Extramedullary plasmacytoma of the nasopharynx: A case report and review of literature

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Abstract

Plasmocytoma is a monoclonal neoplasm derived from progenitor B lymphocyte lineage. It rarely occurs as solitary plasmacytoma in 5-10% of all plasma cell tumors. Extramedullary plasmacytoma is even rarer, accounting for 3% of solitary plasmacytoma. Extramedullary plasmacytoma of the nasopharynx was found to be the cause of emergency presentation with upper airway obstruction and dysphagia in a 50 years old man. The patient had an emergency tracheostomy and feeding gastrostomy. Tumor biopsy and histology confirmed plasmacytoma. He was treated with chemoradiation without prior surgical excision and he had satisfactory improvement. This report highlights that a high index of suspicion is needed for early diagnosis and prompt treatment.

Introduction

Plasmacytoma is a monoclonal neoplasm derived from progenitor B lymphocyte lineage. It presents commonly as Multiple myelomas which are characterized by excess malignant plasma cells in bone marrow, multiple lytic bone lesion and presence of abnormal gammaglobulin (Bence-Jones protein) in serum and rarely occurs as solitary plasmacytoma (5-10% of all plasma cell tumors).[1,2] Extra-medullary plasmacytoma, which is a variant of solitary plasmacytoma, is even rarer (3-4% of all solitary plasmacytoma).[3] It is a proliferation of malignant plasma cells involving the soft tissues with the absence of malignant plasma cells in the bone marrow and without abnormal gammaglobulin in serum.

The World Health Organization classify plasmacytoma into Multiple myelomas (MM) and solitary plasmacytoma [solitary bone plasmacytoma (SBP) and extramedullary/extraosseous plasmacytoma (EMP)].[4] However, the International Myeloma Working Group (IMWG) classification recognizes MM, SBP, and EMP as distinct entities.[5] Thus, EMP is characterized as a plasma cell tumor, along with SBP and MM, which is considered a more advanced stage of disease.[6]

About 80-90% of EMP arise in the head and neck region,[7-10] and the most common location is the upper aerodigestive tract especially the nasal cavity, paranasal sinuses, nasopharynx, oropharynx and larynx.[3,9,10] Other sites in the head and Neck includes orbit, palate, skin, skull base salivary glands, thyroid glands, tonsils, cervical lymph nodes.[8] Generally, symptoms are non-specific and depend on the site, local tumor mass effect and spread of the tumor by adjacent bone erosions. In the nasopharynx, symptoms of EMP include nasal congestion, anosmia, hyposmia, epistaxis, rhinorrhea, pain, and neck swelling. Obstruction of the aerodigestive passage may occur in advanced stage.[6] Radiotherapy and surgery are the main treatment modalities for EMP in the head and neck.[9,8,11,12]

There are few reports from Africa specifically describing EMP of the nasopharynx. This report was to convey our recent experience with EMP of the nasopharynx in the context of the limited literature on this topic.

Case Report

A 50-year-old man presented with a 6-month history of persistently progressive nasal obstruction, associated with intermittent, unprovoked, self-limiting nose bleeding and recurrent nasal discharge. Three months later he developed a feeling of a lump in the throat with muffling of voice and progressive dysphagia to semisolid and liquid. Subsequently, there was progressive difficulty in breathing with dyspnea at rest, but no cough, sore throat, hoarseness or neck swelling. He also had left ear blockage and hearing impairment but no other otologic or ocular symptoms. There was weight loss but no history of bone pains. He neither smokes cigarette nor drinks alcohol.

On clinical examination, he was severely dyspnoeic in respiratory distress, moderately dehydrated and wasted. Nasal endoscopy revealed engorged inferior turbinates and fleshy, friable mass deep in nasal cavities, obstructing the choanae bilaterally, no contact bleeding. There was a mass in the nasopharynx, tenting the soft palate and extending to the oropharynx (abutting the base of the tongue) to cause upper airway obstruction (Figure 1). The right ear appeared normal, but the tympanic membrane was dull on the left. Other Ear, Nose, Throat and systemic examinations were unremarkable except for tachypnea (respiratory rate = 36cycles/minute). There was no cervical lymphadenopathy. Hematological and other laboratory workups, including serum protein electrophoresis, calcium and phosphate, bone marrow aspiration biopsy and urinary Bence-Jones protein were all normal confirming no systemic involvement. Computed Tomography showed an isodense lesion in both nasal cavities extending through the choanae into the nasopharynx and oropharynx up to the level of the hyoid bone (Figure 2). Audiometry findings were moderate conductive hearing loss and a type B tympanogram in the left ear.

