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Case Report

Surgical management of unusual presentation of axillary lymphoma: a case-based approach

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ABSTRACT

Axillary lymphadenopathy has a broad differential, from benign causes to malignancies like lymphoma. Hodgkin's lymphoma (HL), a hematologic cancer, may present atypically, complicating diagnosis. This case highlights a rare presentation of HL, stressing the value of surgical excision biopsy for definitive diagnosis. A 32-year-old female presented with a gradually enlarging, painless right axillary mass (5×5 cm) over six months, accompanied by B symptoms. Examination revealed firm, nodular lymphadenopathy localized to right axilla. Imaging (USG and HRCT) suggested malignancy; however, FNAC was inconclusive due to inadequate architecture for Reed-Sternberg (RS) cell identification. Excision biopsy confirmed HL (Nodular sclerosis subtype). Immunohistochemistry (CD15 and CD30 positive) supported the diagnosis. Under general anaesthesia, complete excision was achieved via a transverse axillary crease incision, preserving neurovascular structures. Histopathology confirmed RS cells, establishing HL diagnosis. This case emphasizes diagnostic and therapeutic challenge of atypical axillary lymphadenopathy. FNAC limitations in lymphoma necessitate excisional biopsy as diagnostic gold standard. Integration of clinical, radiological, and pathological findings is vital for accurate diagnosis and management. This case demonstrates essential role of excisional biopsy in diagnosing atypical HL. Complete surgical removal enabled histopathological and immunohistochemical confirmation. Early diagnosis and a multidisciplinary strategy are key to better outcomes.

Keywords: Hodgkin's lymphoma, Axillary lymphadenopathy, Excisional biopsy, Reed-Sternberg cells, Surgical management

INTRODUCTION

Axillary lymphadenopathy is a common clinical presentation with a wide differential diagnosis. The causes range from benign conditions (e.g., infections like tuberculosis, bacterial lymphadenitis, viral illnesses, reactive hyperplasia) to malignancies such as lymphoma or metastatic spread from primary tumours (e.g., breast carcinoma or melanoma).[1]

Lymphoma

Lymphomas are haematological malignancies originating from lymphoid cells, accounting for approximately 3.37% of all cancers globally.[2,3] They are broadly categorized into HL and non-HL (NHL), with NHL being more prevalent.

Epidemiologically, HL accounts for about 10% of all lymphoma cases, with a global incidence of around 2.62 per 100,000 population annually.[2,3] It demonstrates a bimodal age distribution: the first peak occurs in young adults aged 15-35 years, and the second peak in adults ≥55 years.[4] HL is slightly more common in males (male-to-female ratio 1.2:1).[5] Risk factors include Epstein-Barr virus (EBV) infection (present in 30-50% of cases), genetic predisposition, and immunologic factors (e.g., delayed immune maturation).[5]

NHL constitutes around 90% of lymphomas, with a global incidence of 6.1 per 100,000 annually.[2] It primarily affects older adults (median age 67 years) and is more common in males (male-to-female ratio 1.3:1). Risk factors include immunosuppression (HIV/AIDS, post-transplantation), certain infections (e.g., EBV, *Helicobacter pylori*), and environmental exposures.[6]

Classification

HL is divided into two main types. A) Classical HL (CHL)-95% of cases, characterized by the presence of RS cells. CHL has four subtypes: (1) Nodular sclerosis (NSHL)-the most common (60-80%), typically affecting young adults; (2) Mixed cellularity (MCHL)-associated with EBV infection and older age; (3) Lymphocyte-rich (LRCHL)-rare, with a good prognosis; (4) Lymphocyte-depleted (LDCHL)-very rare, with a poorer prognosis. B) Nodular lymphocyte-predominant HL (NLPHL)-5% of cases, which lacks RS cells and follows an indolent course. NHL is classified into B-cell (≈85%) and T/NK-cell (≈15%) neoplasms. Common NHL subtypes include: (1) Diffuse large B-cell lymphoma (DLBCL)-aggressive but often treatable; (2) Follicular lymphoma-indolent, more common in older adults; (3) Burkitt lymphoma-highly aggressive.[7]

Various diagnostic tools are utilized to reach a diagnosis. Routine blood investigations (e.g., hemogram, ESR, liver and renal function tests, alkaline phosphatase, calcium) may show non-specific changes (such as elevated ESR). Fine needle aspiration cytology (FNAC) of lymph nodes is performed initially, but it is not very sensitive for lymphoma diagnosis. FNAC may suggest a lymphoproliferative process yet often fails to provide a definitive diagnosis. The limitation of FNAC in lymphoma is the lack of preserved lymph node architecture, which is crucial for identifying diagnostic RS cells.[8] Consequently, an excisional lymph node biopsy remains the gold standard for diagnosis in suspected lymphoma cases, as it allows evaluation of the complete nodal architecture and cytology.[9]

