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CASE REPORT

T-Cell-Rich Diffuse Large B-cell Lymphoma Presenting as an Intraosseous Maxillary Neoplasm

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ABSTRACT

Non-Hodgkin lymphomas are a group of highly diverse malignancies with great tendency to affect organs and tissues that do not ordinarily contain lymphoid cells. T-cell/histiocyte-rich large B-cell lymphoma (TCRBCL) is an uncommon histological variant of large B-cell non-Hodgkin lymphoma, morphologically characterized by a minor population of clonal B-cells distributed in a background of prominent reactive T lymphocytes. This is an interesting case of extranodal isolated TCRBCL in jaw bone and to our knowledge this is the first report of its kind in a nonimmune compromised 40-year-old female. An increase in the number of case reports of non-Hodgkin lymphoma in head and neck region definitely makes it to be included as differential diagnosis. The patient has completed 5 years of therapy with no evidence of recurrence.

Keywords: Non-Hodgkin lymphoma, Extranodal, Oral cavity, T-cell-rich diffuse large B-cell lymphoma, Head and neck.

INTRODUCTION

Lymphomas, the malignant neoplasms of the reticuloendothelial and lymphatic system, are classified based on characteristic morphologic pattern, immunophenotypic pattern and sometimes distinctive chromosomal aberrations.[1] They have been traditionally divided into Hodgkin disease (HD) and non-Hodgkin lymphoma (NHL) because of their differences in histology, patterns of behavior, immunohistochemical findings and cytogenetics.

Diffuse large B-cell lymphoma (DLBCL) is the most common lymphoid malignancy in adults accounting for about 40% of all non-Hodgkin lymphomas (NHLs).[2] T-cell-rich B-cell lymphoma (TCRBCL) is an uncommon morphologic variant of DLBCL[3] representing 1 to 3% of all DLBCLs.[4]

Here, we report a case of T-cell-rich B-cell lymphoma (TCRBCL) occurred in the maxilla.

CASE REPORT

A 40-year-old female patient reported at the SDM college of Dental Sciences, Dharwad with the chief complaint of swelling in maxillary posterior region since five months. Swelling was slowly progressive and accompanied with dull ache and burning sensation. History revealed extraction of teeth at the same site two months back.

Extraoral examination revealed a diffuse swelling in the middle-third of face causing facial asymmetry. Intraorally, a lobulated swelling extending from 2nd premolar to the tuberosity of maxilla was observed and seen in association with an unhealed socket. On palpation, the swelling was firm in consistency with indistinct borders (Fig. 1). The patient did not report any systemic symptoms at the time of presentation. OPG (orthopantomograph) and PNS (paranasal sinus) view showed opacity in the maxilla and maxillary sinus. Complete blood examination has not showed any significant results. A diagnosis of squamous cell carcinoma was suspected clinically.

Biopsy specimen revealed ill-defined nodules comprising centrally located large cleaved lymphocytes having round to oval shaped nucleus with irregular nuclear contour with thin rim of eosinophilic cytoplasm. There were many mitotic figures. Reed-Sternberg like binucleated cells with prominent nucleoli, polylobulated cells and giant nucleus having moderate amount of nucleus were also seen. There are many histiocytic cells distributed among these large cells (Fig. 2). These areas were rimmed by sheets of small cleaved cells. Some are present with more convoluted appearance also. Lesion was covered by ulcerated stratified squamous epithelium. Considering the differential diagnosis of other round cell tumors, namely poorly differentiated squamous cell carcinoma, primary intraosseous adenocarcinoma, Ewing's sarcoma and lymphomas, a primary immunohistochemistry was performed. Primary immunohistochemistry reactivity showed negative for cytokeratin and epithelial membrane antigen but intense positive for LCA (leukocyte common antigen). Based on the histopathological examination and immunohistochemistry reactivity, a diagnosis of non-Hodgkin lymphoma was given.

Diagnosis was further confirmed by primary immunohistochemical examination, which showed intense and diffuse expression of CD 20, CD 3. Cells located in the center were positive for LCA, CD 20 (Fig. 3) and small lymphocytes located

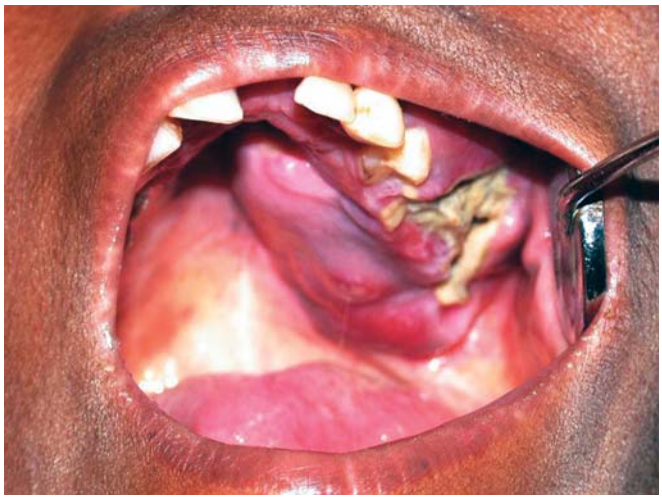

Fig. 1: Lesion showing multilobulated swelling with nonhealing ulcer at the site of extraction

