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Diagnosis of a Rare Tumor "Solitary Plasmacytoma of Bone"

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Abstract

Solitary plasmacytoma of bone (SPB, also called osseous plasmacytoma) is a localized tumor in the bone comprised of a single clone of plasma cells in the absence of other features of MM (Multiple Myeloma). Most patients present with skeletal pain or a pathologic fracture of the affected bone. Patients with vertebral involvement may have severe back pain or neurologic compromise (e.g. cord compression).

Key word: *Solitary Plasmacytoma of Bone, Low back pain.*

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Introduction

Plasmacytoma is plasma cell neoplasm; the abnormal plasma cells (myeloma cells) are in one place and form one tumor, called a plasmacytoma. Sometimes plasmacytoma can be cured. There are two types of plasmacytoma. In Solitary plasmacytoma of bone, one plasma cell tumor is found in the bone, less than 10% of the bone marrow is made up of plasma cells, and there are no other signs of cancer. Plasmacytoma of the bone often becomes multiple myeloma.

In extra medullary plasmacytoma, one plasma cell tumor is found in soft tissue but not in the bone or the bone marrow. Extra medullary plasmacytomas commonly form in tissues of the throat, tonsil, and Para nasal sinuses.

Signs and symptoms depend on where the tumor is. In bone, the plasmacytoma may cause pain or broken bones. In soft tissue, the tumor may press on nearby areas and cause pain or other problems. For example, a plasmacytoma in the throat can make it hard to swallow.[1-4] Here, we diagnosed a case solitary plasmacytoma of bone.

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Case Reports

A 65-year-old lady, diagnosed case of type 2 diabetes mellitus and diabetic peripheral neuropathy presented with gradually progressive low back pain. The pain was localized, dull aching in nature, without any radiation. There was night pain. Pain increased with movement and relieved to some extent by rest and analgesic. There was no H/O trauma to back or fall from height.

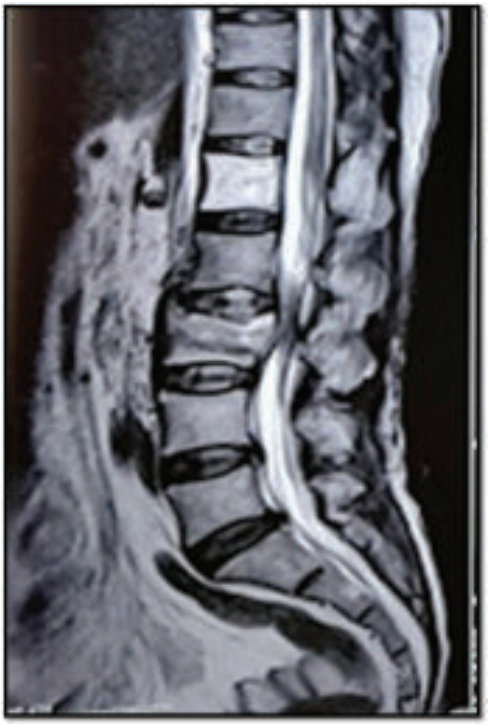

Figure-1: *MRI of lumbosacral spine T2 weighed image*

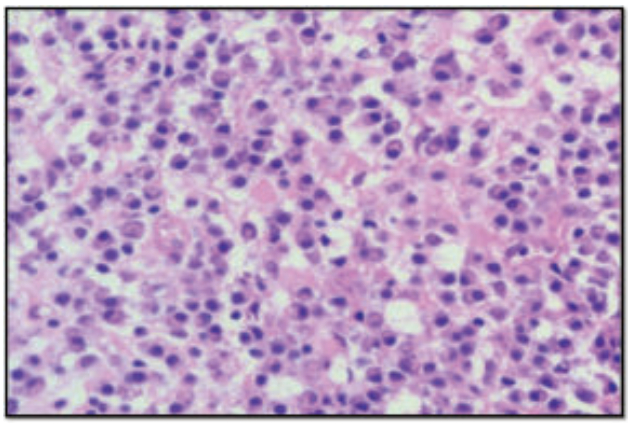

Figure-2: *Histopathological slide of FNAC from 3rd lumber vertebra*

Patient also had fever for last 20 days, which was low grade, intermittent in nature; maximum recorded temperature was 100^0F.It was associated generalized weakness. She gave no H/O cough, hemoptysis, and burning sensation during micturition, joint pain, oral ulcer, anorexia or altered bowel habit. There was no significant weight loss.