Immunohistochemistry is a vital adjunct in diagnosis: in HL, the neoplastic RS cells typically express CD15 and CD30, and there is often evidence of impaired cell-mediated immunity (e.g., a decreased CD4:CD8 T-cell ratio). The pan-leukocyte marker CD45 is usually absent on RS cells but is used in the immunophenotypic panel to help characterize the cells.[10]

For staging and further evaluation, imaging and other modalities are employed. A chest X-ray can detect mediastinal lymphadenopathy or pleural effusion. Ultrasound of the axilla may reveal enlarged, hypoechoic lymph nodes with irregular cortical thickening and loss of the central fatty hilum, along with increased intranodal blood flow-features suggestive of malignancy.[16] Ultrasonography of the abdomen is done to assess the liver, spleen, and abdominal lymph nodes. Contrast-enhanced CT of the chest, abdomen, and pelvis is used to stage the disease (e. g., to identify lymphadenopathy in various regions).[17,18] MRI and PET scans are very useful for detecting extranodal involvement. Bone marrow aspiration/biopsy (usually from the iliac crest) is performed to evaluate marrow involvement for staging. If no peripheral lymph node is available for biopsy, a mediastinoscopy with biopsy of mediastinal nodes (Chamberlain's procedure) can be considered.[18]

Definitive treatment is managed by oncology specialists. In early-stage (favourable) HL, extended-field radiation therapy alone may be employed; in early-stage (unfavourable) disease, combined modality treatment (chemotherapy plus involved-field radiation) is often used; and in advanced-stage HL, systemic combination chemotherapy is the mainstay (often supplemented by radiation to bulky sites).[11]

CASE REPORT

A 32-year-old female presented with a swelling in the right axilla that was insidious in onset, progressively enlarging, and painless, approximately 5×5 cm in size, over 6 months. The swelling was associated with systemic "B symptoms," including: 1) intermittent low-grade fever (notably at night), 2) night sweats requiring her to change clothes several times a week, and 3) an unexplained weight loss of approximately 7 kg over six months, raising suspicion of a systemic malignancy. There was no significant family history or relevant drug history. She attained menarche at 13 years of age, with a regular 28-day cycle (5 days of moderate flow). She was unmarried and nulliparous. On general examination, the patient was moderately built and nourished. Vital signs were stable (pulse 90/min, blood pressure 128/84 mmHg, SpO_2 99% on room air). There were no signs of pallor, cyanosis, icterus, clubbing, or edema. No lymphadenopathy was detected elsewhere on examination apart from the right axillary region.

Physical evaluation

On inspection: A swelling ~5×5 cm was visible in the right axilla. It was globular with a nodular surface; the overlying skin was normal, with a few small dilated veins, and there was no redness or visible pulsation.

On palpation: All inspectory findings were confirmed: the right axillary swelling was approx. 8×7 cm, firm in consistency with a nodular surface and well-defined margins. It was non-tender, and the skin temperature was normal. The swelling was not fixed to the skin or underlying structures. Fluctuation and compressibility could not be elicited due to the deep location. Systemic examination was unremarkable: the patient was conscious and well-oriented; cardiovascular examination revealed normal heart sounds (S1, S2) with no murmurs; respiratory examination showed equal air entry bilaterally

with clear lung fields; abdominal examination, abdomen was soft and non-tender with no hepatosplenomegaly.

Investigations

Laboratory tests: Blood tests (including complete blood count, ESR, LDH, liver and renal function tests) were within normal limits, aside from a haemoglobin was 9.5 g/dL and an ESR of 26 mm/hour.

Imaging studies: Imaging was reviewed to assess the size, number, and location of lymph nodes, and their relationship to the axillary vein and other structures. A chest X-ray was normal. Ultrasonography (USG) of the right axilla revealed multiple enlarged, hypoechoic lymph nodes with irregular cortical thickening and loss of the central fatty hilum, and increased vascularity, features suggestive of malignancy. High-resolution CT (HRCT) of the chest showed multiple enlarged right axillary lymph nodes, the largest ~5×5 cm, uniformly dense without significant calcification or necrosis, and loss of fatty hilum but no extracapsular spread; no mediastinal or hilar lymphadenopathy was seen. A contrast-enhanced CT (CECT) of the abdomen showed no evidence of a primary lesion or distant metastasis.

