CASE REPORT

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Extramedullary plasmacytoma of the tongue base: A rare presentation of head and neck plasmacytoma

Ekstramedularni plazmocitom baze jezika: retka prezentacija plazmocitoma glave i vrata

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Abstract

Introduction. Special entities like solitary bone plasmocytoma (SBP) or extramedullary plasmacytoma (EMP) can be found in a less than 5% of patients with plasma cell disorders. EMP of the tongue represents very rare localization of the head and neck plasmacytoma. **Case report.** We report a case of 78-years-old woman who developed EMP of the tongue base detected by the magnetic resonance imaging (MRI) of the head and neck region. Immunohistochemical profile of the tumor tissue biopsy (CD38, IgG, kappa positivity) indicated diagnosis of EMP. The diagnosis was established with additional staging which confirmed the absence of other manifestation of the disease. The patient was treated with 40 Gy of radiotherapy in 20 doses resulting in the achievement of the complete remission of the disease. This case was discussed with the reference to the literature. **Conclusion.** EMP of the tongue base is a very rare entity of plasma cell dyscrasias. Appropriate irradiation results in the achievement of a long-term remission and a potential cure of the disease.

Key words:
plasmacytoma; diagnosis; tongue; radiotherapy; treatment outcome.

Apstrakt

Uvod. Posebni entiteti kao što su solitarni plazmocitom kostiju ili ekstramedularni plazmocitom (EMP) mogu se naći kod manje od 5% bolesnika sa plazmaćelijskim oboljenjima. Ekstramodularni plazmocitom baze jezika je veoma retka lokalizacija plazmocitoma glave i vrata. **Prikaz bolesnika.** U radu je prikazana bolesnica, stara 78 godina, sa EMP baze jezika, čije postojanje je ustanovljeno magnetnom rezonancom (MR) glave i vrata. Imunohistohemijskim profilom bioptata tumorskog tkiva (CD38, IgG, kappa pozitivnost) potvrđena je dijagnoza EMP. Dopunskim ispitivanjima ustanovljeno je odsustvo drugih manifestacija bolesti. Bolesnica je lečena lokalnom zračnom terapijom sa 40 Gy u 20 seansi, čime je postignuta kompletna remisija bolesti. **Zaključak.** Ekstramodularni plazmocitom baze jezika je veoma redak vid ispoljavanja plazmaćelijskih oboljenja. Odgovarajućom zračnom terapijom postižu se dugotrajne remisije bolesti uz postojanje potencijalne mogućnosti izlečenja.

Ključne reči:
plazmocitom; dijagnoza; jezik; radioterapija; lečenje, ishod.

Introduction

Plasmacytomas are localized tumors consisting of monoclonal plasma cells that may develop in either bones or soft tissue [1]. Less than 5% of patients with plasma cell dyscrasia present with a single bone or extramedullary lesion due to a malignant plasma cell infiltrate, without apparent evidence of systemic myeloma. Solitary extramedullary plasmacytoma (EMP) is less common than solitary bone plasmacytoma (SBP) and occurs when there is soft tissue infiltration of clonal plasma cells. EMP is approximately three times more often in men than in women, usually in the age group of 50–70 years. The diagnosis requires biopsy confirmation of monoclonal plasma cells from single site. There should be no evidence of bone destruction, clonal marrow plasmacytosis or occult disease elsewhere [2]. Approximately 85% of lesions occur in the head and neck mucosa probably related to long-term stimulation by inhaled irritants or viral infection. An underlying bone involvement, particularly in the sinuses, may be noted. They account for fewer than 1% of all head and neck tumors [3]. Gastrointestinal involvement, although significantly less common, is the next most frequent site, and other areas of involvement, reported infrequently, include: lung, bladder, thyroid, testis, ovary, and

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tonsil among other. Solitary plasmacytomas of the tongue base are rare tumors that occurre in 1.7% of all EMPs in the upper aerodigestive tract [4, 5]. Similar to the SBP, EMPs are highly radiosensitive with nearly all patients successfully achieving local control and approximately 50–65% of patients remaining free of disease longer than 10 years. Due to small patient numbers and historical retrospective analyses over many decades, no firmly established treatment criteria exist [6, 7].

