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International Journal of Current Research
Vol. 7, Issue, 11, pp.22667-22669, November, 2015

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

DIFFUSE LARGE B-CELL LYMPHOMA PRESENTING AS A CHEST WALL MASS: CASE REPORT WITH REVIEW OF LITERATURE

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ARTICLE INFO

Article History:
Received 26th August, 2015
Received in revised form
16th September, 2015
Accepted 30th October, 2015
Published online 30th November, 2015

Key words:
Non Hodgkins Lymphoma,
Diffuse large B cell lymphoma,
Chest wall mass

ABSTRACT

Non Hodgkins lymphoma presenting as a mediastinal mass with localized invasion into adjoining structures and the chest wall is an extremely rare entity. Recent advances in immunohistochemistry and genetic profiling has helped to sub classify the malignancy type, which improves accuracy in treatment and in predicting prognosis. Diffuse large B cell lymphoma (DLBCL) and its subtype the mediastinal large B-cell lymphoma (MLBCL) have been identified as the most common types of Non Hodgkins lymphoma having mediastinal involvement. However the commonest lymphoma with chest wall involvement is classical Hodgkins lymphoma (cHL). Apart from the histopathological characteristics which differentiate NHL from cHL, immunohistochemistry definitively sub classifies the lymphomas. Our patient was a middle aged man who presented with a chest wall swelling, which was actually an anterior mediastinal mass locally invading adjacent structures and chest wall. Histopathology and immunochemistry wherein the tumour expressed B cell markers such asCD20 and showed weak staining for CD30 confirmed Non Hodgkins Lymphoma, diffuse large B-cell type. The primary treatment of choice for lymphoma with or without chest wall involvement is chemotherapy. CD30 DLBCL may be associated with an overall better prognosis.

Citation: Dr. Abhijeet Ahuja *et al.* 2015. "Diffuse large b-cell lymphoma presenting as a chest wall mass: case report with review of literature" *International Journal of Current Research*, 7, (11), 22667-22669.

INTRODUCATION

Lymphoma represents 5% of all malignancies, incidence rates in western countries are 3/100,000 for Hodgkin's lymphoma and 5/100,000 for non-Hodgkin's lymphoma. 60% of Hodgkin's lymphomas and 20% of Non Hodgkins Lymphoma show mediastinal involvement (Witte and Hürtgen, 2006). Malignant lymphoma presenting as a solitary chest wall mass is rare, accounting for less than 2% of primary chest wall soft tissue tumours.[2]Thus lymphoma invading the chest wall is indeed a very rare tumour. In the few reports of primary lymphoma of the chest wall, diffuse large B cell lymphoma (DLBCL) is the most common subtype (Hsu *et al.,* 2006). A subtype of DLBCL is the mediastinal large B-cell lymphoma (MLBCL), which has unique genetic alterations, a typical presentation and aggressive clinical behaviour. We report a rare case of diffuse large B-cell lymphoma presenting as a chest wall mass.

CASE HISTORY

A 47 year old Male came in OPD with complaints of tender swelling over chest wall, breathlessness, chest pain, cough & low grade fever since 2 months. Breathlessness was on exertion, insidious onset, aggravated in supine position and progressed to at rest within 1 week. Cough was without expectoration and associated with increase on exertional activity. Fever since 2 months, low grade, intermittent, not associated with chills/rigors/evening rise in temperature. Local examination revealed the swelling size was 5x2x1cm, shape was irregular, swelling was tender, mobile, skin over the swelling was tense& not warm on touch. No other swelling or palpable lymph nodes were noted. Respiratory system examination revealed reduced breath sounds in left infrascapular region on auscultation.

Chest X-ray (Fig.1) showed left sided CP angle blunting with homogenous opacity in the left lower lobe, silhouetting with left heart border & diaphragm. High Resolution Computed Tomography (Fig. 2, 3, 4, 5) showed a large lobulated heterogeneously enhancing lesion in the anterior mediastinum – prevascular compartment extending to superior mediastinum. The left common carotid artery is completely encased by the lesion. The aortic arch & pulmonary trunk are incompletely surrounded by the lesion. The lesion is encasing the pericardium with minimal pericardial effusion. There is mild to moderate left sided pleural effusion. The lesion is also seen extending into the anterior chest wall.USG guided biopsy of the

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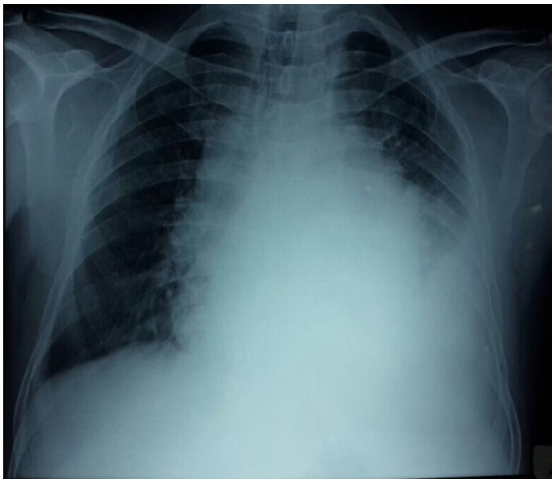

