ABC like DLBCL

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Abstract

Diffuse large B-cell lymphoma [DLBCL] is the most frequently-occurring lymphoma, accounting for an estimated 35% of all lymphoma cases worldwide. This heterogeneous disease has a complex classification, and if left untreated, takes an aggressive and fatal clinical course.

Here, a 70 years' female presented with lymph node enlargement. FNAC [Fine needle aspiration cytology] impression was suggestive of NHL [Non-Hodgkin's Lymphoma] and histopathology was suggestive of secondaries from undifferentiated carcinoma with a differential diagnosis of NHL. On IHC [immunohistochemistry], final diagnosis was diffuse large B-cell lymphoma [Immunoblastic]: ABC [Activated B cell] like.

Keywords: Activated B cell, Immunoblastic, Lymphoma, Diffuse, Large B cell.

Introduction

NHLs occur because of an expansion and progressive accumulation of a mature single clone of lymphocytes.(1) The most common subtype, DLBCL, is characterized by a diffuse proliferation of large and mature B-cells. These cells usually are larger than, or equal to, twice the normal size of macrophages or lymphocytes.(2)

DLBCL is clinically and biologically heterogeneous, aggressive, and includes several subtypes.(2) It may arise as primary or de novo, or may result from a transformation of an indolent lymphoma.(3) Most cases occur in lymph nodes with 40% in extra-nodal sites.(4) These cases occur most frequently in the gastrointestinal tract, but may appear in any organ, including the skin, central nervous system [CNS], bone marrow [BM], salivary gland, lung, kidney, and liver.(5,6) Bone marrow involvement is found in 11% to 27% of all cases but rarely infiltrates the peripheral blood.(7)

Case History

A 70 years old female, came with chief complaints of swelling over the right mandible for 1 month. There was no history of fever or trauma. Local examination [Fig. 1] revealed a firm, non-tender, immobile swelling of size 6 x 5 cm situated over the right angle of mandible. Skin over the swelling was normal. General and systemic examination was unremarkable. No evidence of hepatosplenomegaly or lymphadenopathy.

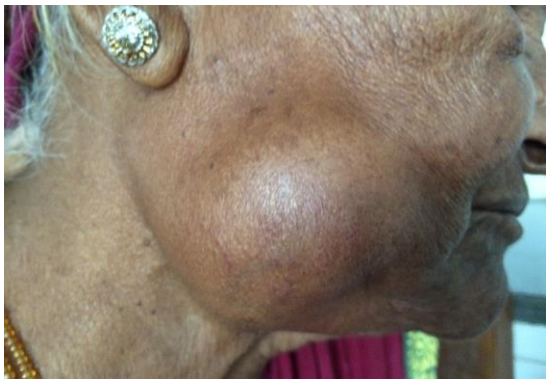


Fig. 1: On gross: Swelling over right mandible of size 6x5 cm with normal skin over the swelling

Local USG [Ultra sonography] was suggestive of right submandibular abscess. Her ESR was16mm/hr, HBsAg [Hepatitis B surface antigen] was nonreactive and CBC [Complete blood count] was within normal range. Her PS [Peripheral Blood Smear] impression was mild shift to left.

FNAC [Fig. 2] showed individually scattered small to large cells admixed with residual lymphocytes suggestive of NHL.

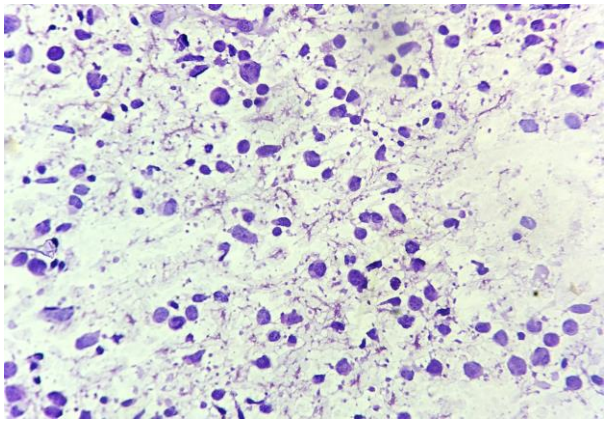


Fig. 2: FNAC showed individually scattered small to large cells admixed with residual lymphocytes. PAP [40X]

Histopathology revealed [Fig. 3] lymph node with areas of sinus histiocytosis admixed with darkly stained small to large cells. Histopathological diagnosis was suggestive of secondary's from undifferentiated carcinoma with a differential diagnosis of NHL and IHC was advised for confirmation.