Its rare occurance and variety of clinical manifestations may cause clinical uncertainty prior to the receipt a histologic and hematologic diagnosis. With an idea to highlight diagnosis and treatment modalities, in this presentation we report a case of extramedullary plasmacytoma of the tongue base.

Case report

In July 2010, a 78-year-old woman was admitted with complaints as tongue swelling without any other symptoms. The patient past medical history revealed durable five years of complete remission after surgical removal of the colorectal carcinoma.

Physical exam showed an elastic, irregular tumor mass at the ventral left side of the tongue base without significant lymphadenopathy. The magnetic resonance imaging (MRI) exam of the head and neck region confirmed tumor mass of 3.5 × 2.5 × 1.0 cm size at the ventral left side of the tongue (Figure 1).

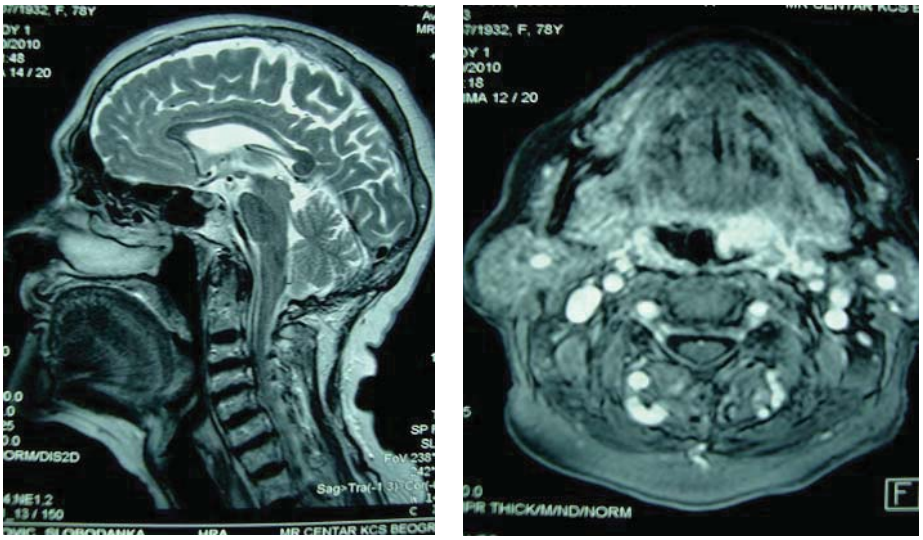

Fig. 1 – Magnetic resonance imaging (MRI) findings of the head and neck region showing tumor mass on the ventral left side of the tongue base.

Tumor biopsy showed massive diffuse infiltrate of abnormal plasma cells (70%) with the following immunohistochemical profile (Figure 2): CD38+++ (70% cells); *kappa* ++ (30% cells); lambda- (< 10% cells); IgG++ (60% cells); p53+ (20% cells); FGFR3- (< 10% cells). Blood count was normal (Hb 123 g/L, WBC 6.0 × 10^9/L, PLT 170 × 10^9/L).

Results of the other laboratory tests were unremarkable with normal levels of the erythrocyte sedimentation rate (14), total proteins (80 g/L), without renal impairment and proteinuria (0.08g/24h), and without suppression of the uninvolved immunoglobulins. Protein electrophoresis with immunofixation did not confirm the existence of monoclonal (M) protein accompanied with the absence of Bence Jones proteinuria. Bone marrow (BM) trephine biopsy with immunohistochemical staining did not show plasma cell infiltration accompanied with positive expression of osteoprotegerin (OPG, 25% cells) and the absence of receptor activator of nuclear factor κB ligand (RANKL, < 10% cells). An x-ray skeletal survey found no osteolytic or neoplastic processes followed with normal MRI of the axial skeleton. Computed tomography (CT) scan of the chest and abdomen did not reveal any pathological findings. The patient was negative for the tumor (CEA, CA19.9, CA125) and viral (HBsAg, HCV, HIV, HHV8) markers.

Following above mentioned exams, the diagnosis of solitary EMP of the tongue base was established. The patient was treated with 40 Gy of a local radiotherapy in 20 doses achieving complete remission confirmed at the last control check-up in December 2010.

