INTRODUCTION

Plasma cell tumours or plasmacytoma is a malignant plasma cells tumour growing within soft tissue or in the axial bony skeleton. It can present as a discrete solitary mass (solitary plasmacytoma) or as part of multiple myeloma. EMP which is also called extrametullary plasmacytomas, is defined by the WHO classification (2017) as localized plasma cell neoplasms that arise in tissues other than bone (1). It represents 3% of plasma cells neoplasms and almost 80% occur in submucosal lymphoid tissue in the head and neck region. The main site of occurrence is the nasal cavity, paranasal sinuses, tonsillar fossa, and oral cavity but it may also occur in the gastrointestinal tract, urinary bladder, salivary gland, lymph nodes, and skin (2, 3). It is important to distinguish EMP from other plasma cell tumours especially multiple myeloma as they carry different prognosis and management.

CASE REPORT

A 54-year-old male complained of unilateral left sided nasal stuffiness, followed by complete nasal obstruction of one-year duration, worsening in nature with episodic epistaxis and facial pain. Anterior rhinoscopy revealed a left nasal cavity mass. Nasal endoscopy showed an extensive left intranasal mass that extending posteriorly and occupying nasopharynx which can be seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1]. The origin of the mass cannot be identified as the scope cannot be inserted further and it was seen from nasoendoscopy on right nasal cavity [Figure 1].

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ABSTRACT

Extramedullary or extrametullary plasmacytoma (EMP) is a rare neoplasm characterized by monoclonal proliferation of plasma cells arising outside the bone marrow. It shows a predilection for the head and neck region, primarily in the upper respiratory tract. The commonest site of occurrence are nasal cavities and nasal septum followed by oropharynx. Even though EMP of the nasal cavity is rare but it should be considered in the differential diagnosis of nasal cavity mass. This tumour may invade into the adjacent tissues and acts as a locally aggressive neoplasms. Thus, crucial attention to the clinical, radiological, and histopathological findings should be taken into consideration for accurate diagnosis. Furthermore, appropriate management must be carried out to prevent further dissemination of the disease. We report a case of a 54-year-old male who presented with a progressive nasal obstruction for one-year duration, in which the biopsy of the left nasal cavity mass revealed EMP. He underwent endoscopic debulking surgery and then was subjected for radiotherapy. The clinical and histopathologic findings of plasmacytoma are discussed further.

ÖZET

Ekstramedüller veya ekstraossöz plazmasitom (EMP), kemik iliğinin dışında ortaya çıkan plazma hücrelerinin monoklonal proliferasyonu ile karakterize nadir bir neoplazmdır. Baş ve boyun bölgeleri için, öncelikle üst solunum yollarında bir ön eğilim gösterir. En sık görülen bölge nazal boşluklar ve nazal septum ve bunu orofarinks takip eder. Nazal kavitenin EMP’si nadirdir, ancak nazal kavitenin ayrıntı tansında düşünüldü. Bu tümör bitişik dokulara girebilir ve lokal olarak agresif bir neoplazma gibi davranır. Bu nedenle doğru tani için klinik, radyolojik ve histopatolojik bulgulara çok dikkat edilmelidir. Ayrıca, hastalığına daha fazla vayvetilmesi önlemek için uygun yönetim yapılmalıdır. Sol burun boşluğu kitlesinin biyopsisinin EMP’i ortaya çıkardığı bir yıllık proses bir burun tıkanması ile başlayanın 16 yaşında bir erkek olgu sunuldu. Endoskopik kitle çıkarma operasyonu geçirildikten sonra radyoterapisi tabi tutuldu. Plazmasitomunun klinik ve histopatolojik bulguları daha ayrıntılı olarak tartışılmalıdır.
Figure 1: Endoscopic view of left nasal cavity (A) showed nasal mass occupying nasal cavity with bulged medial wall of maxilla and extend posteriorly to the nasopharynx and posterior choanae (B).

Histopathological examination (HPE) revealed a dense infiltration of plasma cells of varying degrees of differentiation [Figure 2A]. The immunocytochemistry studies confirmed the diagnosis of EMP [Figure 2B]. A systemic work up to exclude multiple myeloma were performed. Renal and liver profile including calcium levels were normal. Serum and urine assays for Bence Jones protein were absent. Bone marrow aspiration (BMA) and trephine biopsy did not show infiltration of neoplastic plasma cells within marrow spaces. Radiological skeletal survey were negative. Computed tomography (CT) of the paranasal sinuses showed large heterogenous soft tissue lesion occupying left nasal cavity and left paranasal sinuses measuring 8.0 cm (AP) x 5.8 (W) x 6.7 cm (CC) extending posteriorly to the nasopharynx [Figure 3] with no evidence of systemic involvement. Thus, a diagnosis of EMP was made.

