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Oral Clues to A Systemic Malignancy: A Case Report of Multiple Myeloma Presenting with Jaw Lesions

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Abstract

A lymphoid neoplastic growth of B cells is known as plasma cell neoplasia. This group includes extramedullary plasmacytoma, single bone plasmacytoma, and multiple myeloma (MM). A clonal proliferation of bone marrow-derived plasma cells with varying levels of differentiation makes up MM. The usual age at diagnosis is around 60 years, and the condition is more common in men. Patients may exhibit nervous system dysfunction, bone pain, exhaustion, recurrent infections, and renal failure. Since oral symptoms could be the initial indication of MM, the dentist is crucial to the disease's early detection. This paper reports a case of a 35 years old male who had a complaint of a painful mass in the left mandible that prompted a MM diagnosis.

Keywords: Multiple Myeloma, Clonal Proliferation, Plasma Cell Neoplasia.

Introduction

Atypical synthesis of monoclonal immunoglobulins and aberrant proliferation of bone marrow-derived plasma cells are hallmarks of multiple myeloma (MM). MM accounts for 1% of all cancers and 10% of hematological tumors. Approximately 14% of MM patients have maxillofacial bone involvement, with the mandible more commonly involved than the maxilla.[1] Monoclonal light or heavy chains of immunoglobulin, which are typically produced in large quantities by neoplastic cells, are detectable in serum or urine. This disease draws the attention of oral and maxillofacial specialists, among other medical experts, due to its wide-ranging presentations that can affect multiple organ systems.[2]

Clinical findings

A 35 year old male patient reported to our department with the complaint of pain and swelling in the lower left back teeth region since 2 months. He gave history of self extraction of mobile teeth in the same region following

which the swelling increased to present size over period of 1 month. The associated pain was spontaneous, moderate in intensity and dull aching type. His medical history revealed that he was undergoing ayurvedic treatment for arthralgia since 1 year. General physical examination was within normal limits. However, extraoral examination reveal solitary swelling involving left body and inferior border of mandible extending from the corner of mouth till 2 cm anterior to the angle of mandible anteroposteriorly and from a line joining corner of mouth to the angle of mandible till 1cm below the inferior surface of mandible superoinferiorly (Figure 1a). The skin over the swelling was normal. On palpation mild tenderness was elicited and was firm in consistency.

On intra oral examination, a solitary proliferative growth was seen involving left mandibular alveolus extending from the mesial aspect of 35 till mesial aspect of 37 anteroposteriorly and superoinferiorly from alveolar crest till buccal and lingual vestibule, measuring 2 x 2 cms in greatest dimension. The overlying mucosa was pale pink with few areas of erythema with well defined borders (Figure 1b). On palpation mild tenderness was elicited with firm consistency, and was non compressible and non reducible. A provisional diagnosis of ameloblastoma was made. Under differential diagnosis OKC and chronic osteomyelitis were considered.

Diagnostic Assessment

Conventional 2D radiography (Figure 2) showed solitary ill defined radiolucency involving left body of mandible. The lesion extended anteroposteriorly from periapical region of 34 to 37 and superoinferiorly from alveolar crest of 36 regions to a centimeter above inferior border of mandible. The borders were irregular ragged and infiltrative in appearance. Loss of lamina dura was observed irt 34, 35 and 37 with evidence of early and advanced root resorption respectively. Thinning of lingual cortical border and resorption of buccal cortical border was also appreciable. The left mandibular neurovascular canal was displaced inferiorly with evidence of loss of cortical boundary in the involved part. Cone beam computed tomography (CBCT) in addition showed marked thinning of buccal and lingual cortices with multiple areas of egg shell cracking and erosions (Figure 3a). Incisional biopsy of the lesion was performed under local anaesthesia, the histopathological and immunohistochemistry of the same were suggestive of monoclonal plasma cell infiltrate indicative of Plasmacytoma/Multiple myeloma (Figure 4). Whole body 18-FDG PET-CT imaging study was undertaken and the findings showed bone marrow involvement of entire axial and proximal appendicular skeletons. Marked FDG uptake was noted involving left body of mandible and adjoining soft tissue osteolytic, which was further confirmed on corresponding CT images (Figure 3b).

Histopathological report was suggestive of round cell tumor and on immunohistochemistry monoclonal palsma cell infiltrate suggestive of deposits of multiple myeloma. His serum protein electrophoresis showed marked increase in kappa free light chains and kappa lambda ratio which as per SLiM criteria is indicative of Multiple myeloma (Figure 5). Further bone marrow biopsy findings were suggestive of plasma cell dyscrasia.

Therapeutic Intervention

Patient was initially managed conservatively as an inpatient, receiving high dose of parenteral chemotherapeutic drugs - Dexamethasone 20 mg IV, injection Bortezomib 2 mg S/C stat, injection Denosumab 120 mg S/C stat.

Follow up and outcome

The lesion reduced in size over a period of 3 months (Figure 6). Presently patient is under oral chemotherapeutic drug Tab. Lenalidomide 10 mg once

daily. Patient is planned for hematopoietic stem cell transplant in the upcoming course of treatment.