Discussion

In comparison to SBP, solitary EMP is less common than SBP. Solitary plasmacytoma of the tongue is extremely rare, with only a few cases having been reported in the English literature [8–14]. This entity requires distinction from reactive plasmacytosis, plasma cell granuloma and lymphoproliferative disorders like mucosa-associated lymphoid tissue (MALT), marginal zone, and immunoblastic lymphoma [3, 15, 16]. It is suspected that in pathogenesis of EMP, both of clonal event (chromosomal abnormalities, i.e. losses at 13q) and IL-6 are required [1]. In accordance with literature data, our patient is the senior female who developed EMP of the tongue base in the age of 78 years [2]. The immunohistochemical profile of the tumor in our patient indicated massive diffuse infiltration

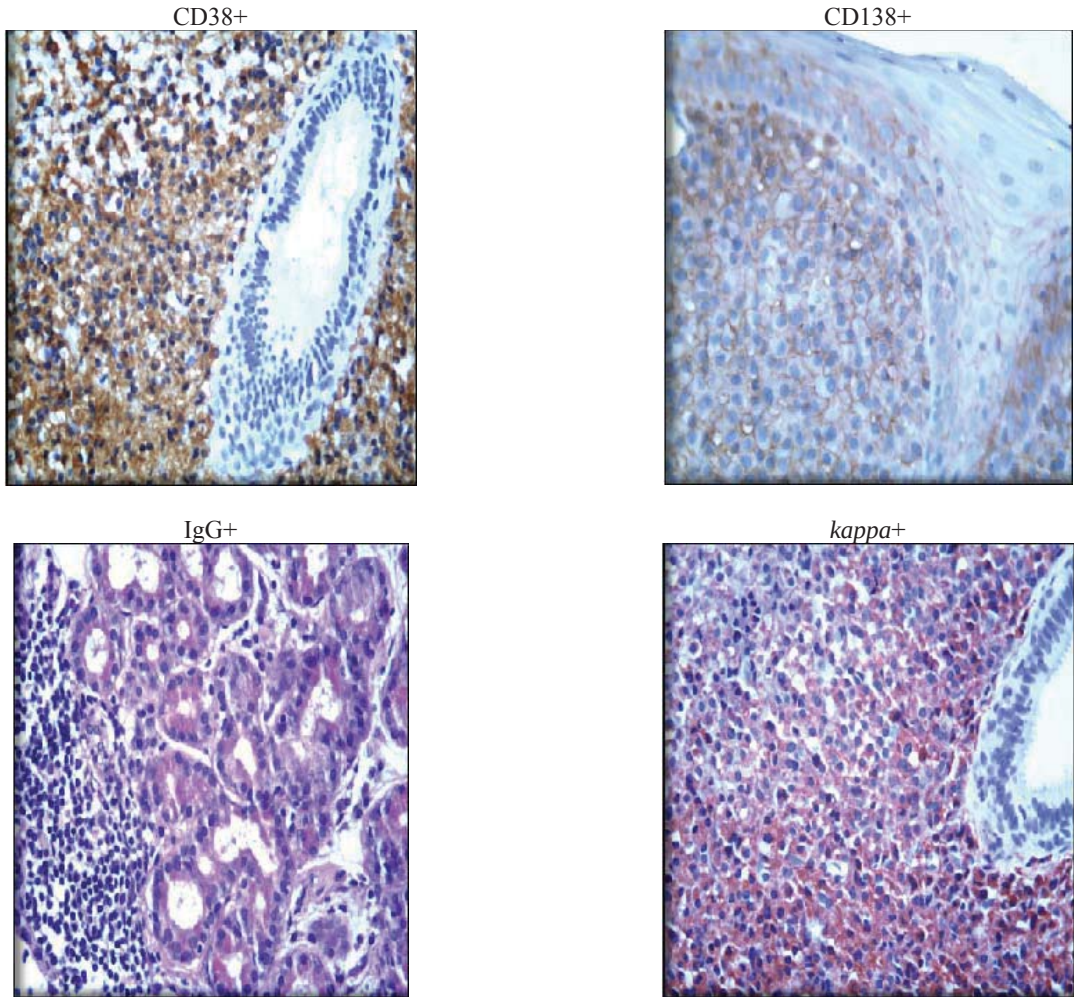

Fig. 2 – Immunohistochemical profile of the tumor tissue biopsy (CD38+, CD138+, IgG+, *kappa* +).