Figure 2: Haematoxylin and eosin staining (A) show tumour tissue composed of sheets of plasma cells of varying degrees of differentiation. These cells exhibit eccentrically placed nuclei with eosinophilic cytoplasm and show strong diffuse membranous positivity for CD138 immunostains (B).

Figure 3: Coronal (A) and sagittal (B) CT scan of the sinuses showed the left nasal cavity and left maxillary sinus are occupied with soft tissue density lesion.
Endoscopic debulking surgery was done under general anesthesia with no complications. Intraoperatively revealed a friable and vascularized mass occupying left nasal cavity. It extend posteriorly to the posterior choanae and nasopharynx causing obliteration of bilateral fossa of Rosenmuller and torus tubarius. Histologic examination revealed a mass originating from the mass septum to the right side. Left osteomeatal complex cannot be seen. Site of the tumour origin cannot be identified as the mass was bleeding during probing. Debubbling surgery was done using microdebrider and coblator. However, complete removal was abandoned due to uncontrolled bleeding leaving the mass at posterior choanae and nasopharynx.

The patient received post-operative radiotherapy with a radiation dose of 50 Gy in 25 fractions over 5 weeks. At 1 year post radiotherapy, patient presented with pain and tenderness in the involved area. A repeat CT scan after 6 weeks post radiotherapy showed significant regression of left nasal mass. He was planned to have a repeat CT scan after 6 weeks post radiotherapy.

DISCUSSION

Plasma cells are mature immunocompetent cells derived from B lymphocytes in the bone marrow. They provide specific non-cellular immunity within the immune system by producing specific immunoglobulin which also known as antibodies against antigens in different tissues. Plasmacytoma is a very rare, discrete, solitary mass arising from neoplastic proliferation of these plasma cells. The first case of plasmacytoma was reported by Schirde in 1905 (3). It is characterized by neoplastic proliferation of a single clone of plasma cells, producing a monoclonal immunoglobulin. The commonest immunoglobulin expressed by the tumour cells is Ig G with kappa chain restriction. It can present as a single lesion (solitary plasmacytoma) or as multiple lesions (multiple myeloma). Solitary plasmacytommas are further divided into 2 groups based on their site of development. If this abnormal plasma cell arise in the bone, it is known as solitary bone plasmacytoma (SBP) whereby extraosseous or extramedullary plasmacytoma (EMP) is a neoplastic monoclonal plasma cells that arise in the soft tissue, 4, 5.

EMPs mostly occur in head and neck area and they represent approximately 4% of nasal cavity tumours. EMP has also been reported to arise in other anatomic sites, including the gastrointestinal tract, lymph node, bladder, CNS, breast, thyroid, testis, parotid and skin (1). It may also develop anywhere in the body in a patient who has a known SBP or multiple myeloma. These extramedullary lesions probably represent manifestations of disseminated disease with the primary focus on tumour being in bone (6). However, there is a possibilities that these extramedullary lesions may represent as separate independent primary foci of tumour such as in our reported case.

EMP tends to occur in sixth and seventh decade of life and it is three to four times more common in men than in women (6). This is similar with our patient. The aetiology of this disease remain unknown, but chronic irritation from inhaled irritants and viral pathogenesis has been suggested (5). Our patient was a chronic heavy smoker and this could be the possible risk factor for this pathology.

Plasmacytommas occurring in the head and neck area usually have initial clinical presentation without evidence of tumour elsewhere. When occurring in the upper respiratory passages, most patients present with symptoms such as nasal obstruction, nasal discharge (rhinorrhea) and epistaxis (2). Similarly in this case, nasal blockade and epistaxis were the major complaints. Those patients whose tumour grew predominantly in the maxillary sinus usually presented with pain and tenderness in the involved area.

The evaluation of a patient with a suspected EMP should include a biopsy of the suspected lesion for HPE. In histopathology tissue examination, plasma cells are present with a morphologic spectrum ranging from mature forms with abundant cytoplasm and perinuclear halo to highly atypical cells with large nuclei, hyperchromatic clumped chromatin, and prominent nucleoli with scant cytoplasm. Amyloid deposition may be seen in 15%–38% of EMP. Immunohistochemistry study is important to demonstrate monoclonal expression of light immunoglobulin chains and establish the diagnosis (5).

