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Original Article

A CHALLENGING CASE REPORT OF DIFFUSE LARGE B-CELL LYMPHOMA

Mai M.Saleh[1], Zeinab E.Darwish[2], Nermine G.El Bahey[3]

[1.] Lecturer Oral Pathology, Faculty of Dentistry, Alexandria University, Egypt.

[2.] Professor Oral Pathology, Faculty of Dentistry, Alexandria University, Egypt.

[3.] Lecturer Oral Pathology, Faculty of Dentistry, Pharos University, Egypt.

Email: mai.mahmoud.dent@alexu.edu.eg

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Abstract

Introduction: Diffuse large B-cell lymphoma (DLBCL) refers to diverse group of cancers that are all biologically unique. Finding the subtype of non- Hodgkin's lymphoma is crucial, in addition to figuring out if the cancer is aggressive or indolent, T-cell, B-cell, or natural killer cell lymphoma. This is because each subtype has a range of possible behaviors and therapies. This justifies the requirement for a precise and detailed diagnosis that is specific to the subtype and lists the molecular prognostic markers.

Aim: This study aimed to an immediate histological and immunohistochemical investigation had to be conducted in the cases of oral lymphomas .

Subjects and methods: A 39- year old Egyptian female patient complained of painful swelling in the left side of the mandible for two months. Biopsy was taken then processed, stained with H&E stain and examined under light microscope. A panel of markers was performed including vimentin, LCA (CD45), CD20, CD15, CD3, and epithelial membrane antigen (EMA).

Results: Strong immunopositivity was detected with vimentin, CD45, CD20, and CD15. CD3 and EMA showed immunonegativity of the tumor cells. The histopathology and immunohistochemistry were consistent with DLBCL.

Conclusion: Histological analysis of suspected oral lesions is always mandatory. Using panel of immunohistochemical biomarkers is important in diagnosis hematological tumors.

Keywords: Non-Hodgkin’s lymphoma, Diffuse large B cell lymphoma, Immunohistochemistry, Case report.

I. INTRODUCTION

The distinguishing feature of lymphoid neoplasms is aberrant cell growth. It involves lymph nodes but has the potential to infiltrate extra nodal tissues as well. This group of tumors includes Hodgkin's lymphoma (HL) and non-lymphoma Hodgkin's (NHL), both of which are hypothesized to be caused by a mutation in lymphocyte progenitor cells. Approximately 4 percent of head and neck cancers are lymphomas,

the majority of the cases being non Hodgkin's lymphoma (97%).[1]

The World Health Organization's (WHO, 2016) 4th revised classification of lymphoid tumors [2] lists more than forty subtypes of NHL, the most common kind of lymphoid malignancy. This varied group of tumors displays a range of biological behavior and anatomical involvement patterns. As a result, NHL can present in many different ways and with a range of imaging results.[1]

Diffuse large B cell lymphoma (DLBCL) is an aggressive condition that requires immediate treatment due to its frequent growth of lymphadenopathy and constitutional symptoms. Even though extranodal disease frequently manifests, lymphadenopathy is typically the first sign in most people. The first line of treatment is chemotherapy/immunotherapy, which heals the illness in 50–60% of individuals. The prognosis is unfavorably poor in patients whose disease is resistant to initial therapy or who return after achieving remission.[3] After clinical examination and radiographic imaging, the best course of action is to conduct an excisional biopsy to confirm the diagnosis of DLBCL.[4]

Care should be taken with patients to take a biopsy that is the least intrusive while still producing adequate tissue. Using positron emission tomography computed tomography, it is possible to identify the illness areas with the highest standardised uptake values and most likely the most aggressive part of the disease can be detected, and this information could be used to guide the selection of the biopsy site.[4]

DLBCL is characterized physically with widespread infiltration of medium to large cells with huge nucleoli and plentiful cytoplasm that disrupts and effaces basic architecture of the affected lymph node. The cells frequently exhibit CD19, CD20, and CD45, which are pan B cell antigens. A favorable prognosis is indicated in approximately 10- 40 % of patients by CD30 expression.[5] But in EBV positive patients, CD30 immunopositivity has unfavorable outcomes despite the good prognosis conferred by CD 30 expression.[4]

In this work, we introduce a case of diffuse large B cell NHL in the left side of the mandible of 39 years old Egyptian female patient in which a panel of immunohistochemical markers was done to confirm the diagnosis and provide an accurate treatment plan.

II. SUBJECTS AND METHODS

A 39 years old Egyptian female patient complained of rapidly growing and painful swelling at the left side of the mandible extended to the anterior area for two months (Figure.1). The patient suffered from bone pain and weight loss. The patient didn't take any medications and no family history was present for presence of the same swelling.