He was admitted, had an emergency tracheostomy to relief upper airway obstruction and a feeding gastrostomy (Figure 3). Pernasal punch biopsy taken in the clinic for histology shows nasopharyngeal mucosa with squamous metaplasia and stroma infiltrated by sheets of neoplastic plasma cells with eosinophilic cytoplasm, eccentric nuclei, and frequent mitosis (Figure 4). Immunohistochemical staining showed strong positivity to lambda restriction (Figure 5). He was treated as a case of Extra-medullary plasmacytoma of the nasopharynx and he had 45Gy of radiation in 30 fractions over 6 weeks after having 2 cycles of chemotherapy (Cyclophosphamide, Dexamethasone, and

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Key words: Extramedullary plasmacytoma, Nasopharynx, radiotherapy.

Contributions: the authors contributed equally.

Conflict of interest: the authors declare no potential conflict of interests.

Funding: none.

Received for publication: 29 April 2019.
Revision received: 10 June 2019.
Accepted for publication: 10 June 2019.

Licensee PAGEPress, Italy
Pyramid Journal of Medicine 2019; 2:52
doi:10.4081/pjm.2019.52

Thalidomide) as a radiosensitizer and tumor regressed significantly and oropharyngeal examination was normal (Figure 6). He has been followed up for 10 months with no tumor recurrence.

Discussion

Majority of EMP occur between the 4th and 7th decade of life, the median age is 55 years although one-third of patients are under 50 years old.[8] There is a 3:1 male dominance.[3,13] This case report is a 50 years old male.

The patient presented with catarrh, nasal obstruction, anosmia, epistaxis and hyponasal speech; similar to nonspecific symptoms associated with EMP of upper airways in other reports.[6] However, he also had dyspnea at rest and dysphagia due to upper aerodigestive tract obstruction from mass/pressure effect of a bulky tumor in the nasopharynx that has extended down into the oropharynx thus presenting as an emergency. This size of tumor which is due to late presentation is not unusual in developing countries like ours because of a combination of factors such as poverty, ignorance and poor accessibility of health care.[14] The clinical staging of EMP was generally based on the Wilshaw method,[15] that classify soft tissue plasmacytoma into three clinical stages.

Stage I - Limited to an Extramedullary site;

Stage II - Involvement of regional lymph node;

Stage III - Multiple metastases.

In our case, the patient was in stage I since the tumor was confined to the primary site and there was no cervical lymph node or obvious metastasis. Cervical lymph node metastasis was reported in 12-26% of cases at initial presentation.[16]

Since these neoplasms may signal the presence of multiple myeloma, a full evaluation is required to exclude disseminated disease. Abemayor *et al.*[11] recommended a complete blood count with white blood cell count and platelet count, erythrocyte sedimentation rate, bone marrow biopsy, serum biochemistry including calcium, blood urea nitrogen, creatinine, uric acid, serum protein, serum and urine electrophoresis and a skeletal survey to rule out multiple myeloma[11] while Galleni *et al.*[8] recommended the diagnostic criteria for EMP as: tissue biopsy showing monoclonal plasma cell on histology, bone marrow plasma cell infiltration not exceeding 5% of all nucleated cell, no evidence of myeloma or osteolytic lesion, absence of hypercalcemia or renal failure, absent or Low serum or urinary M-protein level (Paraprotein concentration / monoclonal immunoglobulin <2 g/dL), even if present.[8] In less than 25% of patients, a monoclonal paraprotein can be detected in the blood or urine.[6] Our case satisfied all the criteria described above. At the initial presentation of a localized plasmacytoma, diagnosis is based on histological confirmation of monoclonal plasma cell infiltration of a

Figure 1. Oropharynx at presentation showing bulging of the soft palate and oropharyngeal extension of the lesion.