Discussion

Many patients with MM experience inexplicable bone or back pain. The majority of patients have several lytic skeletal lesions mainly affecting long bones, ribs, head, and pelvis.[3] About 14% of patients have oral signs of MM as their initial indication of the illness.[4] Swelling, discomfort, numbness, bleeding, xerostomia, amyloid buildup, root resorption, tooth mobility, labial anaesthesia, radiolucencies in the jaw, and fractures are some of its symptoms.[5] In presenting case, a painful swelling was the initial complaint. One of the hallmark criteria for diagnosing multiple myeloma is the CRAB feature (C- Hypercalcemia, R- Renal failure, A- Anemia, B- Bone lesion) which was not present in our case. These patients require prompt and comprehensive evaluation to ensure an accurate diagnosis and facilitate early intervention for a better prognosis. Initial consolidation with high-dose chemotherapy and autologous hematopoietic stem cell transplantation are examples of disease-specific therapy. Maintenance and salvage therapies are also included, along with supportive care that addresses skeletal problems, anemia, infections, pain, and hypercalcemia.[5] Although relapse is prevalent with MM, patients may experience remission after a second course of the original treatment. Thalidomide and its equivalent Lenalidomide (Revlimid) were administered along with the proteasome inhibitor Bortezomib (Velcade), which has been demonstrated to be advantageous in certain situations. The median survival for people with initial multiple myeloma is 33 months, and the overall five-year survival rate is currently close to 33% with newer therapies.[3]

Conclusion

Clinical practitioners should be familiar with the manifestations of MM as it may affect the oral and maxillofacial region in the initial stages of the disease. This is especially significant because a wide range of signs, symptoms, and imaging results may be seen.

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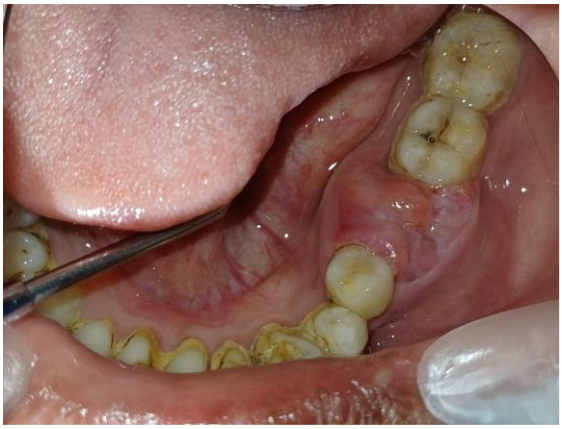
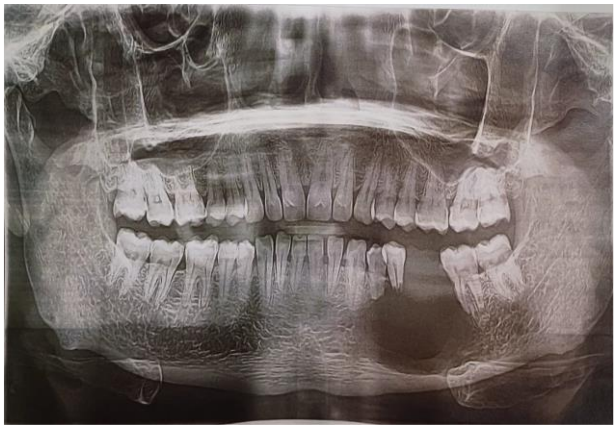
Time line of History:

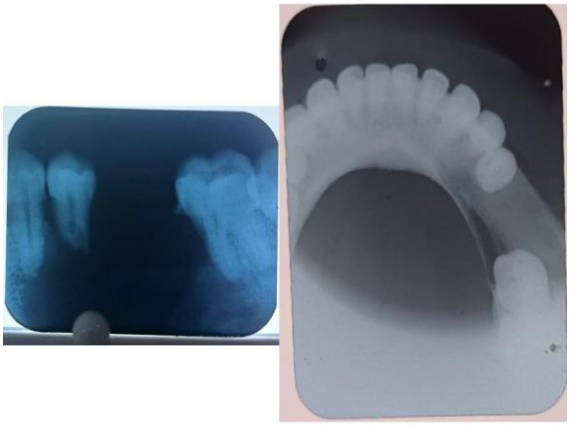
Clinical Description	A solitary proliferative growth was present on left mandibular alveolus of 35 36 37 measuring 2 x 2 cms in greatest dimension with mild tenderness.
Diagnostic Assessment	Conventional 2D radiography revealed bone loss followed by CBCT. PET- CT showed bone marrow involvement of entire axial and proximal appendicular skeletons. Histopathology and Immunohistochemistry of the lesion was done and were suggestive of monoclonal plasma cell infiltrate indicative of Plasmacytoma/ Multiple myeloma. Serum protein electrophoresis showed marked increase in kappa free light chains and kappa lambda ratio which as per SLiM criteria. Further bone marrow biopsy findings were suggestive of plasma cell dyscrasia.
Therapeutic Intervention	Patient received high dose of parenteral chemotherapeutic drugs - Dexamethasone 20 mg IV, injection Bortezomib 2 mg S/C stat, injection Denosumab 120 mg S/C stat.
Follow up and outcome	The lesion reduced in size over a period of 3 months. Patient is planned for hematopoietic stem cell transplant in the upcoming course of treatment.