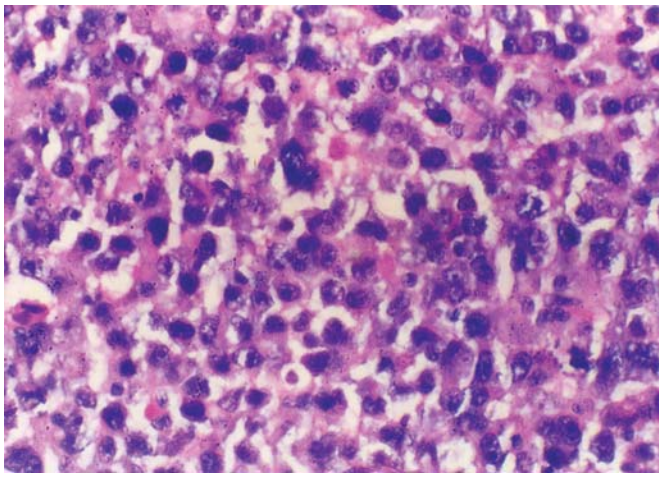

Fig. 2: Lesional neoplastic lymphocytes showing cleaved cells having round to oval shaped nucleus and prominent nucleoli rimmed to irregular nuclear contour with scanty eosinophilic cytoplasm. Mitotic figures and histiocytic cell distribution among these large cells is also seen (original magnification ×400)

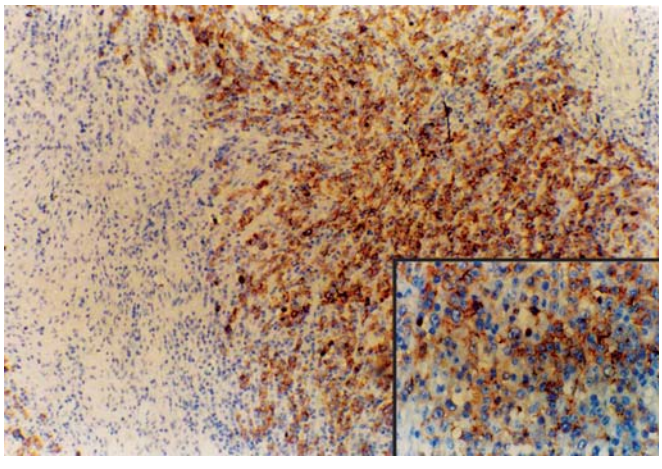

Fig. 3: Cytoplasmic and membranous positive reactivity, centrally located large cells positive for CD 20 (original magnification ×250), inset high power (original magnification ×400)

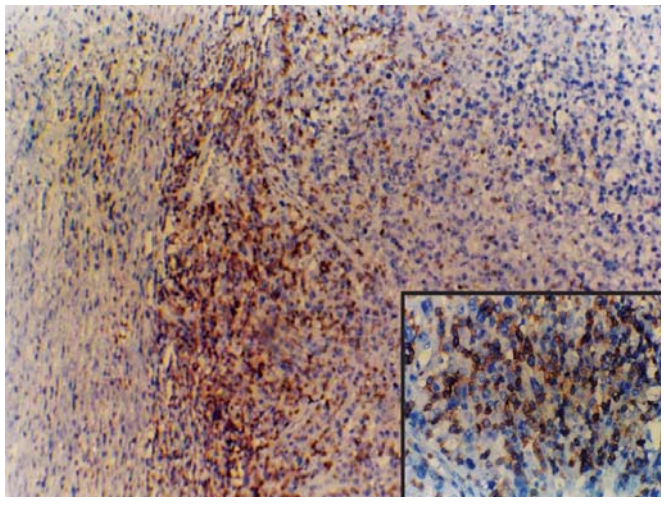

Fig. 4: Cytoplasmic and membranous positive reactivity, small round cells positive for CD 3, rimming large cells located in the center (original magnification ×250), inset high power (original magnification ×400)

in the periphery were positive for CD 3 (Fig. 4). Negative expression of ALK, kappa and lambda rule out the possibility of anaplastic lymphoma and plasmacytoma respectively and negative expression of EMA and cytokeratin ruled out SCC.

