



CASE REPORT

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## A case report: Is local radiotherapy sufficient in solitary plasmacytoma?

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### ABSTRACT

**BACKGROUND:** Solitary plasmacytoma is a rare hematological tumor with a significantly better prognosis than multiple myeloma. However, most patients undergo MM transformation within 5-8 years. Then the course of the disease accelerates. While large local radiotherapy and chemotherapy is preferred for large tumors, small area local radiotherapy may be preferred for small tumors.

**CASE:** A 51-year-old male patient was examined in the neurosurgery department with the complaint of double vision dizziness in September 2015. He was operated due to right 6th nerve palsy. Pathology Presented as solitary plasmocytoma. 4600 cGy local radiation was applicated with Intensive Modulated Radiaiton Therapy (IMRT).

**RESULTS:** The patient alive since 7 years with a good performance while obtained MM after 3 years of diagnosis.

**CONCLUSION:** Local RT is a good treatment method in young patients with good performance in solitary plasmacytoma.

**KEYWORDS:** Soliter plasmasitoma, radiotherapy

### INTRODUCTION

Plasma cell neoplasms constitute 1-2 % of malignancies. It is seen at a rate of 3-5/100000 per year. It is a clonal neoplasm of bone marrow originating from plasma cells, the final stage of maturation of B lymphocytes.. B lymphocytes are the cells responsible for humoral (antibody-dependent) immunity. B lymphocytes carry the immunoglobulin molecules they synthesize on the cell surface membrane.

And this molecule creates a specific receptor against the antigen. A B lymphocyte carries a surface immunoglobulin receptor that can bind to only one type of antigen (epitope).

When an antigen enters the organism, it finds and stimulates B lymphocytes that carry receptors specific to this antigen on its surface. Stimulated B lymphocytes transform into plasma cells. Plasma cells also synthesize large amounts of antigen-specific antibodies (immunoglobulin) (1,2).

It occurs as four different diseases. Multiple myeloma (MM, systemic disease) is formed

by the infiltration of the bone marrow with malignant plasma cells. It is the most common hematological tumor after Non-Hodgkin lymphoma. It is the most common primary bone tumor in the elderly population. 85% of patients are over 65 years old. Life expectancy of 5 years is around 30% despite advances in treatment (1) Plasma cell leukemias, Extra medullary plasmocytoma (EMP) is a plasmacytoma of soft tissue while solitary plasmocytoma (SP) in bone. (3,4) There are some criteria for the diagnosis of solitary plasmocytoma. First of all, there should be no malignant bone involvement other than the primary site in the imaging of the skeletal system. In addition, the bone marrow biopsy should be normal. Solitary plasmocytoma is twice as common in men as in women.

The median age of the patients ranged from 55 to 60. Solitary plasmocytoma is most common (80%) in the bones. It is usually seen in the vertebrae and skull but extramedullary plasmocytoma (20%) is frequently located in the head and neck, nasopharynx and nasal cavity (3-6).

The treatment of solitary plasmocytoma include some challenges whether about preferring of RT or surgery. Therefore we report to case report a case with solitary plasmocytoma who applied to local RT for contribution on literature.

**CASE:** A 51-year-old male patient was examined in the neurosurgery department with the complaint of double vision dizziness in September 2015. He was operated due to right 6th nerve palsy.

Pathology presented as solitary plasmocytoma. Cranial MRI of the patient revealed a 54x48x36 mm mass lesion in the right half of the cavernous sinus. The mass invaded the left cavernous sinus, medially to the sella, inferiorly to the sphenoid sinus, to the right lateral temporal lobe, and posteriorly to the pontocerebellar cistern. The cavernous segment of the right internal carotid artery was surrounded by a mass. It

was in close proximity to the right optic nerve.

**Radiotherapy planning:** Simulation tomography and tomography of the cranial region of the patient with a 1 mm cross-section gap were performed. Intensity modulated radiation therapy (IMRT) plan was made using double arc with 6 MV photons in Eclipse 10 planning system. External radiotherapy was applied to the cavernous sinus area and the entire tumor area with a Varian Oncology device at a total dose of 4600 cGy by giving 200 cGy per day under image guidance. After the treatment, the patient continued his routine follow-ups. In the cranial MRI taken during the patient's controls, 27x17x21mm contrast, which causes destruction in the bone that also affects the clivus in the skull base non-adherent formation was observed as 80% regress.

**Multiple myeloma conversion:** In December 2018, the patient developed left hip pain. Cervical, Dorsal, lumbar and pelvic MR were taken to the patient. The patient was diagnosed with MM due to nodular involvement in the left iliac wing. The patient received chemotherapy between January 2019 and May 2019. Later, a bone marrow transplant was performed.

**Latest Status:** The general condition of the patient is good in February 2022 and he continues his routine controls.

## DISCUSSION

Solitary Plasmocytoma is a malignancy of increased monoclonal plasma cell infiltration in the bone marrow without systemic involvement.

Solitary plasmocytoma accounts for only 5-10 % of cases on all plasma cell myeloma (1). Solitary plasmocytoma has been shown to be very effective in providing local control and treatment. However, in long-term results, it has been observed that solitary plasmocytoma transforms into multiple myeloma more frequently than extramedullary plasmocytoma formed in soft

tissue (3,4). In individuals with plasmacytoma better prognosis was obtained at a young age, tumor is smaller than 4 cm in diameter and located in the extramedullary with local radiotherapy (7).

The 10-year survival is between 81-95% with only local treatments with surgery or RT (7-9). Median life is 7-12 years (8). In general, studies in the literature have reported OS between 81-100% with only median 40-50 Gy RT. In a study, a 5-year OS was found to be 100% after a median 50 Gy RT in patients with solitary plasmacytoma. With only local surgery, the 5-year OS was found to be 70%, and a significant survival advantage was observed with local RT (10). Local recurrence up to 78% has been reported in a small number of studies performed with only surgery. Treatment-related side effects such as pathological fractures are also higher with surgery (7,10). Despite successful results, MM conversion has been reported after 5-8 years in 60% of patients. Median life after MM transformation is 3 years. (7,9).

Although the initial tumor size was 54 mm in this patient, her general condition is still good with local RT although MM transformation has taken place, it is still in a limited area and has not adversely affected the patient's life.

## CONCLUSION

Local RT is a good treatment method in young patients with good performance in solitary plasmacytoma.

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