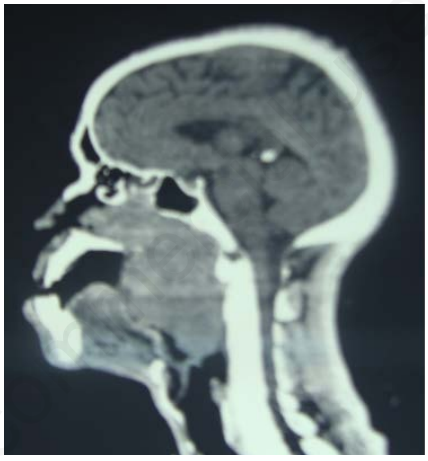

Figure 2. Computerized tomography scan (sagital view) showing isodense lesion in the nose extending through the choanae into the nasopharynx and oropharynx up to the level of the hyoid bone.

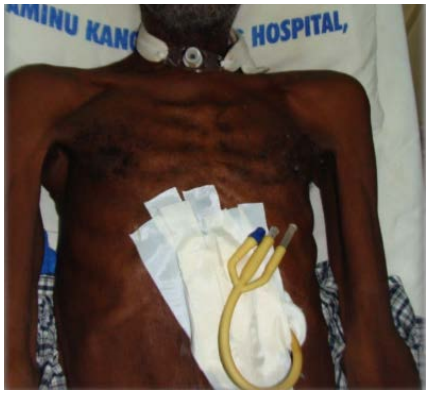

Figure 3. Post resuscitation showing tracheostomy and feeding gastrostomy tubes *in situ*.

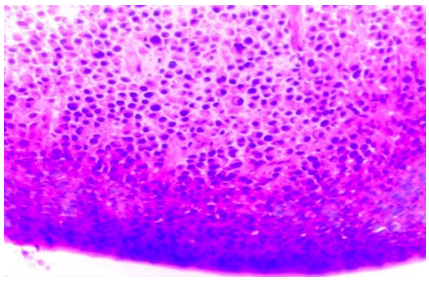

Figure 4. Histology section showing nasopharyngeal mucosa with squamous metaplasia and stroma infiltrated by sheets of neoplastic plasma cells with eosinophilic cytoplasm, eccentric nuclei, and frequent mitosis.

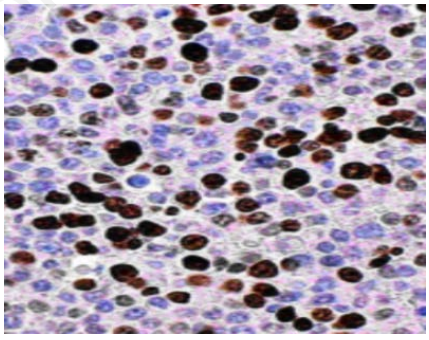

Figure 5. Immunohistochemical staining showing strong positivity to lambda restriction.

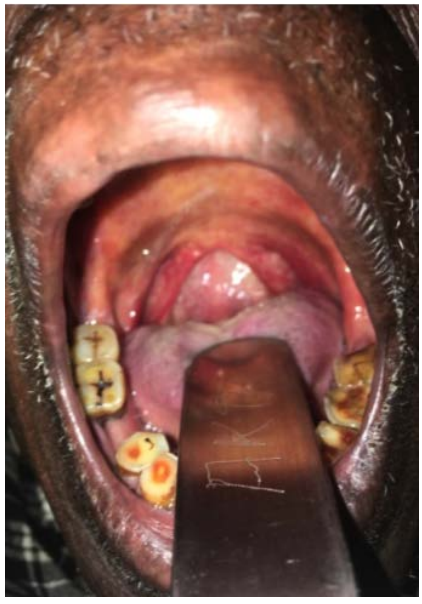

Figure 6. Post treatment oropharyngeal examination showing normal oropharynx with no bulging of the soft palatal.

single disease site and on the exclusion of systemic myeloma.[12] Therefore, the goal of testing is to exclude systemic involvement characteristic of multiple myeloma.[11]

