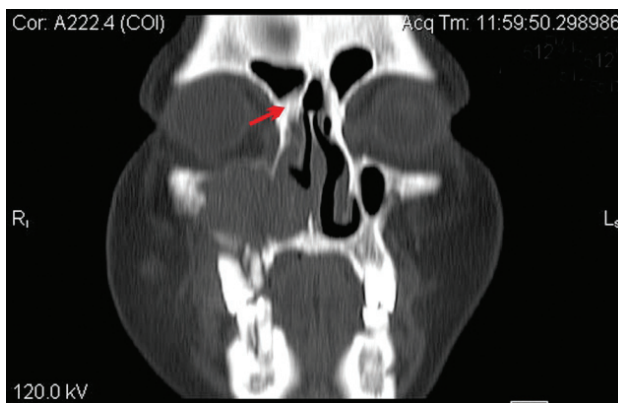


Figure 4c. Coronal view showing destruction of medial wall of right maxillary sinus and extensions into frontal sinus (arrow).

The history of rapid growth together with the clinical and radiographic features suggested a malignant neoplasm.

After re-evaluation of the patient's CT images the lesion was localized precisely. Endonasal endoscopic observation and biopsy was performed under general anesthesia. Histopathological examination revealed respiratory epithelium overlying an encapsulated tumor containing sheets of plasma cells, separated by numerous proliferating, congested and dilated capillaries and foci of necrosis (Fig. 5). Plasmacytoma was confirmed by histological and immunohistochemical analysis.

Further diagnostic test to exclude multiple myeloma were done. Bone marrow aspiration and biopsy were normal. Plasma cells represented <5% of all nucleated cells. The complete blood count and serum biochemical tests were normal. Urine immune fixation electrophoresis did not reveal the

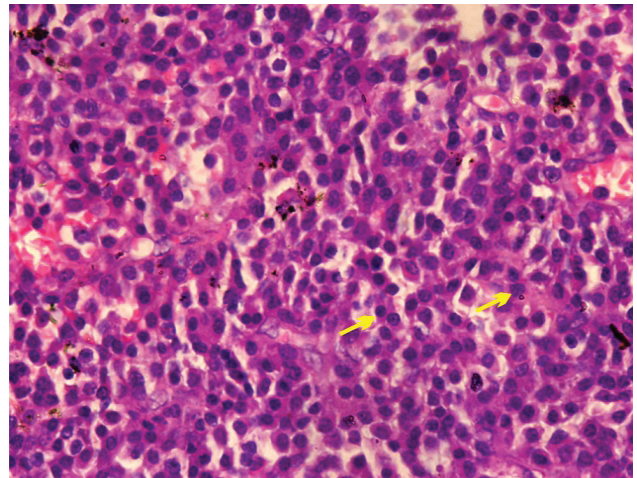


Figure 5. Microphotograph showing homogenous picture of densely packed plasma cells (H&E X 400) (arrows)

presence of kappa or lambda light chains. Tests for serum myeloma protein and Bence-Jones protein in urine were negative. Abdominal ultrasonography and a total body skeletal survey were normal. Patient was tested for HIV and was found positive for HIV antibodies.

These findings confirmed the diagnosis of EMP of the right maxillary sinus. Finally, the patient was referred to ENT department for further management. She underwent right enucleation, right maxillectomy and hemipalatectomy, excision of the right superior, middle and inferior turbinates, floor of frontal sinus and right ethmoidectomy through the combined ENT-neurosurgical approach. However the patient died during the post treatment phase in the hospital itself because of the compromised immune status.

Discussion

Approximately 80–90% of extramedullary plasmacytomas involve the mucous-Associated-Lymphoid Tissue of the upper airways with most involving the nasal and paranasal regions.⁽⁵⁾ It is mainly due to abundance of plasma cells in the submucosal tissues of the upper aerodigestive tract. This may be attributed to chronic stimulation by inhaled irritants or viral infection.⁽⁶⁾ EMP is more common in men, approximately three to four times than in women and is usually seen in the age group of 50–70 years.⁽⁷⁾ Our patient was a female and had no relevant history of smoking or any allergic irritation. The patient was however positive for HIV antibodies.

The specific location in the head and neck region governs most of the symptoms related to the disease. Nevertheless, swelling/mass with additional symptoms of epistaxis, localized pain proptosis and airway obstruction are most common.⁽⁹⁾ Physical examination reveals raised submucosal swelling in cases with definite mass lesion with typically intact mucosa. Cervical lymph node metastasis is seen in about 12—26% of cases at initial presentation⁽⁷⁾ However, an extraoral swelling and an intraoral mass were the only findings present in our case. The appearance and consistency of these tumors differ in different regions. They are usually pedunculated in the larynx and pharynx and sessile in the nose and nasopharynx. They are soft in maxillary antrum but firm in consistency in larynx and pharynx.⁽⁹⁾ The color varies from yellowish grey to dark red and the surface is generally smooth without ulceration.⁽¹⁰⁾

Biopsy is usually the first step towards diagnosis in the presence of a definite mass lesion. Deep biopsies are advised because the tumor is submucosal and the mucosa is thickened from an inflammatory reaction^(2, 7) Radiographic imaging is critical in evaluating the exact location, extent and size of the lesion with plain CT scan helping in bone delineation and contrast CT and MRI helping in determining extension of soft tissue mass.^(7, 8)

EMP of the sinonasal tract appears on CT as a well-defined mass, often having expansile characteristics. It is generally associated with bone remodeling as well as bone erosion. In our case no bone remodeling was detected. The CT images show moderate to marked enhancement after intravenous infusion of contrast material. MR imaging with T1-weighted images reveal a mass of low to intermediate signal intensity exhibiting moderate to marked contrast enhancement. T2-weighted images demonstrate intermediate to high signal intensity.⁽¹¹⁾

