Case Report

Primary diffuse large B-cell lymphoma of the nasal bone and palate: An unusual clinical presentation

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Abstract

Primary bone lymphomas account for 3-5% of extranodal non-Hodgkin lymphomas in adults and are typically present in the axial skeleton and weight-bearing bones. We present a unique case of primary bone diffuse large B-cell lymphoma (DLBCL) of the nasal bone and palate. We discuss the pathologic and radiologic findings and review the current literature and clinical management to highlight how this unusual clinical entity should be considered in differential diagnoses of head and neck bone masses.

Keywords: Bone, diffuse, large B-cell, lymphoma, nasal, non-Hodgkin, palate

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INTRODUCTION

Diffuse large B-cell lymphoma (DLBCL) is the most common form of non-Hodgkin lymphoma and is an aggressive disease of malignant B-lymphocytes.[1] The median age of diagnosis for DLBCL is 64 years with a slight male predominance at 55%.[2,3]

DLBCL can be present primarily in bone, most commonly in the axial skeleton and weight-bearing bones. Primary presentation in bones of the head and neck is extremely rare. Here, we present a patient with the unusual presentation of DLBCL as nasal and palate bone masses. To the best of our knowledge, this is the first reported case of primary nasal and palate DLBCL.

CASE HISTORY

The patient is a 49-year-old male who presented with complaints of nasal congestion, purulent rhinorrhea, and progressive difficulty breathing for 4 months duration. On examination, a firm 2 cm swelling to the left of the nasal bridge was appreciable. The patient underwent a computed tomography (CT) scan that revealed a hyperdense left nasal sidewall mass extending into the maxillary alveolus and a right nasal floor lytic lesion with no evidence of osseous destruction or remodeling [Figures 1 and 2].

Due to the location, surgical exploration with open biopsy was recommended. The patient underwent an endoscopic septoplasty and resection of multiple cystic lesions of the right nasal floor, palate, left maxilla, and left nasal bone. Figures 3-5 display histologic findings of the specimens.

The resected specimen consisted of fragments of cartilage, connective tissue, muscle, and glandular tissue with a variably dense diffuse atypical lymphoid infiltrate, which showed variable cytologic preservation.

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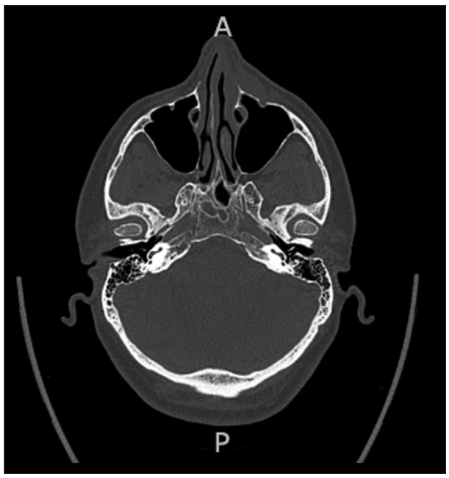

Figure 1:CT scans demonstrating left nasal sidewall and right nasal floor masses (soft tissue and bone view). A subcutaneous soft tissue mass abuts the left nasal bone, anterior to the left maxillary sinus wall, measuring 2.1 × 1.0 × 0.5

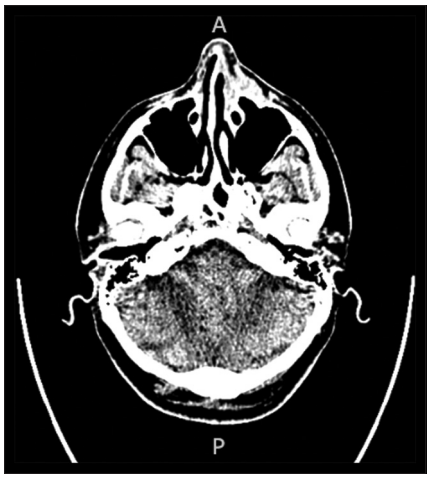

Figure 2: CT scans demonstrating left nasal sidewall and right nasal floor masses (soft tissue and bone view). A subcutaneous soft tissue mass abuts the left nasal bone, anterior to the left maxillary sinus wall, measuring 2.1 × 1.0 × 0.5