Cytology

FNAC was performed as an initial diagnostic step. It was suggestive of a lymphoproliferative lesion but failed to provide a conclusive diagnosis. The likely reason for the FNAC's inadequacy was the lack of preserved nodal architecture, which is crucial for the identifying the RS cells.

Given the inconclusive FNAC, a decision was made to proceed with an excisional biopsy. Surgical excision biopsy remains the gold standard in such cases for definitive diagnosis. The excised specimen's histopathology confirmed HL by the presence of RS cells, and it was classified as the Nodular Sclerosis subtype of classical HL.

Surgical procedure

Indications for surgery: To obtain diagnostic confirmation via excisional biopsy; therapeutic removal of bulky lymph nodes that were causing discomfort.

Preoperative preparation: Written informed consent was obtained after explaining the diagnostic and therapeutic purpose of the procedure to the patient and her relatives. Standard preoperative workup and precautions were undertaken.

Surgical technique: Under all aseptic precautions and under general anaesthesia, the patient was placed supine with the right arm abducted and supported. A transverse skin-crease incision was made in the right axilla to minimize visible scarring. In the axillary region, dissection was carried through the subcutaneous plane and then deepened. A multinodular tumour mass was observed. The axillary vein was identified laterally and used as an anatomic landmark; careful dissection was carried out toward the apex of the axilla to mobilize the nodes (Figure 1). The fascia under the lateral margin of the pectoralis major was incised to expose the pectoralis minor. The deeper part of the pectoralis minor was dissected to expose the axillary vein beyond the subscapular vessels. Multiple lymph node masses were identified using anatomical landmarks and preoperative imaging; these were removed by careful blunt dissection along the long axis of the axillary vein to avoid vascular or neural injury (Figure 2).

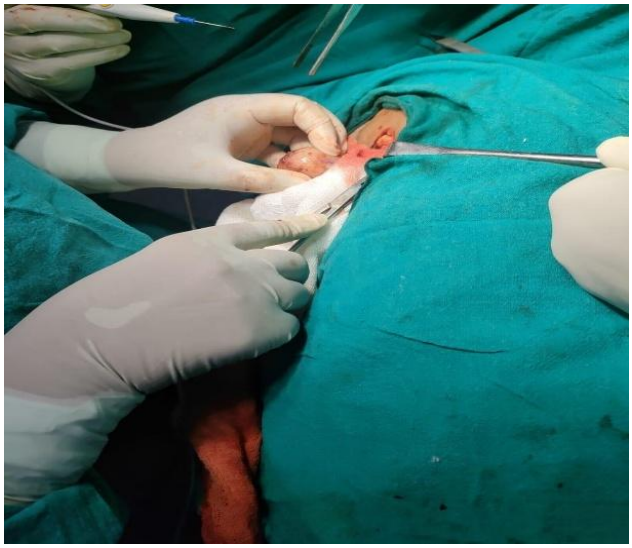

Figure 1: Intraoperative picture of axillary dissection with tumour.

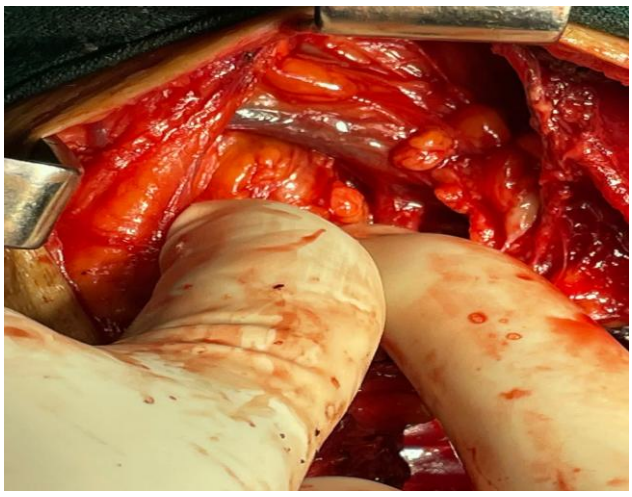

Figure 2: Intraoperative axillary dissection showing axillary vein.

The clavipectoral fascia was incised to clear the nodes, taking care to avoid injury to the medial pectoral nerve (which passes through pectoralis minor to innervate the pectoralis major). The pectoralis minor muscle was

retracted to clear apical nodes. The axillary vein marked the superolateral boundary of the dissection. The fascia over the serratus anterior was cleared without injuring the long thoracic nerve. Posteriorly, dissection was continued over the subscapularis muscle, preserving the subscapular vessels and thoracodorsal nerve.

