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Diffuse Large B Cell Lymphoma of the Mandible: A Case Report

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Abstract **Case Report**

Primary bone lymphoma (PBL) of the mandible represents an exceptionally rare extranodal manifestation of non-Hodgkin lymphoma, often posing a significant diagnostic challenge that can delay critical intervention. This report details the case of a 44-year-old male smoker presenting with a rapidly progressive, painful swelling of the right posterior mandible. Clinical and radiographic evaluations revealed a 5.5 cm aggressive osteolytic lesion characterized by cortical destruction and soft tissue extension, accompanied by regional lymphadenopathy. An incisional biopsy followed by histopathological and immunohistochemical analysis confirmed a diagnosis of "double hit" diffuse large B-cell lymphoma (DLBCL), germinal B-cell subtype, classified as Ann Arbor stage IIE. Given the nonspecific clinical presentation which frequently mimics osteomyelitis or primary bone malignancies definitive diagnosis relies heavily on immunohistochemistry to identify aggressive subtypes like the double hit rearrangement (MYC and BCL2). This case emphasizes the necessity of including PBL-DLBCL in the differential diagnosis of mandibular masses and highlights the vital role of a multidisciplinary approach in ensuring early recognition and referral to hematology-oncology units to improve patient outcomes.

Keywords: Diffuse large B cell lymphoma; non-Hodgkin; primary bone lymphoma; mandible.

INTRODUCTION

Primary bone lymphoma (PBL) is an uncommon extranodal manifestation, accounting for less than 1% of all non-Hodgkin lymphomas. While it predominantly affects the long bones and axial skeleton, involvement of the craniofacial skeleton, particularly the mandible, is exceptionally rare. The majority of reported cases correspond to diffuse large B-cell lymphomas (DLBCL) [Raju M *et al.,* 2018]. Mandibular lymphomas often present with nonspecific clinical and radiological findings, frequently mimicking odontogenic infections, osteomyelitis, or other malignant primary bone tumors, which can lead to significant delays in diagnosis and treatment [Coutinho de Camargo Moraes *et al.,* 2019]. Despite its aggressive nature, DLBCL is a highly chemosensitive malignancy with a favorable prognosis when identified and treated early [Raju M *et al.,* 2018]. We present a rare case of a primary mandibular "double hit" DLBCL in a 44-year-old male, emphasizing the diagnostic pathway and clinical features.

CASE PRESENTATION

44-year-old male was referred to the Department of Oral and Maxillofacial Surgery with a 2-month history of a rapidly progressing, painful swelling in the right posterior mandible. His medical history was notable for long-term smoking; however, he denied systemic symptoms such as nocturnal sweats, fever, or unintentional weight loss. Extraoral examination revealed significant facial asymmetry caused by a hard, tender, and fixed mass measuring approximately 5 cm in its greatest diameter. Neurological sensation in the lower lip and chin area remained preserved. Cervical palpation identified right submandibular lymphadenopathy. Intraoral examination showed a partially edentulous arch with a large, irregular mass extending distally from tooth 43 to the right retromolar region, obliterating the buccal vestibule. The overlying mucosa was ulcerated with focal areas of bone exposure (Figure 1).

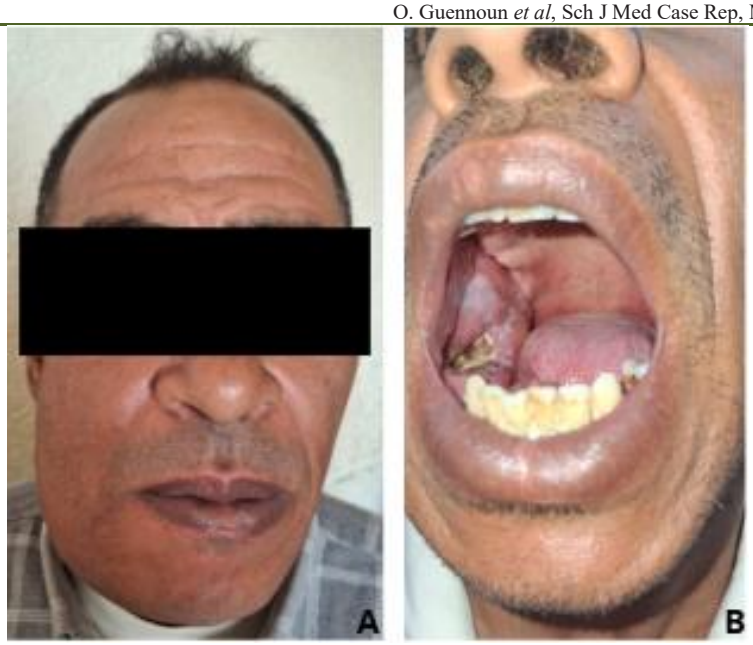

Figure 1: Initial clinical presentation: extraoral (A), intraoral (B)

Orthopantomography revealed a large osteolytic lesion involving the right mandibular angle. Subsequent computed tomography (CT) demonstrated an aggressive osteolytic lesion with cortical bone destruction and significant soft tissue extension presenting necrotic areas, measuring approximately 5.5 cm. The imaging also confirmed at least two right submandibular lymphadenopathies, each measuring 2 cm (Figure 2).