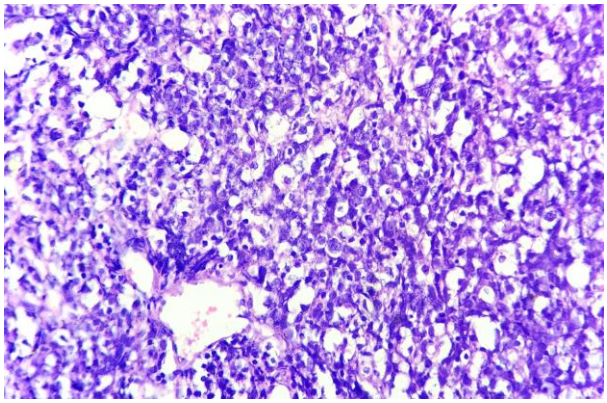
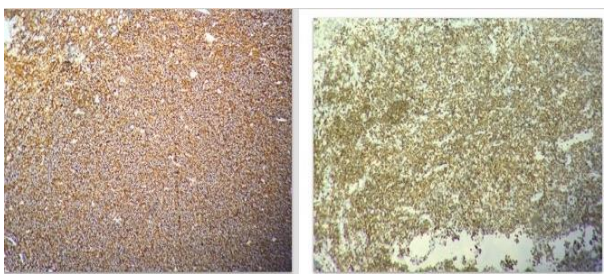


Fig. 3: Lymph node biopsy shows areas of sinus histiocytosis admixed with darkly stained small to large cells. H&E [40X]

IHC [Fig. 4] revealed large lymphoid cells immunopositive for CD20, Bcl2, Bcl6 & MUM1 with focal immunoreactivity for c-myc. These cells were immunonegative for CD3 and CD10 [Fig. 5]. Final diagnosis was diffuse large B-cell lymphoma [Immunoblastic]: ABC [Activated B cell] like.



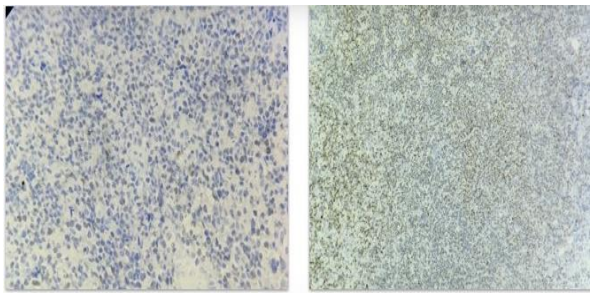


Fig. 4: IHC: positive for CD20, Bcl2, Bcl6 and MUM1. [IHC:40X]

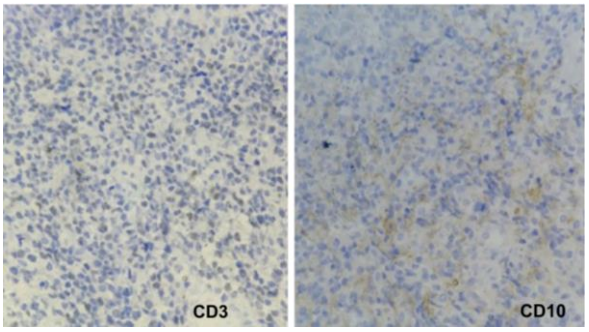


Fig. 5: IHC: Tumor cells were immunonegative for CD3 and CD10. [IHC:40X]

Discussion

FNAC offers immediate preliminary diagnosis in the investigation of lymphadenopathy with minimal trauma to the patient at a considerably lower cost than surgical biopsy.[8,9,10]

Cytologically, our case showed individually scattered small to large lymphoid cells admixed with residual lymphocytes suggestive of a NHL.

B-cell lymphoma is comprised of a heterogeneous group of entities that have a significant component of large cells. The large non-cleaved cell or immunoblast is at least two to three times the size of a small-cleaved cell. It has round nuclear outlines, vesicular chromatin, and single to multiple prominent nucleoli.

Immunoblastic lymphomas usually have a predominance of immunoblasts with prominent central large nucleoli in a large round vesicular nucleus. The cytoplasm is abundant and plasmacytoid, or clear to pale.

Another type of large cell variant described is the multilobated large cell [greater than three lobes]. When pleomorphic multilobated variant cells are present in the lymphoma, one can make a diagnosis of large cell lymphoma with confidence. Based on a review of the literature, the value and limitations of FNAC in the diagnosis of lymphomas should not be assessed in terms of cytohistological correlation alone, with histology taken as the gold standard.[11]

The lymph node biopsy procedure in this patient was selected based on FNAC result showing suspected lymphoma.

On histopathology, the lymph node revealed sinus

histiocytosis admixed with darkly stained small to large cells, which was suggestive of secondaries from undifferentiated carcinoma or a NHL, so IHC was advised for confirmation. Final diagnosis after IHC was diffuse large B-cell lymphoma [Immunoblastic]: ABC like.

Phenotypically, over 95% of DLBCL cases express pan-B-cell markers, such as CD20.[12] In practice, it may be necessary to also exclude other tumors in the morphological differential diagnosis with negatively staining antibodies. This include carcinoma's (negative keratins), amelanotic melanoma [negative S100 and MelanA], anaplastic large cell lymphoma, small cell variant [negative CD30 and ALK-1], B-cell lymphoma's [negative CD20, CD79a and CD138], and T cell lymphoma's [negative CD1a, CD2, CD3, CD5, CD8 and if necessary granzyme B and TIA-1].[13]

Conclusion

DLBCLs are the most common lymphoid neoplasms, composing 30- 40% of adult non-Hodgkin lymphomas.[14]

DLBCL probably arises via a stepwise process of somatic mutations, particularly chromosomal translocations involving oncogenes and, often, promoter regions of the immunoglobulin genes. The genes most commonly rearranged in DLBCL are BCL6 [over 30% of cases], BCL2 [approximately 20% of cases] and C-MYC [5–10% of cases].[15,16,17] Unlike indolent lymphomas, DLBCL is an aggressive lymphoma, and if left untreated, survival may be measured in weeks to months.[18]

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