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A Rare Presentation of Mediastinal High-Grade B-Cell Lymphoma with Secondary Cutaneous Infiltration

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Abstract

In this report, we present the case of a 73-year-old male who was seen at Clinic with a 4-month history of persistent cough. The gentleman was an ex-smoker with a 40-pack-year history and known case of non-Hodgkins lymphoma in remission for 25 years. Initial examination revealed decreased air entry on the right base and a prominent chest wall mass at the mid sternum. This was boggy and non-tender on palpation and associated with overlying violaceous skin changes and 2 nodules. CT thorax demonstrated a large mass lesion involving the anterior chest wall measuring 16.5 cm × 8.0 cm with extensive destruction of the sternum with extension into anterior mediastinum invading left brachycephalic vein. PET CT confirmed lesion was FDG avid and US guided biopsy confirmed High-grade B-cell lymphoma with a germinal center phenotype. The patient was treated with target chemotherapy with notable remission.

Keywords

High-Grade B-Cell Lymphoma, Cutaneous Infiltration

1. Introduction

Non-Hodgkins lymphoma is a form of cancer of the lymphatic system involving abnormal B cells or T cells. It can involve lymph nodes and other organs with presentation of swollen nodes, fever, night sweats and weight loss. Several subtypes have been identified from slow-growing to aggressive forms. In the case report, we present a case of a patient investigated and diagnosed with High Grade B-cell Non-Hodgkin's lymphoma.

2. Case Summary

We present a case of Mr. GB, a 73-year-old male, ex-smoker, who was referred to our respiratory medicine outpatient clinic with a four-month history of shortness of breath, protracted dry cough, weight loss and decreased appetite. Mr. GB was a known case of non-Hodgkins lymphoma that had been treated with chemotherapy 25 years prior and was in remission since.

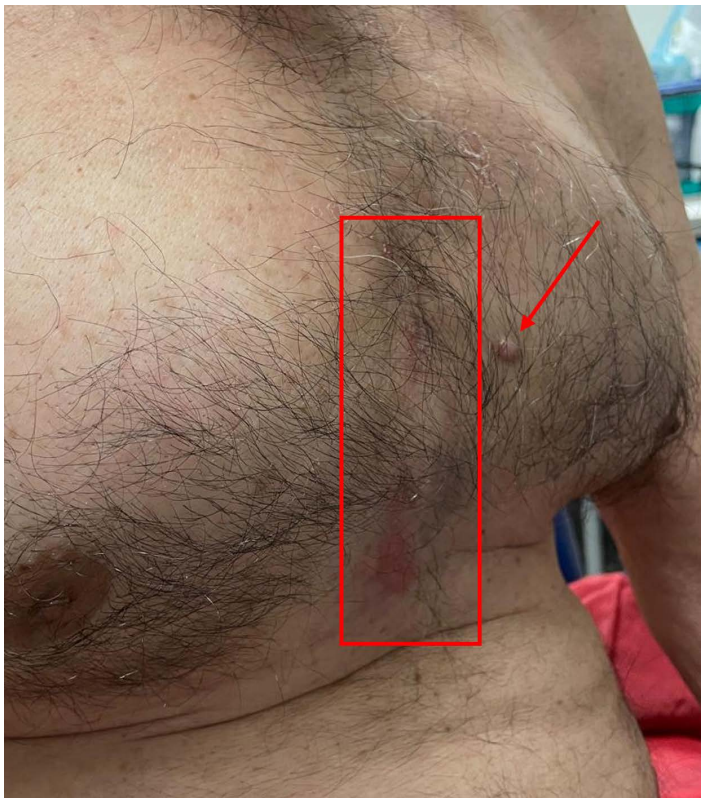

Figure 1. Cutaneous presentation of Lymphoma.

Initial examination revealed decreased air entry on the right base and a prominent chest wall mass at the mid sternum. The mass was boggy and non-tender on palpation with associated overlying violaceous skin changes and 2 nodules (**Figure 1**).

3. Investigations

Blood LDH levels were measured at 1147 U/l (Range: 125 - 220 U/l).

Chest ultrasonography (US) performed two weeks after initial presentation revealed a left-sided pleural effusion. A subsequent diagnostic followed by a therapeutic thoracentesis yielded an exudative effusion with a lactate dehydrogenase (LDH) level of 1874 U/L and protein of 47 g/L. Cell differential indicated that fluid consisted mostly of large mononuclear cells whilst cytology demonstrated a monomorphic lymphocytic effusion with no malignant cells.