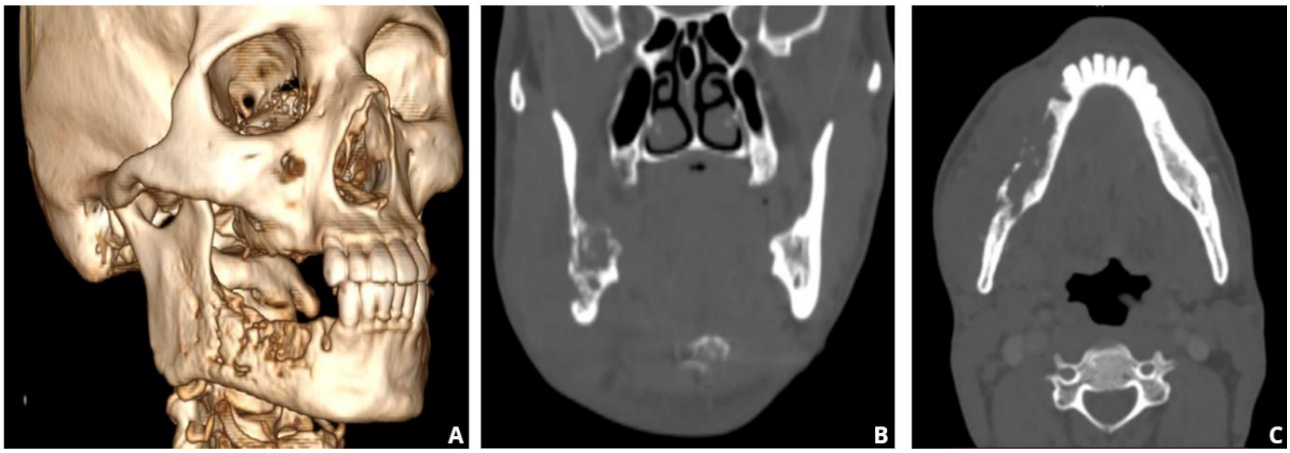

Figure 2: CT scan showing an aggressive osteolytic lesion of the right mandible with cortical bone destruction on 3D reconstruction (A), coronal view (B) and axial view (C)

Based on the clinical and radiological suspicion of malignancy, an incisional biopsy was performed, ensuring adequate sampling of both mucosal and bony tissues. Histopathological and immunohistochemical findings were consistent with DLBCL, germinal B-cell subtype, showing a high Ki67 proliferation index of 91%. Genetic analysis revealed rearrangements of MYC and BCL2, confirming a "double hit" subtype. A whole-body CT scan showed no evidence of distant involvement, and the disease was classified as Ann Arbor stage IIE. Written informed consent was obtained from the patient for the publication of this report. The patient was immediately referred to the Hematology-Oncology unit for specialized treatment.

Following the administration of four cycles of R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone), the patient demonstrated a remarkable clinical response with significant shrinkage of the mandibular mass and nearly complete resolution of the extraoral facial asymmetry (Figure 3).

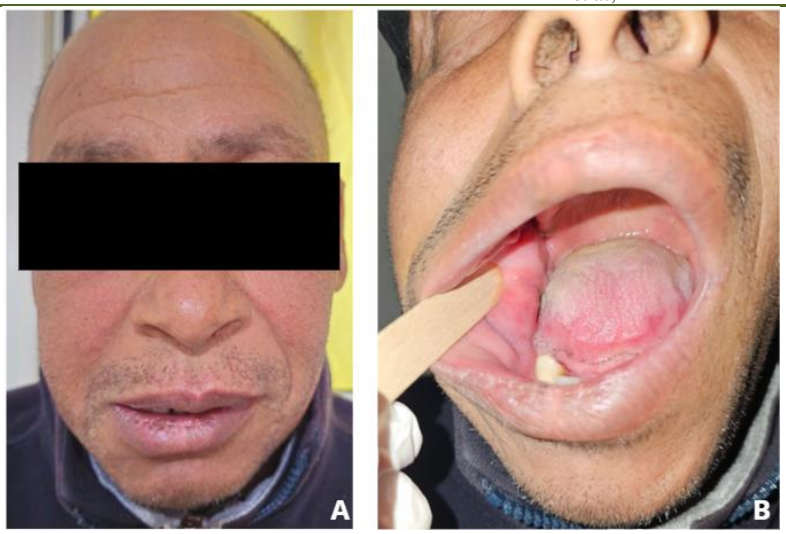

Figure 3: presentation after 4 cycles of R-CHOP: extraoral (A) and intraoral (B) showing significant reduction in tumor size