Figure 1. X-Ray chest shows mediastinal widening with left sided pleural effusion

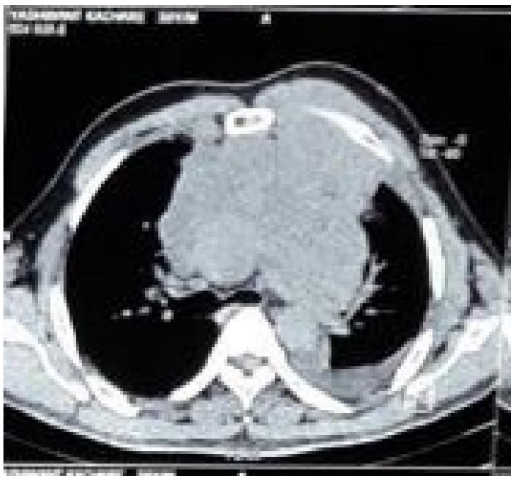

Figure 2. HRCT Chest shows anterior mediastinal mass with chest wall extension and left sided pleural effusion

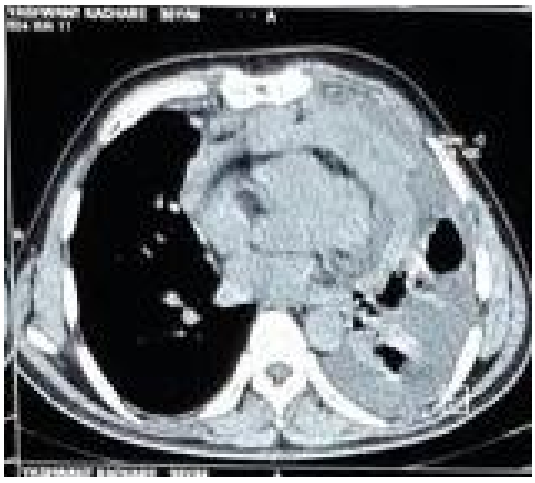

Figure 3. HRCT Chest shows anterior mediastinal mass with chest wall extension and associated pericardial & pleural effusion

anterior mediastinal mass was done, which revealed diffuse infiltration by small rounded lymphoid looking cells in the rest of the tissue. On immunohistochemistry, the cells are positive for LCA, CD20 and show weak staining for CD 30 suggestive of Non Hodgkins Lymphoma, diffuse large B-cell type. Patient was referred to Onco surgery for further management.

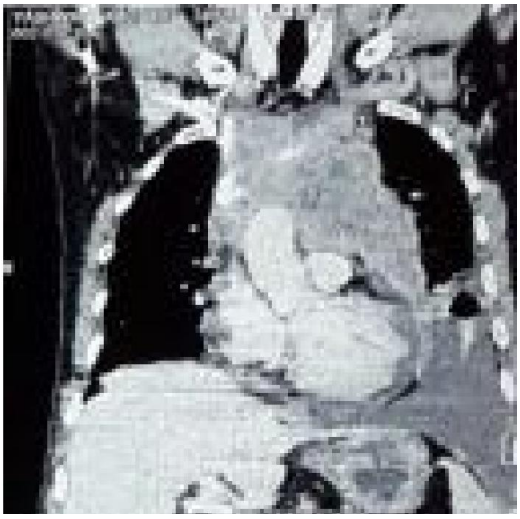

Figure 4. HRCT Chest saggital section PA view showing anterior mediastinal mass with pleural effusion

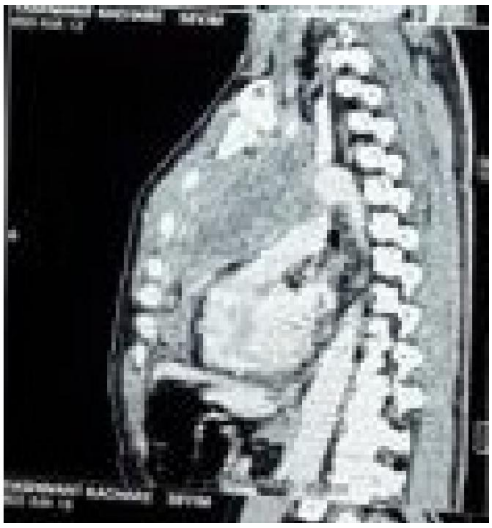

Figure 5. HRCT Chest saggital section lateral view showing anterior mediastinal mass with chest wall extension