On examination, she was anemic, febrile, having tachycardia. Examination of spine revealed grade 4 tenderness over L3 to L5 spines and para spinal muscles along with restricted side to side movement. Motor function of the nervous system could not be evaluated properly due to pain. There was impaired sensory function in gloves and stocking pattern and fundoscopy revealed bilateral NPDR.

MRI of lumbosacral spine showed partial collapsed L 3 vertebra. Her Hb was 10.6gm/dl with MCV- 82fl, MCH- 29pg, PBF was normocytic normochromic anemia, S. Ferritin - 465ng/ml, TIBC - 40mcmol/l, S. Creatinine 1.0mg/dl, S. Corrected calcium 9.8mg/dl, Serum protein electrophoresis, Urinary bench-jones protein and Bone marrow were normal. S. Immunofixation showed IgG Kappa and Lambda. FNAC from L3 vertebra showed malignant plasmacytosis.

Discussion

Solitary bone plasmacytoma (SBP) is a rare malignancy and is characterized by malignant proliferation of monoclonal plasma cells. SBP constitutes less than 5% of malignant plasma cell tumors.[1] It is more common in males as compared to females (3:1) and median age of presentation is 55 years.[1] Why some patients develop MM and others plasmacytoma is not understood, but might be related to differences in cellular adhesion molecules or chemokine receptor expression profiles of the malignant plasma cells[5].

These tumors most commonly occur as an expansile lytic mass and are localized in the spine twice as often as other bony sites.[6] The most common symptom of solitary bone plasmacytoma (SBP) is pain at the site of the skeletal lesion.[7] Our patient present with low back pain. The most common systemic symptoms are fever and fatigue.[8] In our patient, fever is present associated with generalized weakness. More than 75% patients with apparent SBP progress to myeloma, with a median duration of two to three years and this proportion increases with passage of time.[1,9] Thus, patients with SBP require careful lifelong monitoring to detect progression to MM with routine assessment of symptoms and signs in conjunction with laboratory investigations. The median overall survival ranges from 7.5 to 12 years.[1] The diagnosis of SPB requires the following[4,9]: 1. Biopsy-proven solitary tumor of bone with evidence of clonal plasma cells. 2. Cross sectional imaging must show no other lytic lesions.3. Bone marrow aspirate and biopsy must contain no clonal plasma cells. 4. There is no anemia, hypercalcemia, or renal insufficiency that could be attributed to a clonal plasma cell proliferative disorder.

The most common bones involved are those with active hematopoiesis; the axial skeleton is more commonly involved than is the appendicular skeleton, while disease in the distal appendicular skeleton below the knees or elbow is extremely rare[10,14].

In our cases, all criteria are fulfilled. However, we could do bone scan or whole body CT scan for skeletal survey. This is not possible due to exhaustion of patient and financial constraints.

The optimal treatment for most patients with SBP is moderate dose RT, approximately 40–50 Gy administered once daily at 1.8–2.0 Gy per fraction in a continuous course resulting in high local control rates of 83-96%.[7-11] Our patient was a non-bulky solitary plasmacytoma of 3rd lumber vertebra and was transferred to radiation oncologist.

The role of adjuvant chemotherapy is not clearly defined.[15,20] The addition of chemotherapy to radiotherapy in the treatment of SBP might, however, help in improving local control and preventing or delaying progression to MM, but there are insufficient data to support this recommendation.[16]

The role of surgery is limited in SBP and is indicated in cases with surgical instability or neurological compromise.[17]

Factors predicting progression to myeloma includes tumor size >5 cm, age e"60 years, high M protein levels (1 g/dL), persistence of M protein after treatment and spine lesions.[11,17-19] None of the factors were present in the index case except age of the patient and thus the long term chances of progression to multiple myeloma are less in the index case.

Assessment of response after local treatment with radiotherapy includes estimation of monoclonal protein levels, resolution or progression of symptoms and evidence of new lesions on imaging. We advised the patient for follow up. This is a rare case of SBP of 3rd lumber vertebra. Treatment with involved field localized RT and will further aid in the awareness, diagnosis, and management of this rare diagnosis.

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Conflicts of interest
There are no conflicts of interest.

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