III. RESULTS

Histopathologically, sections revealed multiple fragments of soft tissue infiltrated by sheets of large malignant cells. The cells show round and vesicular pleomorphic nuclei with distinct nucleoli and abundant eosinophilic and amphophilic cytoplasm. Atypical mitosis is also seen (Figure.2). This histological picture could be sarcoma, infectious disease or large cell malignancies as melanoma or carcinomas. Immunohistochemistry was done by the standard techniques. A panel of markers is performed including vimentin, LCA (CD45), CD20, CD15, CD3, and EMA (epithelial membrane antigen). Strong immunopositivity was detected with vimentin, CD45, CD20, and CD15 (Figure.3). CD3 and EMA showed immunonegativity of the tumor cells (Figure.4). The histopathology and immunohistochemistry were consistent with DLBCL. The patient was subjected to chemotherapy regimens known as R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone).

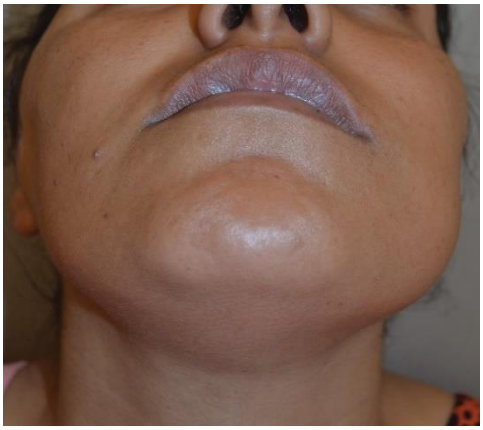

Figure 1

Large swelling at the left side of the mandible

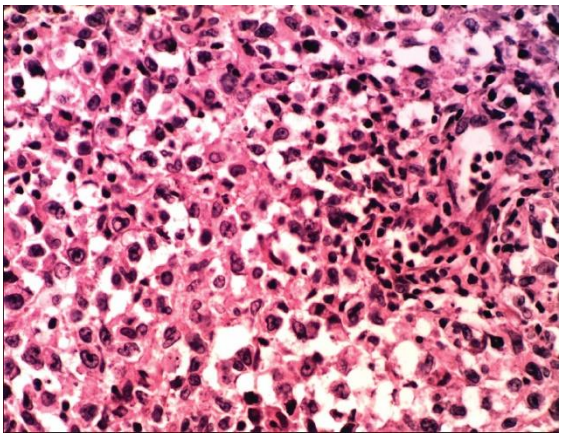

Figure 2

Sheets of malignant cells with round and vesicular pleomorphic nuclei and abundant eosinophilic and amphiphilic cytoplasm (H&E x100)