Legend of Figures:

Figure 1: Intraoral photograph







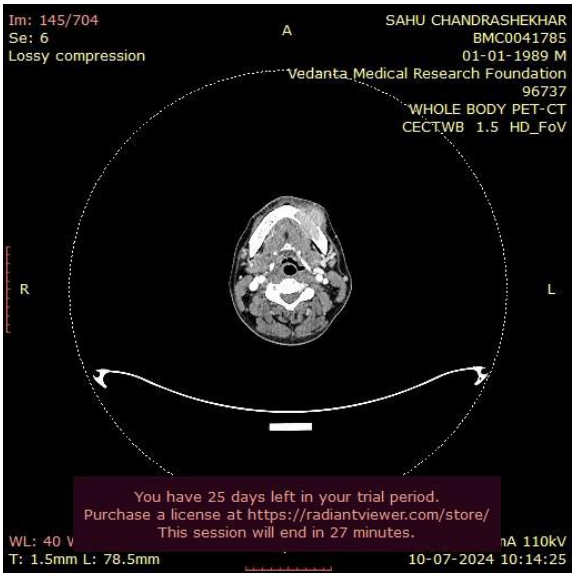


Figure 2: Radiographic photographs

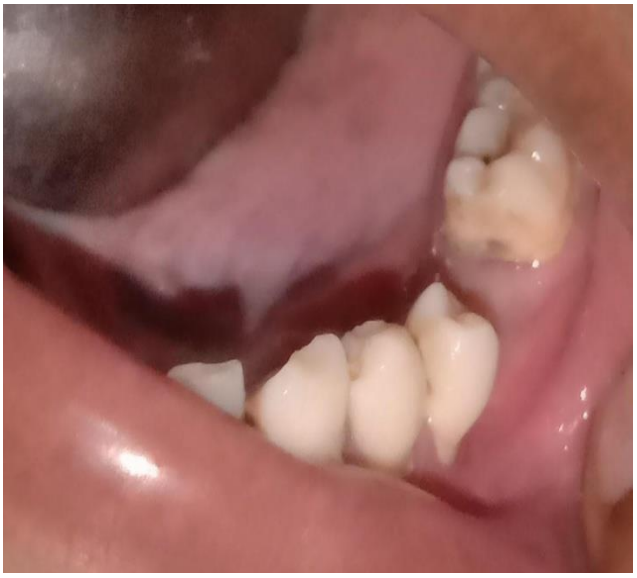
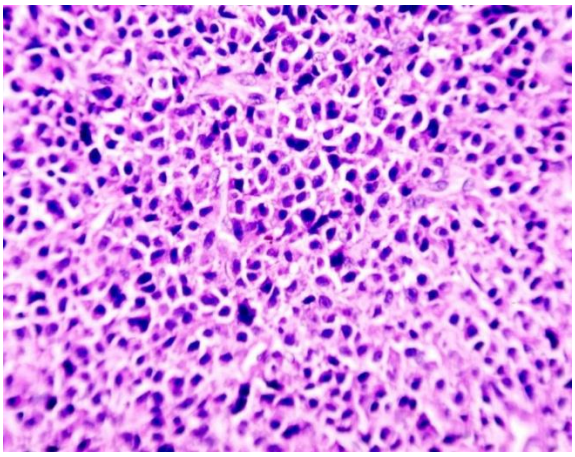
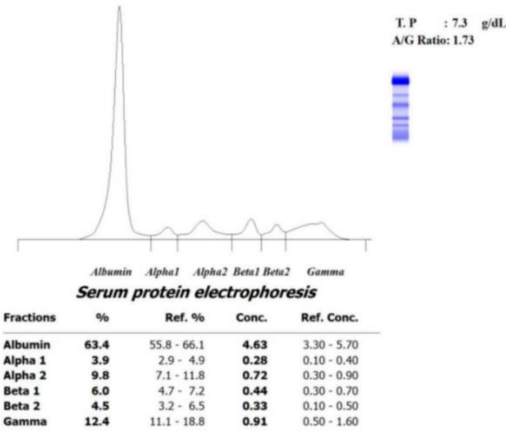


Figure 3: Histopathological and post-treatment





Serum protein electrophoresis

Fractions	%	Ref. %	Conc.	Ref. Conc.
Albumin	**63.4**	55.8 - 66.1	**4.63**	3.30 - 5.70
Alpha 1	**3.9**	2.9 - 4.9	**0.28**	0.10 - 0.40
Alpha 2	**9.8**	7.1 - 11.8	**0.72**	0.30 - 0.90
Beta 1	**6.0**	4.7 - 7.2	**0.44**	0.30 - 0.70
Beta 2	**4.5**	3.2 - 6.5	**0.33**	0.10 - 0.50
Gamma	**12.4**	11.1 - 18.8	**0.91**	0.50 - 1.60