Computed tomography (CT) of the thorax at three weeks revealed a large, 16.5

× 8 cm mass infiltrating the anterior chest wall (Figure 2). This lesion demonstrated significant destructive changes to the sternum, with extension into the anterior mediastinum and occlusion of the left brachiocephalic vein.

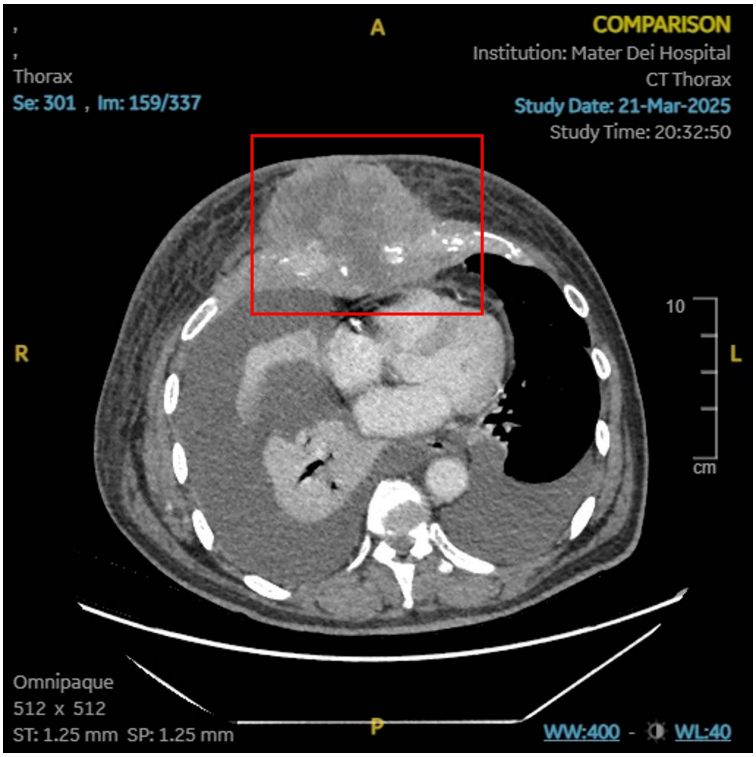

Figure 2. CT Thorax showing infiltration from mediastinum to skin.

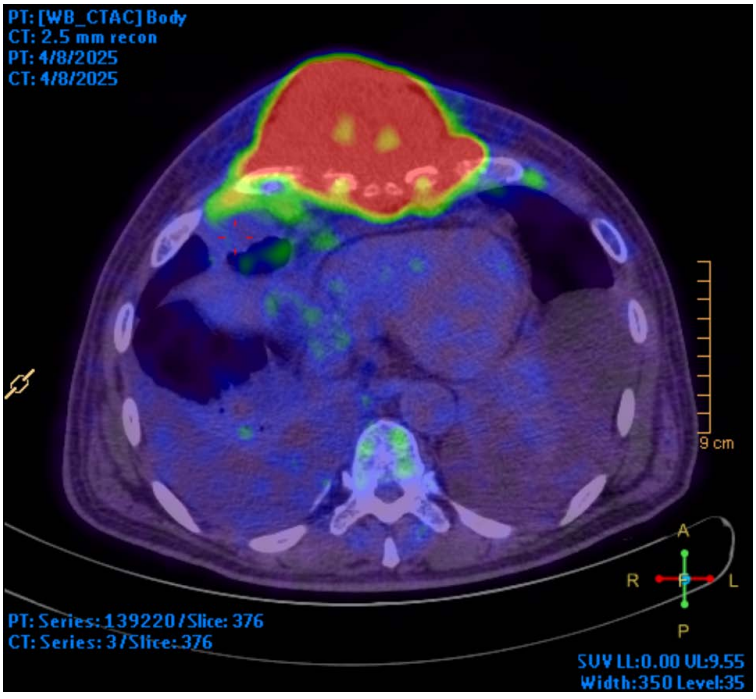

Figure 3. PET CT showing avid uptake (red) of Lymphoma.

US guided biopsy of the lesion 4 weeks from presentation was hence performed with histology reporting high-grade B-cell lymphoma with a germinal centre phenotype (Positive: CD20, CD10, BCL 6, PAX5).