In better-preserved areas, the specimen consisted of predominantly small lymphocytes, while other areas showed medium-sized lymphocytes with round to angular nuclei with open chromatin and abundant cytoplasm. The neoplastic cells did not involve epithelial structures, but they surrounded and focally appeared to invade vessels as well as muscle and fat. Occasionally, necrotic foci were seen [Figure 3].

Immunohistochemical stains were difficult to interpret in many areas due to cell preservation artifact. However, the atypical cells were positive for CD20, Bcl-2, and Bcl-6 and negative for CD5, CD10, and MUM-1 [Figures 4 and 5]. The Ki67 proliferation index was increased to 50-60% [Figure 5] and CD30 is negative. There were variable numbers of normal CD3 positive T cells in the background, numerous in some areas but less frequent in the above-described areas of atypical cells. FISH showed no MYC rearrangement and no fusion of MYC and IGH. Therefore, the diagnosis of DLBCL of the germinal center B-cell phenotype was rendered.

DISCUSSION

We present a rare case of DLBCL located in the nasal bone, maxilla, and hard palate. Primary lymphoma of bone (PLB) is a rare disease, and it comprises less than 2% of lymphomas in adults and approximately 5% of extranodal non-Hodgkin lymphoma presentations.[4] PLB is a particularly unusual finding in the bones of the head and neck, as it most often presents in the weight-bearing bones and joints of the axial skeleton.[5] Ramadan *et al*.[6] reported 131 patients with PLB, with 21 patients (only 16%) presenting with PLB of the head and neck. None of these patients, however, presented with a mass in the bones of the nose or palate.

In contrast to the rare primary bone lymphomas of the head and neck, several previous case studies have reported the finding of primary DLBCL in the soft tissue structures of the nasal cavity and paranasal sinuses.[7,8] Asian countries have a higher incidence of reported nasal lymphomas than Western countries. While lymphomas of T cells or natural killer cells are more common in Asian countries, DLBCLs are more commonly found in Western countries.[8] In our case, the patient's diagnosis is concordant with a study from Jawad *et al*.[9] who identified DLBCL as the most common PLB. In their study, 66.3% of 1500 patients with PLB had disease classified as non-Hodgkin large B-cell.

Various molecularly distinct subtypes of DLBCL have been described in the literature. The most used classification based on the cell of origin divides DLBCL into germinal centre B-cell type (GCB) and the activated B-cell type (ABC). Our patient's tumor stained positive for Bcl-6, while negative for MUM-1. Based on immunophenotype, this case was classified as the Germinal Centre type.[10]

Patients with the GCB type often have better responses to standard R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone) and thus, better prognosis than other DLBCL subtypes.[11] However, R-CHOP has been shown to cure 90% of patients with limited DLBCL and only 60% with advanced DLBCL.[12] Currently, 45-55% of patients relapse following R-CHOP therapy. Ongoing clinical trials are examining the use of salvage chemotherapy with autologous stem cell transplant consolidation and immunotherapy such as