A systemic evaluation must be performed in order to exclude systemic involvement before the diagnosis can be made. The laboratory investigations include full blood count, renal and liver functions, calcium level, erythrocyte sedimentation rate, full blood picture, serum and urinary protein electrophoresis, a study of urine for Bence-Jones protein, and bone marrow examination by aspirate and biopsy (7, 8). Bone marrow biopsies and immunoelectrophoretic studies of serum and urine performed in patients with EMP showed abnormalities in only a small percentage of cases (8). Booth et al. reported that EMP patients who subsequently did develop multiple myeloma often had serum protein abnormalities and an elevated erythrocyte sedimentation rate when EMP was first diagnosed (7).

A skeletal survey and imaging either by a positron emission tomography/computed tomography (PET/CT) scan or magnetic resonance imaging (MRI) of the entire spine and pelvis is essential to evaluate the extent of local disease and to rule out the dissemination of disease (5). As in our reported case, patient underwent radiology skeletal survey followed by computed tomography (CT) scan in order to look for distant dissemination of disease.

For a diagnosis of EMP, all of the following diagnostic criteria must be met: 1. Tissue biopsy of single extramedullary mass showing monoclonal plasma cells, 2. Histologically normal marrow aspiration and trephine biopsy by showing bone marrow plasma cell infiltration not exceeding 5% of all nucleated cells, 3. Normal result on skeletal survey including radiology of long bones, 4. Absence of anemia, hypercalcemia or renal impairment due plasma cell dyscrasia, 5. Absence or low serum or urinary level of monoclonal protein concentration (3). All these criteria were fulfilled in our case and supported our final diagnosis.

Wilshaw et al. classified soft-tissue plasmacytoma into 3 clinical stages, as follows: Stage I – Limited to an extramedullary site, Stage II – Involvement of regional lymph nodes and Stage III – EMP with multiple metastasis (8). Based on this classification, our reported case was diagnosed as EMP Stage 1.

Plasmacytoma of nasal cavity should be differentiated from other benign lesions having plasma cells such as plasma cell granuloma, chronic granulomatous inflammation and rhinoscleroma. Another differential diagnosis include aggressive malignant neoplasms, such as large B-cell lymphoma, poorly differentiated carcinoma, melanoma, as well as other types of sarcoma with features of epithelial differentiation. Immunohistochemistry study will help in distinction among those tumours by demonstrating the monoclonal nature of the proliferating plasma cells (9).

When solitary EMP involved localized soft tissue particularly in the head and neck region, it should be treated as a locally aggressive potentially metastasizing tumour. Recommended treatment is complete surgical resection if feasible followed by radiotherapy. Small lesions may be cured with surgery alone and no adjuvant radiotherapy is indicated unless a residual local disease is suspicious (10). Chemotherapy may be considered for patients with refractory or relapsed disease (10). For our patient, it was almost impossible for complete tumour excision due to massive intraoperative bleeding. Thus, patient was subjected for radiotherapy after endoscopic debulking surgery. By reducing the size of tumour bulk, patient had partial relief of complaints while completing radiotherapy.

Radiotherapy provide an excellent local control as these tumours are radiosensitive. The optimal dose ranges from 40 Gy in 20 fractions with a 2 cm margin for tumour smaller than 5cm and 50 Gy in 25 fractions for larger tumours (3). Regional cervical lymph nodes should be irradiated only if they are directly involved or if there is a high risk of spread (3). Our patient received 50 Gy in 25 fractions as the tumour size was more than 5 cm.

5-year survival rates for EMP are between 30% to 82% and local recurrence rate of the tumours is usually less than 5% in patients who received radiotherapy (9). Follow-up on radiological and serum electrophoresis is required after treatment to detect recurrences and progression to multiple myeloma. The rate of progression of EMP to multiple myeloma is lower than in SBP, ranging from 11% to 30% and is associated with a poorer prognosis (2). Progression to multiple myeloma usually occurs within 2 years of diagnosis but certain reported cases showed the occurrence can be up to 15 years later indicating the need for long-term follow up.

CONCLUSION

Extramedullary plasmacytoma (EMP) is a rare, aggressive neoplasm of plasma cells that commonly occur in upper respiratory tract, especially the nasal cavity and paranasal sinuses. Diagnosis of EMP is based on histopathological examination of suspected lesion. A systemic work-up including blood investigation, urine examination for Bence-Jones protein, radiology skeletal survey and bone marrow biopsy is required to differentiate it from other type of plasmacytommas. Radiotherapy is an effective treatment and surgery may occasionally be used as a complement. Long term follow up is essential to look for tumour recurrence and progression to multiple myeloma which has poor prognosis.

Conflict of interest

No conflict of interest was declared by the authors.
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