Positron emission tomography/computed tomography (PET-CT) at six weeks confirmed intense fluorodeoxyglucose (FDG) avidity (**Figure 3**) in the anterior mediastinum causing sternal and rib erosion. This was associated with tracer uptake in the right sub pectoral and right axillary lymph nodes, given an Ann Arbor stage of 2. Finally, a trephine core biopsy taken in the same week was normal.

4. Differential Diagnosis

In few of the patient's previous history of non-Hodgkin's lymphoma, the primary differential diagnosis was a relapse of the lymphoma, which was eventually confirmed by the biopsy.

Other possible differentials included invasive melanoma in view of the lesions on the patient's chest or thymoma in view of its presentation within the anterior mediastinum.

5. Treatment and Outcome

After five weeks from the initial outpatient presentation, the patient was pretreated with Rasburicase to mitigate the risk of tumour lysis syndrome. He subsequently commenced on 6 cycles of R-ESHAP chemotherapy, delivered according to the standard 21-day protocol, consisting of rituximab on Day 1, continuous-infusion platinum during the early cycle days, daily etoposide and methylprednisolone on Days 1 - 4, and high-dose cytarabine on Day 5. This regimen was selected because R-ESHAP is an established salvage protocol for aggressive B-cell lymphomas, particularly in cases with bulky mediastinal disease where rapid cytoreduction and chemosensitivity assessment are clinically important. Following six cycles of R-ESHAP, interval imaging demonstrated a marked remission with a PET-CT Deauville scoring of 1 (**Figure 4**, **Figure 5**).

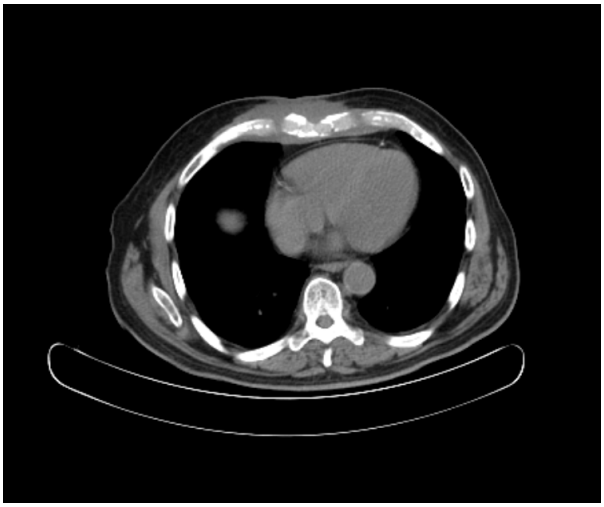

Figure 4. CT thorax post-treatment with significant reduction in tumour mass.

The pleural effusion that was initially drained recurred after two weeks but subsequently resolved on follow-up imaging as part of the patient's response to chemotherapy. Repeat LDH measurement was 149 U/L (Reference range: 125 - 330 U/L) further emphasising treatment response.

Following completion of chemotherapy, the patient remained under six-monthly surveillance, with ongoing follow-up maintained up to the time of writing.