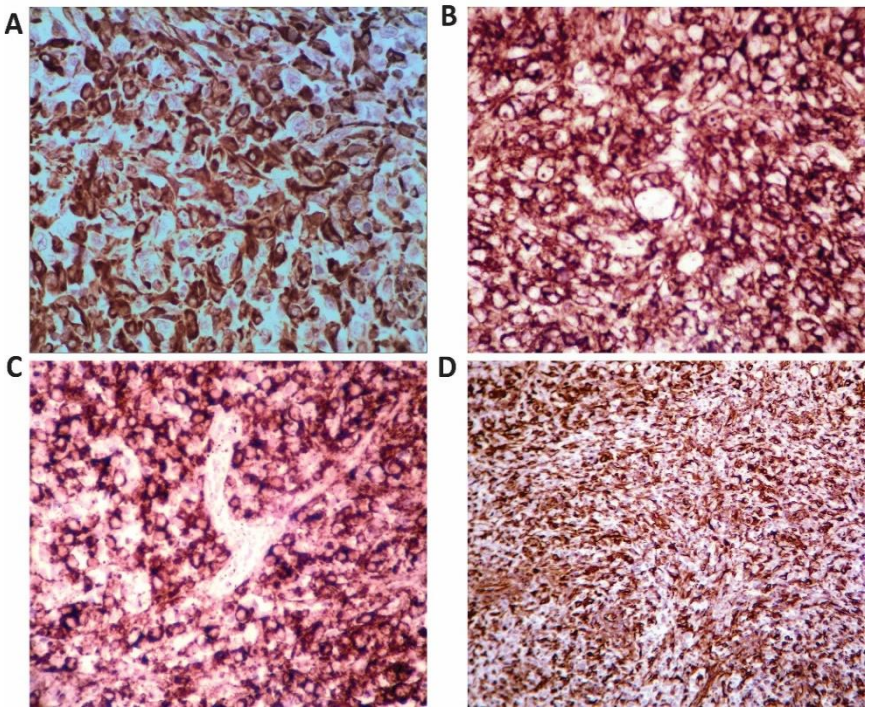

Figure 3

A. Strong cytoplasmic and membranous expression of Vimentin (IHC ×100)

B. Membranous and cytoplasmic expression of CD45 (IHC ×100)

C. CD20-positive cells in the stroma (IHC ×100)

D. Strong cytoplasmic reaction of CD 15 (IHC ×100)

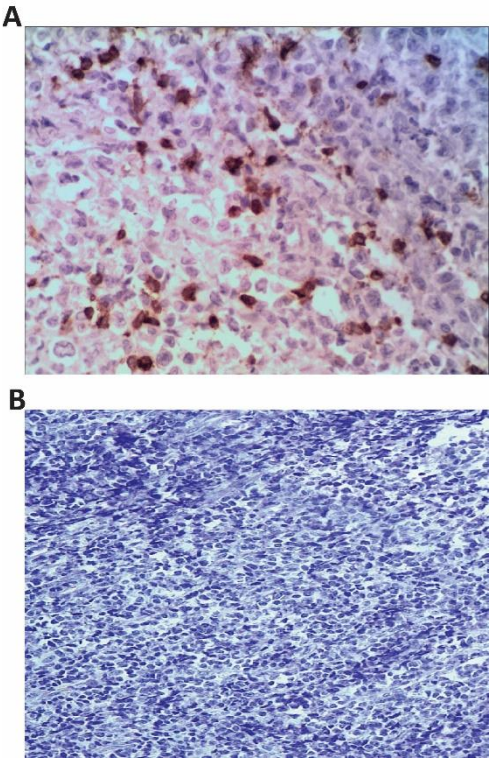

Figure 4

A. Scantcytoplasmic CD3 expression (IHC×100)

B. Negative immunoreaction of EMA (IHC×100)

IV. DISCUSSION

DLBCL is described as a tumor of giant B cells grouped in diffuse pattern by histological image of the disease. However, DLBCL diagnosis required consideration of the lesion's inherited etiopathogenesis.[6]

A few necessary adjustments for the diagnosis of DLBCLs have been made in the new 2016 categorization of DLBCL. It has been suggested that the pathology report contains the cell of origin categorization, such as germinal center B-cell and activated B-cell type.[7]

Leukocyte common antigen (CD45) is a glycoprotein marker that is used as the first-line immunohistochemical stain to distinguish between hematological malignancy (CD45+ve) and nonhematopoietic malignancy (CD45-ve) to determine the nature of an unknown lesion.[7] Diffuse membranous and cytoplasmic reaction was seen in the B-lymphocytes throughout the stroma in the current case.

Another globally utilized pan B cell marker is CD20 which is expressed from the naive B-cell until the last stages of B-cell development just before plasmacytic differentiation.[8] Strong CD20 positivity also showed in cytoplasm of B cells distributed in stroma was so suggestive of non-Hodgkin's B cell lymphoma.

Diagnosis confirmation was done by CD15 staining, to differentiate Hodgkin lymphoma (CD15+ve) from anaplastic large cell lymphoma (usually CD15-ve). In the present case, a strong cytoplasmic reaction was detected which is in agreement with Zsófia Simon et al.[9] However, Liziane Cattelan Donaduzzi et al. found that the neoplastic cells expressed immunopositivity for CD20 and Ki67 (100%) and immunonegativity for CD3 and CD15 so the histopathology and immunohistochemistry investigation were both confirm the DLBCL diagnosis.[10]

In contrast to previously mentioned IHC markers, CD3 revealed scanty immunoreaction which indicates that T-cells are not present in the stroma which in accordance with Liziane Cattelan Donaduzzi et al. also.[10]

EMA, which is an epithelial marker for most poorly prognosis carcinomas, showed immunonegativity in almost all the tumor cells while vimentin, revealed strong cytoplasmic and membranous expression.

V. CONCLUSION

As a conclusion, when assessing poorly differentiated neoplasms, pathologists should be aware of this trap and use panel of immunohistochemical biomarkers is important in diagnosis hematological tumors.

Recently, using Comprehensive Genomic Profiling and Next-generation sequencing tests are recommended for biomarker profiling in multiple tumor types as they provide more comprehensive tumor profiling and help oncologists and pathologists in diagnosis. Molecular profiling studies have recently proposed new molecular classification systems. These have the potential to resolve the biological heterogeneity of DLBCL into manageable subgroups of tumors that use common oncogenic programmes.

Conflict of Interest:

The authors declare no conflict of interest.

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Ethics:

This study protocol was approved by the ethical committee of the faculty of dentistry- Alexandria university (IRB#00010556-IORG0008839).

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