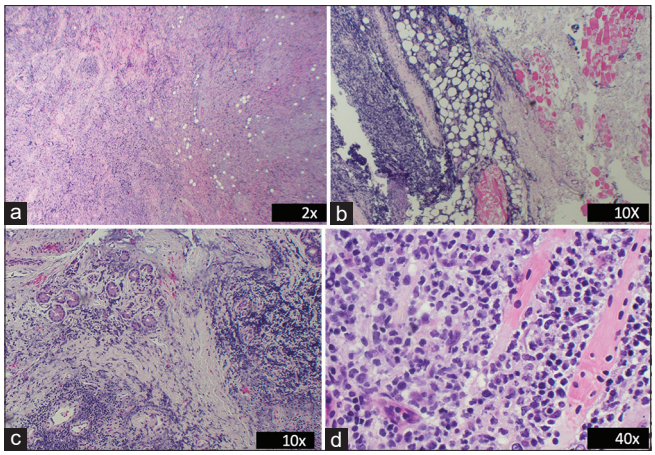

Figure 3: H and E staining.(a, b and c) fragments of connective tissue, muscle, and glandular tissue with variably dense diffuse atypical lymphoid infiltrate. (d) The atypical lymphocytes are medium sized with round to angular nuclei with open chromatin and abundant cytoplasm

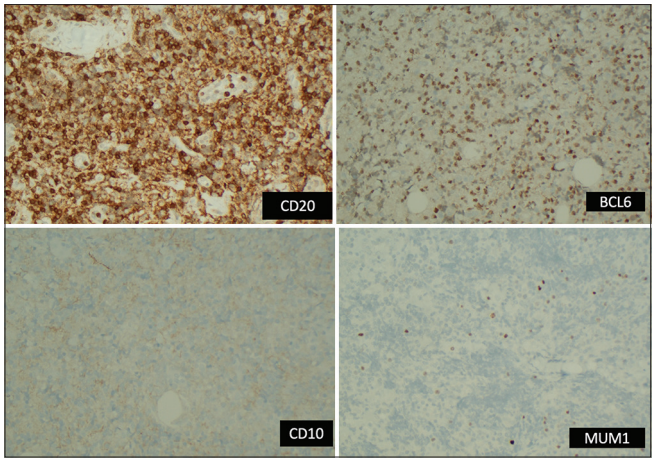

Figure 4: Atypical cells are positive for CD20, and Bcl-6, but are negative for MUM1

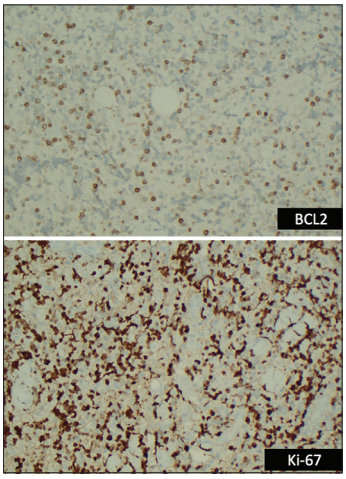

Figure 5: Bcl-2 is positive. The Ki67 proliferation index is increased to 50-60%

anti-PD-1 monoclonal antibody and Chimeric Antigen Receptor T-Cell therapy for refractory disease.[12]

Additionally, a recent systematic review and meta-analysis on DLBCL treatment found that the addition of other therapeutic agents (bortezomib, lenalidomide, gemcitabine, bevacizumab, ibrutinib) did not improve survival as compared to R-CHOP alone.[13]

Primary lymphoma of bone is treated similarly with R-CHOP, although in some cases, chemotherapy is combined with radiation or surgery of the affected bones. Studies have shown improved 5-year survival outcomes among patients with combined radiation and R-CHOP treatment.[14,15]

The patient in this case underwent 4 cycles of R-CHOP chemotherapy following his surgical resection for stage IE disease. Eighteen months following the final R-CHOP infusion, a positron emission tomography (PET) scan showed no evidence of disease in the nasal bone or hard palate. No other suspicious FDG avid lesions were identified, and there is no evidence of any remaining active disease at this time.

CONCLUSION

We report a case of DLBCL presenting as nasal bone and hard palate masses. Even though this disease most commonly presents in soft oropharyngeal tissues, it should also be considered when working up bone masses of the head and neck. It is imperative to recognize primary DLBCL in head and neck bones as prompt diagnosis and treatment can lead to a better prognosis.

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Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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