Histopathologically, EMP appears as a monocellular proliferation of plasma cells rested in a sparse matrix. Cellular and nuclear atypia may be either minimal or prominent. Three subtypes anaplastic, plasmablastic and plasmacytic have been described. However Batsakis states that the biologic activity cannot be predicted by histological appearance of the lesion.^(1, 2)

Inadequate tissue specimen for special staining and histological examination renders FNAC of limited use in diagnosis of the lesion. Therefore excisional or incisional biopsy, depending upon the size and location of the mass is recommended.^(2, 7)

Extramedullary plasmacytomas should be differentiated from non-neoplastic lesions like plasma cell granuloma, pseudolymphoma, reactive plasmacytic hyperplasia and from malignancies like malignant melanoma, haematopoietic neoplasms, anaplastic carcinoma, olfactory neuroblastoma and metastases. Immunohistochemical studies are required for the differentiation between plasmacytoma and polyclonal infiltrates of plasma cells. Using immunohistochemical techniques, a monoclonal staining pattern demonstrating either one heavy chain class, one light chain type, or both can be demonstrated. Immunohistochemical staining helps in typing the neoplastic and monoclonal nature of cells.^(1, 7)

There is no reported association between HIV infection and sinonasal solitary extramedullary plasmacytoma. However, the frequency of plasmacytomas is increased in HIV-seropositive subjects compared to the general population. The pathogenic mechanisms associated with increased frequency of plasmacytoma in HIV-seropositive subjects are not fully understood. However the constant polyclonal B cell proliferation associated with HIV infection may eventually lead to clonal selection. Also the increased levels of interleukin 6 related with HIV infection; and the clonal expansion of plasma cells caused by co-infection with other viruses (human herpes virus-8, Epstein-Barr virus) observed in HIV-seropositive subjects, are some possible mechanisms implicated in the evolution of B cell neoplasms and the development of plasmacytomas in HIV-seropositive subjects. Solitary extramedullary plasmacytoma in HIV positive patients may occur at a younger age. EMP can be an initial indicator leading to the diagnosis of HIV infection. They tend to be more aggressive with a poor prognosis. This may be due to the poor immunity. A patient diagnosed to have solitary extramedullary plasmacytoma should have their HIV status evaluated, due to the possible association and poor prognosis.⁽¹²⁾

EMP is graded as low (grade 1), intermediate (grade 2) and high (grade 3), based on the cellular atypia. Based on the serum, urine electrophoresis, bone marrow examination, bone scan and radiological evaluation, EMP is staged into three stages according to the spread of the disease. Stage I is disease confined to one site only. Stage II includes tumors with either local extension or lymph node involvement. Stage III include tumor with metastatic spread.⁽¹³⁾ Our case was graded 3 based on cellular atypia and stage II based on local extension.

About 20—30% cases of EMP may progress to multiple myeloma. Multiple myeloma cannot be differentiated from an extramedullary plasmacytoma histopathologically as both are plasma cell neoplasms. The diagnosis of EMP is confirmed by further evaluation and exclusion of any systemic disease. Recommended investigations are complete blood count with differential white blood cell count and platelet count, serum biochemistry including calcium, blood urea nitrogen, creatinine, uric acid, serum protein, serum and urine electrophoresis, bone marrow biopsy, and a skeletal survey to rule out multiple myeloma.^(1, 2, 10) All of these tests were negative in our patient.

The treatment of EMP of the head and neck is a matter of much debate. Some authors advocate radiation therapy alone, others advocate surgery alone or a combination of both.^(2, 8, 14) Plasma cell neoplasms are highly radiosensitive. The optimal radiation dose of 40–60 Gy over a period of 4–6 weeks is generally recommended without surgery.^(15, 16) Chemotherapy is indicated in large or radioresistant tumors or when a secondary tumor or dissemination exists.^(15, 16) Factors such as younger age, large primary tumor, presence of bone destruction, recurrence, and tumors located in the sphenoid, maxillary sinus, orbit, and larynx are associated with poor prognosis on radiotherapy.^(1, 17) Radiotherapy is widely used as a treatment modality of choice, but surgery as a single management modality has been debated. Nevertheless, such an option assumes significance in a developing nation, where patient follow-up is unreliable and economic status is compromised. There is not much difference in terms of survival following radiotherapy or surgery or a combination approach.

Histological appearance and lymph node involvement are not reported to be of any prognostic

significance.^(1, 7) The prognosis is good in solitary plasmacytoma without HIV infection. The patient was not aware of her HIV infection prior to our investigations. In the case presented, keeping in mind the age and the economic status of the patient, poor patient compliance, size and location of the tumor and its aggressive nature surgery with curative intent was undertaken.

Survival rate of EMP is good as compared to multiple myeloma. A poor prognosis is evident in the plasma cell tumor of maxillary sinus as compared to other head and neck plasmacytomas. Prognosis is considered to be especially poor if radiographic examination of maxillary sinus reveals bone destruction.⁽¹⁸⁾ Prognosis of our case was regarded as poor considering the age, HIV status, location (sinonasal region), radiographic features and systemic conditions of the patient.

Conclusion

EMPs occur primarily in the soft tissues of the head and neck region. Thus the possibility of a plasma cell tumor should never be discarded in the presence of a head and neck neoplasm. A detailed evaluation through clinical, biological and radiological investigations should be done to rule out disseminated disease. Also HIV status should be evaluated due to possible association and poor prognosis. Long-term follow-up of the patient is necessary in order to monitor the disease recurrence after treatment.

Ethical Statement

The primary author of this article has taken the patient's approval and informed consent to have this case published.

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