Clinically and histologically, EMP mimics nasopharyngeal cancer which is common in similar age group in our setting therefore a high index of suspicion that is needed for early diagnosis and prompt treatment. Due to the submucosal nature of these tumors, deep biopsies or excisional biopsies are sometimes required for diagnosis.[13] It may also mimic other lesions, such as lymphoma, reactive plasmacytoma, and plasma cell granuloma; these are best differentiated by immunohistochemistry. Immunohistochemically, the plasma cells express cytoplasmic immunoglobulin with light chain restriction.[17] With new advances in flow cytometry and immunophenotyping, CD 138 has been recognized as a marker for neoplastic plasma cells,[6,17] but these investigations were not available in our center at the point of diagnosis. However, immunohistochemical staining on our patient showed strong positivity to lambda restriction.

Computerized tomography scan (CT) or Magnetic resonance imaging (MRI) is critical to delineate the extent of local disease,[13] however, there are no characteristic imaging criteria.[18] The purposes of imaging in the diagnosis and management of plasmacytoma include; detection of extramedullary and intramedullary foci of the disease, exclusion of additional lesions and bone marrow involvement, evaluation of the risk of pathological fractures, guiding needle biopsy, planning radiotherapy and surgery.[7] Although Positron emission tomography (PET)/CT studies are more sensitive than other imaging modalities for localizing extramedullary sites of the disease, based on currently available evidence PET imaging cannot be recommended for routine use in the management of myeloma patients. However, if the decision to perform PET scanning has been taken, it is advisable to avoid undertaking the procedure within 4 weeks of chemotherapy or 3 months of radiotherapy.[7]

Generally for EMP, surgery or radiotherapy are acceptable treatment methods depending on the resectability of the lesion,[19] but combined therapy is suggested when complete surgical tumor resection cannot be applied and/or lymph node areas are affected.[19,20] EMP is also highly radiosensitive, with local cure rates of up to 100%.[7] The majority of EMP occurs in the head and neck region and radical surgery with curative intent is generally a mutilating procedure as it is not always possible to obtain adequate margins in the head and neck as there is significant morbidity associated with adequate resection. Therefore, given these limitations, as well as the responsiveness of EMP to radiation, surgery is currently a second line treatment of EMP in the Head and Neck. It should thus, be treated by radical radiotherapy encompassing the primary tumor with a margin of at least 2 cm including involved cervical nodes using 40-50 Gy depending on the size of the tumor instead of radical surgery.[7,8] However, for patients with EMP in other areas, complete surgical removal should be considered when resectable and adjuvant radiotherapy will only be required in case of inadequate surgical margins.[3,19]

Our patient was treated using radiotherapy with the excellent outcome despite a bulky disease and surgery was limited to taking a pernasal punch biopsy in the clinic using local anesthesia, resuscitating the patient with emergency tracheostomy to relief upper airway obstruction and a feeding gastrostomy. The neck was not irradiated since it was not involved. The use of radiotherapy in an environment such as ours is, however, subject to its availability.

Prognostic factors have not been clearly delineated for EMP, although it is thought that tumor size (> 5cm), age (>40 yrs), high-grade tumor (anaplastic), residual or recurrent disease and persistence of serum/urinary para-protein after treatment may be poor prognostic indicators for recurrence and it is such patients that should have adjuvant chemotherapy.[7,6,11] The patient in this report had adjuvant chemotherapy since he was 50 years old and the tumor size was >5 cm. This may have improved the outcome in him. Multiple myeloma (MM) is believed to be a disseminated form of EMP with conversion occurring in about 15 - 35%, usually in 2-3 years.[6-8] It is for this reason that long term follow-ups of patients to identify progression to MM early is of importance. Multiple myeloma is indicated by the presence of CRAB (increased calcium, renal insufficiency, anemia, or multiple bone lesions) features and it is often associated with POEMS syndrome (Polyneuropathy, Organomegaly, Endocrinopathy, Multiple myeloma, and Skin changes).[20] Our patient had been disease-free for 10months.

Conclusions

Solitary extramedullary plasmacytoma of the nasopharynx is extremely rare. It can present as an emergency requiring resuscitation. Clinicians need a high index of suspicion for early diagnosis and treatment as the lesion could mimic other conditions. There is a need for a close collaboration between the hematologist, radiotherapist, and surgeon. Further studies are recommended.

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