DISCUSSION

Lymphomas constitute a diverse spectrum of malignancies arising from lymphocytes and their precursor cells, representing approximately 5% of all head and neck cancers. These are broadly categorized into Hodgkin and non-Hodgkin lymphomas (NHL) [MacDonald D *et al.,* 2021]. Notably, about 40% of NHL cases occur in extranodal sites. Primary bone lymphoma (PBL) is rare, accounting for less than 1% of new NHL cases annually. While it typically involves the axial skeleton or long bones, craniofacial presentations account for only 0.6% of all extranodal NHL, with the maxilla being more frequently involved than the mandible [Hamburger E *et al.,* 2026; Dr. Jesline Rupa, 2023]. The majority of PBL cases are identified as diffuse large B-cell lymphomas (DLBCL), predominantly occurring in patients between 40 and 60 years of age [Hamburger E *et al.,* 2026].

The pathogenesis of intra-alveolar lymphomas may be linked to the accumulation of lymphoid tissue in response to chronic dental infections [MacDonald D *et al.,* 2021]. Indeed, severe periodontal disease has been associated with an elevated risk of developing non-Hodgkin lymphoma [Bibas M *et al.,* 2025]. Clinical manifestations are often nonspecific, typically presenting as rapidly progressive swelling, though pain and numbness are less frequent [MacDonald D *et al.,* 2021]. As the lesion expands, mucosal ulceration, necrosis, bleeding, and unexplained tooth mobility due to cortical destruction are common. Involvement of the inferior alveolar nerve can lead to paresthesia, known as “numb chin syndrome,” while larger tumors result in visible facial asymmetry and persistent cervical lymphadenopathy [Bibas M *et al.,* 2025]. Systemic "B-symptoms," such as fever and weight loss, occur in a minority of cases [Hamburger E *et al.,* 2026].

Advanced imaging is crucial for defining the lesion’s extent and staging. Radiologically, these lesions may mimic periapical inflammatory processes or present aggressive features like the “floating teeth” aspect or “spiked root” resorption [MacDonald D *et al.,* 2021]. Poorly defined “moth-eaten” osteolytic patterns are common, frequently leading to misdiagnosis as osteomyelitis or refractory periodontitis [Bibas M *et al.,* 2025]. Differential diagnoses must include squamous cell carcinoma, plasmacytoma, myeloma, and various granulomatous infections [Bibas M *et al.,* 2025].

Definitive diagnosis requires histopathological and immunohistochemical analysis. While excisional biopsy is reserved for small lesions, large mandibular masses generally necessitate incisional or core needle biopsies, as fine-needle aspirates often yield insufficient necrotic tissue [Bibas M *et al.,* 2025]. On histopathology, DLBCL is characterized by a diffuse proliferation of large atypical lymphoid cells with vesicular nuclei. These cells express pan-B-cell markers (CD20, CD79a, PAX5) and typically demonstrate a high Ki-67 proliferation index [Bibas M *et al.,* 2025]. The presence of MYC, BCL2, and/or BCL6 rearrangements defines the "double hit" or "triple hit" subtypes, which are associated with significantly inferior prognoses [Northend M *et al.,* 2021].

Staging is conducted via the Ann Arbor system, where Stage IE involves a single bone lesion and Stage IIE involves regional node involvement [Yohannan B *et al.,* 2023]. Standard treatment for localized DLBCL is R-CHOP chemoimmunotherapy. Surgery is largely limited to diagnostic biopsy or the management of pathological fractures [Hamburger E *et al.,* 2026]. While the overall response rate for PBL-DLBCL is high (91%), the prognosis is markedly worse in advanced stages or the "double hit" subtype [Hamburger E *et al.,* 2026; Bibas M *et al.,* 2025]. In this case, the aggressive nature of the

"double hit" features underscores the critical need for rapid diagnostic escalation.

CONCLUSION

Primary bone lymphoma of the mandible is a rare but vital diagnostic consideration for destructive mandibular lesions. Its ability to mimic common odontogenic infections often leads to diagnostic delays. Any failure of a mandibular lesion to respond to conventional antibiotic therapy should prompt immediate advanced imaging and biopsy. Early recognition, particularly in aggressive subtypes like double hit DLBCL, remains the most significant factor in improving patient survival.

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