with monoclonal CD38 and IgG *kappa* positive plasma cells. Phenotypic studies for CD38 and monoclonal cytoplasmic light chain expression of malignant plasma cells obtained by biopsy or fine needle aspiration of the solitary lesion are necessary for the accomplishment of the EMP diagnosis [2, 15, 16]. Aberrant expression of fibroblast growth receptor 3 oncogene (FGFR 3) as a product of *t* (4,14) is present in approximately 15% of myeloma patients and contribute to myeloma progression. Lack of FGFR 3 expression in our patient could explain the indolent course of disease [17]. The absence of bone disease in the patient concurs with the findings of both low expression of RANKL in the bone marrow as a marker of octeoclastic activity and pronounced expression of its naturally occurring decoy receptor, OPG [18]. Additionally, according to the literature data [1], the lack of CD56 expression could indicate the lack of bone disease in EMP. Confirmation of the diagnosis requires as well the absence of bone marrow infiltration, skeletal events or any signs of symptomatic disease elsewhere [1–3, 15, 16].

In order to verify the extent of the solitary lesion, CT or MRI is required. Similarly to SBP and 1A clinical stage of myeloma, spinal MRI was performed in the patient for the accurate staging of EMP indicating the absence of the bone disease. Although there was no detectable M-protein in the serum and urine of our patient, by electrophoresis and immunofixation its low levels can be detected in less than 25% of patients with EMP or SBP [2, 3, 15, 16]. Additionally, normal level of uninvolved immunoglobulin in the patient confirmed the absence of occult disease elsewhere. Serum-free light chain assays could be useful in staging EMP and SBP patients, accompanied with the absence of underlying myeloma by bone survey and abnormalities of biochemistry attached to plasma cell disorders [19].

Due to a small number of patients, there are no established criteria for the treatment. Both entities, SBP and EMP, are highly radiosensitive. The achievement of local control is expected in nearly all patients. About half of these will remain free of the disease longer than 10 years. In accordance with the literature, elective radiotherapy with 40 Gy of mean irradiation dosage was applied in the described patient [4, 7] resulting in the achievement of a complete remission after irradiation at the last three months of follow-up. The United Kingdom Myeloma Forum recommended radiotherapy dose of 40 Gy in 20 fractions for tumors < 5 cm and up to 50 Gy in 25 fractions for tumors a 5 cm with at least a 2 cm margin encompassing the primary tumor. Involvement of cervical nodes or Waldeyer's ring tumors requires inclusion in the radiotherapy field [16]. Radical surgery of the head and neck is a generally mutilating procedure that is not indicated as the tumours are generally highly radiosensitive and the majority

of patients are cured with radiotherapy. Nevertheless, surgery may be considered for other sites of disease, such as the gastrointestinal tract [20]. Comparing patients with sites other than the head and neck, who received either surgery, radiation, or a combined-modality treatment, there was no difference among these 3 arms, suggesting that either surgery or radiotherapy is reasonable for such patients. At the present time, adjuvant chemotherapy is not indicated because it has not been shown to reduce relapse or improve survival rates. However, it can be used at the time of recurrence or dissemination of the disease [2, 16, 19–21].

Less than 10% of patients have local reccurence of the disease, with achievement of 50–80% of the 10-year disease free and overall survival in 30–50% of patients who develop disease progression to myeloma. The progression to myeloma might occur after the median of 1.5–2.5 years. The clinical course at progression of these patients is similar to patients with newly diagnosed symptomatic myeloma. Possible risk factors for EMP evolution to myeloma may be bulky disease > 5 cm, elderly age, suppression of uninvolved immunoglobulins and persisting M protein for more than one year after radiotherapy indicating age as the only one positive risk factor in our patient [2, 7, 16].

Conclusion

EMP of the tongue base is a very rare entity of plasma cell dyscrasias accounting less than 1% of all head and neck tumors. Appropriate irradiation results in a log-term stability and potential cure in more than half of the patients. Spinal MRI and new modalities of the disease monitoring like serum free-light chain assay might be of significance for staging and risk stratification. More detailed individual patient data analyses of the hitherto published cases are needed to identify different prognostic subgroups of patients and optimal treatment approach.

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