DISCUSSION

Primary diffuse large B-cell lymphoma (DLBCL) is a group of large, lymphoid B-cell malignant proliferations that has variable presentation and is also morphologically and genetically heterogeneous. It constitutes about 30% of all non-Hodgkin lymphomas and is its most common histologic subtype. DLBCL can occur in people of all ages, but is more common in adults in their 60s. It is slightly more common in men.Most reported DLBCLs of the chest wall are pyothorax-associated lymphomas (PALs) - tumors that develop in the pleural cavity of patients with long-term pyothorax (Xiaoming Qiu *et al.,* 2014). An association withEpstein-Barr virus (EBV) infection is also reported (Kanno *et al.,* 1998; Fujimoto *et al.,* 2008). Our patient was a middle aged man presenting with an anterior chest wall swelling which was increasing in size over two months. He also had dyspnoea and chest pain, but no signs of superior venacaval obstruction. He had no historyof pyothorax or chest-wall trauma that could be a cause of chronic inflammation, leading to DLBCL. He had a mediastinal mass which was locally invasive, hence his clinical presentation fits with a subtype of DLBCL which is the mediastinal (thymic)

large B-cell lymphoma (MLBCL). MLBCL accounts for 10% of cases of DLBCL. MLBCL typically presents in younger women, while DLBCL commonly arises in elderly patients of both sexes. MLBCL usually present as bulky mediastinal masses with frequent invasion of adjacent structures and very rarely extrathoracic involvement. MLBCLs typically consist of tumor cells with a pale cytoplasm and a diffuse growth pattern associated with variable degrees of sclerosis (Barth *et al.,* 2002). However, there are no histologic features that reliably distinguish these tumors from DLBCLs that often involve mediastinal regional lymph nodes, they can only be differentiated genetically and on special immunohistochemistry (Banks and Warnke, 2001; Kerry J. Savage *et al.,* 2003). In fact the presenting features of MLBCL and associated genetic abnormalities such as gains in chromosome 9p and the JAK2 locus are similar to sclerosing type of classical Hodgkin's lymphoma (cHL). Both MLBCL and cHL of the nodular sclerosis subtype (NSHL) commonly present in young patients as mediastinal tumors. Cases of composite cHL and MLBCL have also been reported, further supporting a pathogenetic relationship between these tumors. However histologically Reed Steinberg cells, which are a hallmark of cHLand polymorphous inflammatory infiltrate rich in plasma cells, neutrophils, and eosinophils, reactive cell types seen in nodular sclerosis cHL are not seen in MLBCL.Immunologically the MLBCL cells express multiple B cell markers such as CD20, CD79a, not produced bycHLcells. CD30 is typically expressed but is dim in comparison with classical Hodgkin lymphoma (CHL), whereas CD15 is usually negative (Barth *et al.,* 2002). In our patient immunohistochemistry of the mass revealed that the cells are positive for LCA, CD20 and show weak staining for CD30 suggestive of Non Hodgkins Lymphoma, diffuse large B-cell type, probably MLBCL subtype. However special immunochemistry and genetic marking was not possible in our case to distinguish the subtype decisively. Recent reports have suggested another subtype of mediastinal lymphomas with features intermediate between PMBL and NSHL, called mediastinal gray-zone lymphomas (MGZLs). Both PMBL and Hodgkin lymphoma (HL) are putatively derived from a thymic B cell. Although NSHL is CD15- and CD30-positive and PMBL is CD20-positive, there are mediastinal lymphomas between these 2 entities with histologic and immunohistochemical features intermediate and transitional between NSHL and PMBL. These diseases are MGZLs (Kieron Dunleavy and Wyndham Wilson, 2015).

Despite the advances in differentiating the lymphomas, the treatment option for DLBCL remains R-CHOP, which is a mixture of rituximab and several chemotherapy drugs (cyclophosphamide, doxorubicin, vincristine, and prednisone). In Hsu *et al.* (2006), 3 of the 4 patients with isolated chest wall lymphoma were managed with surgical resection and adjuvant chemotherapy. No tumor recurrence was recorded during the follow up period, which had a maximum duration of 171 months. Thus although the primary treatment of choice for lymphoma with or without chest wall involvement is chemotherapy, surgery followed by adjuvant chemotherapy can be considered especially in patients where only mediastinal involvement with localized extension is present. However Witte et al[1] state that resection is likely to result in residual tumor, postoperative complications, local recurrence, and systemic progression, and should therefore be avoided.

G Ctype DLBCL is associated with a better prognosis compared to ABC-type DLBCL. With the addition of rituximab to standard therapy, 5-year survival is 87% to 92% for GC type and 44% for ABC type. Most recent studies suggest CD30 DLBCL may be associated with an overall better prognosis, with a unique gene expression profile. PMLBCL has an equivalent or slightly better prognosis than typical DLBCL (Dennis P. O'Malley *et al.,* 2015).

Conclusion

Non Hodgkins Lymphoma presenting as a chest wall mass is extremely rare and only a few cases have been reported. Advances in immunohistochemistry and genetic profiling have resulted in a better understanding and classification of these tumours. Better chemotherapeutic agents have resulted in better cure rates and immunotyping has helped in predicting the prognosis.

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