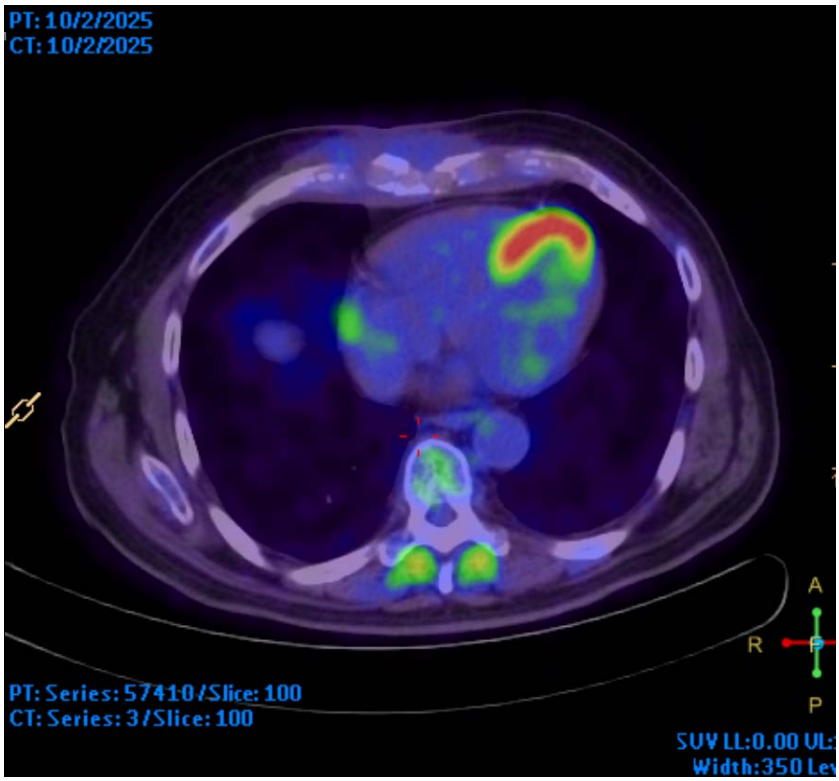

Figure 5. PET CT post treatment showing significant reduction in uptake.

6. Discussion

High-grade B-cell lymphoma (HGBCL) arising in the anterior mediastinum with direct extension into the chest wall is a rare but recognised manifestation of aggressive non-Hodgkin lymphoma. Although mediastinal HGBCL more commonly presents de novo, this case illustrates an unusual presentation occurring 25 years after initial treatment for a prior non-Hodgkin lymphoma. Because histopathological and molecular details of the original malignancy are unavailable, it is not possible to determine whether the current disease represents an exceptionally late recurrence or a second primary lymphoid neoplasm. Nevertheless, clinicians should remain mindful that very late recurrence, although uncommon, remains a relevant differential diagnosis in patients with a remote history of lymphoma who re-present with compatible systemic or thoracic symptoms [1].

Mr. GB's clinical picture—progressive dyspnoea, cough, weight loss, and a large chest wall mass with violaceous overlying skin—reflects the aggressive nature of mediastinal HGBCL. Cutaneous changes in this context are most often due to di-

rect extension from an underlying mass rather than true primary cutaneous lymphoma. This pattern aligns with reported mechanisms of spread involving local invasion or, less commonly, haematogenous dissemination [2]. The presence of a monomorphic malignant lymphocytic effusion further supports thoracic relapse, as pleural involvement is common in mediastinal lymphomas.

Radiologically, the destructive anterior chest wall lesion invading the sternum and occluding the left brachiocephalic vein is consistent with the infiltrative pattern seen in HGBCL and PMBCL-like presentations [1]. PET-CT characteristically shows intense FDG uptake in such masses, correlating with high metabolic activity and tumour burden, while bone marrow and spleen may be spared in early or localised thoracic disease [2].

The patient's biopsy confirmed high-grade B-cell lymphoma with germinal centre phenotype, a finding in keeping with aggressive subtypes of DLBCL/HGBCL. These lymphomas typically show high proliferation indices (Ki-67 often >90%) and may express MYC and BCL2, driving rapid growth and invasion [3]. Differentiation from other mediastinal tumours, such as thymoma or metastatic melanoma, is essential, as clinical and cutaneous presentations can overlap. Core biopsy with immunohistochemistry and, when indicated, FISH analysis remains the diagnostic gold standard to distinguish HGBCL from entities such as Burkitt lymphoma or classical Hodgkin lymphoma [4].

In accordance with evidence-based practice for HGBCL with bulky mediastinal disease [5], the patient received an intensive immunochemotherapy regimen including rituximab, etoposide, high-dose cytarabine, carboplatin, and corticosteroids [6]. Such regimens aim to overcome chemoresistance often observed in high-grade or transformed lymphomas. Rasburicase prophylaxis was appropriate given the substantial tumour burden and corresponding risk of tumour lysis syndrome. The favourable radiological response after six cycles illustrates the chemosensitive nature of HGBCL when treated promptly and intensively [1].

Cutaneous or chest wall involvement in secondary DLBCL/HGBCL generally portends a poorer prognosis, with reported five-year survival often below 50% depending on stage and molecular features [7]. Nevertheless, outcomes improve with early recognition and multidisciplinary management involving respiratory medicine, haematology-oncology, radiology, and pathology. Long-term surveillance with PET-CT remains essential given the risk of relapse and the aggressive biology of these lymphomas.

7. Conclusion

This case underscores the clinical importance of maintaining suspicion for lymphoma recurrence—even decades after remission—in patients presenting with destructive chest wall masses, constitutional symptoms, or atypical skin changes. Early biopsy and staging imaging are pivotal to ensure appropriate, timely treatment and to optimise outcomes in this rare and aggressive presentation of mediastinal HGBCL.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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