The histopathologic features together with immunohistochemical profile led to the diagnosis of T-cell-rich diffuse large B-cell lymphoma.

Hemimandibulectomy along with radicular neck dissection till level V lymph node was done. Patient was further treated by radiotherapy and chemotherapy. Prognosis in this patient was good with no evidence of recurrence four years later.

DISCUSSION

Non-Hodgkin lymphoma is a heterogeneous group of malignancies characterized by an abnormal clonal proliferation of T-cells, B-cells, or both.

T-cell-rich B-cell lymphomas (TCRBCL) are recently described, unusual non-Hodgkin lymphomas that have a diffuse morphology, a predominance of reactive T-cells and a minority of neoplastic B-cells. They account for 1 to 2% of all non-Hodgkin lymphoma. The revised European-American lymphoma and adopted WHO classifications currently classify TCRBCL among the diffuse large B-cell group, since they have a diffuse growth pattern and because large transformed B-cells comprise the neoplastic population.[3,7] However, the neoplastic B-cells accounts for only minor population (20-25%) distributed in a background of prominent reactive T lymphocytes (65-90%).

Clinical data regarding T-cell-rich B-cell lymphoma is not well described due to paucity of previous reported cases. Most patients with TCRBCL present with nodal disease involving various sites of the body.[8] Extranodal involvement has been reported in liver, soft tissue, spleen, nasopharynx, brain, tongue, mediastinum and bone.[5] Their occurrence in oral cavity is extremely rare and to our knowledge this is the first case of TCRBCL to be reported in the jaws.

The factor(s) responsible for the increased number of T-cells and/or reduced number of neoplastic B-cells in TCRBCLs has/have not been extensively studied. Increased interleukin (IL)-4 expression in the neoplastic large B-cells and histiocytes of TCRBCL, which was absent in other DLBCLs, may play a role in the proliferation of T-cells and/or the suppression of B-cell growth in this tumor.[5] The associated apoptosis of B-cells may be due to the cytotoxic T-cell mediated lysis.[6] An immune response to viral associated antigens in the neoplastic B-cells, such as EBV has also been considered for possible source of the extensive T-cell population in TCRBCL.[7] The present case was however not evaluated for their existence.

The neoplastic B lymphocytes display a heterogeneous spectrum of morphology, including centroblasts, immunoblasts, multilobated, multinucleated, RS-like cells (especially the lymphocytic and histiocytic [L&H] variants of RS cells), as well as large cleaved and noncleaved cells. Stromal fibrosis and hypervascularization may also be present.[8] Similar were the findings in the present case. These features resembling those of peripheral T-cell lymphoma (PTCL) and Hodgkin disease[6,8] pose a diagnostic challenge.

Controversy still exists whether T-cell-rich B-cell lymphoma to be categorized as a distinct entity or as a variant of diffuse large B-cell lymphoma. TCRBCL may occur concurrently with or evolving from a follicular lymphoma or nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL)[8] or it may represent different stages of same disease owing to its morphologic and immunophenotypic similarities to NLPHL.[9] One has to be aware that TCRBCL frequently mimics PTCL or NLPHL morphologically, and it may coexist with one of these lesions, but it behaves and responds to therapy like a conventional diffuse large B-cell lymphoma. The diagnosis of TCRBCL can be confirmed with an immunohistochemical analysis because the neoplastic B-cells are immunoreactive for CD 20 and LCA and the reactive T-cells for CD 3, CD 43, CD 4.[5] Similar findings were also noted in the present case. Presence of Reed-Sternberg cells in these tumor could be differentiated from those in Hodgkin disease by negative immunoreactions of CD 30 in TCRBCL.[10]

The paucity of cases makes the understanding of biological behavior and therapeutic options of lymphoma involving the oral region difficulty. Chemotherapy following surgical excision of the lesion is the treatment of choice.

Achten et al[10] consider this variant as an aggressive lesion and Greer et al[11] associated them with poor prognosis. This could be related to the result of inappropriate therapy as most patients were treated for Hodgkin disease initially.

CONCLUSION

We report a rare case of T-cell-rich large B-cell lymphoma (TCRBCL) presenting as an asymptomatic lesion in the jaw of nonimmunocompromised middle aged female patient. Histopathological observation of multiple samples of lesion and immunohistochemistry will be useful in diagnosis of this lesion. Patient was undergone hemimandibulectomy and treated with chemotherapy and radiotherapy resulting in complete resolution of the lesion with no recurrence of more than 5 years. Therefore, a proper clinical evaluation, histopathological as well as immunohistochemical of biopsy specimen may aid in the diagnosis and help in proper management. This case is reported for its rarity and also highlights the importance of this unusual clinical entity to maxillofacial surgeons and pathologists.

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