Intraoperative findings: Multiple firms to rubbery swellings of varying sizes were excised in toto; the largest measured approximately 5×5 cm (Figure 1). Complete removal of all identifiable swellings was achieved (Figure 2). The excised specimen was immediately sent for histopathological evaluation. Haemostasis was achieved. A closed negative suction drain was placed to prevent seroma formation.

The incision was closed with approximation of tissue done using absorbable vicryl 2-0 intermittent sutures for deeper layers and non-absorbable ethilon 2-0 vertical mattress sutures for skin closure and sterile dressing was applied.

Specimen details: The excised specimen comprised multiple nodules of lymphoid tissue of varying sizes. The nodules were firm to rubbery in consistency, pale yellow in colour and together weighed 356 grams.

Histopathology findings

Microscopic examination of the excised swellings revealed characteristic large binucleate RS cells (and mononucleate variants with prominent nucleoli) set in a polymorphous background. The background showed inflammatory infiltrates composed of eosinophils, lymphocytes, and plasma cells dispersed throughout the node, along with areas of vascular proliferation and prominent high endothelial venules (Figures 3 and 4). These histopathological features were diagnostic of classical HL.

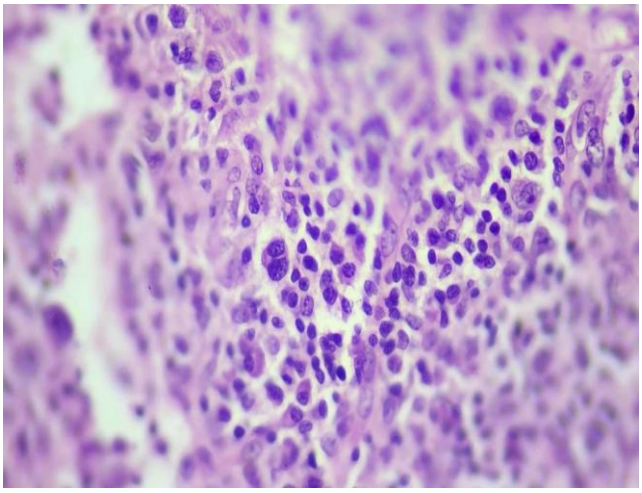

Figure 3: Histopathological image showing binucleate RS cells.

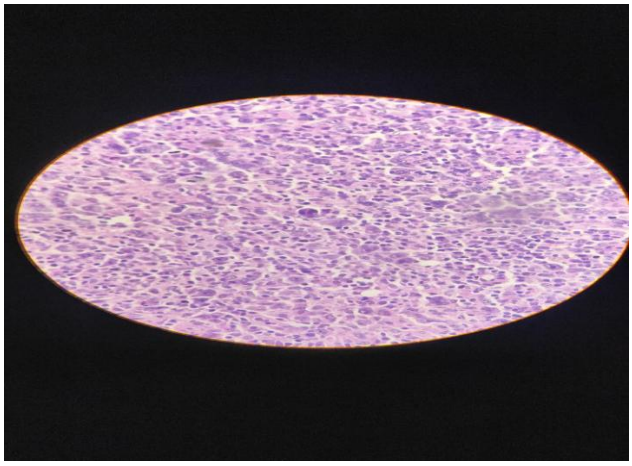

Figure 4: Histopathological image showing RS cells and background showed inflammatory infiltrates.

Immunohistochemistry

Immunohistochemical analysis was not available at our institution, so the specimen was sent to a higher centre. After 20 days patient came for follow up with immunohistochemistry report which revealed positivity for CD15 and CD30, confirming the diagnosis of classical HL.

This case involves a 32-year-old female with a progressive, painless right axillary swelling (~5×5 cm) accompanied by B symptoms (fever, night sweats, weight loss). On examination, she had firm, nodular right axillary lymphadenopathy with no other nodes involved. Imaging (ultrasound and CT) suggested a malignancy, but FNAC was inconclusive. An excisional biopsy of the axillary lymph nodes confirmed HL with classical RS cells. Histopathological findings were supported by immunohistochemistry demonstrating CD15 and CD30 positivity. The excision was performed through a transverse axillary skin-crease incision under general anaesthesia, ensuring complete removal of swelling and lymph nodes while preserving surrounding structures. Surgical and histopathological approach allowed definitive diagnosis and guided further management. This case highlights that excisional biopsy is the gold standard for diagnosing lymphoma, especially in atypical presentations such as an isolated axillary mass.

DISCUSSION

Upon literature review, the following points illustrate how this case correlates with established knowledge and similar case reports:

Diagnostic and therapeutic challenges in atypical axillary lymphadenopathy

This case underscores the difficulties in diagnosing and managing an unusual axillary presentation of HL.[1]

Significance of B symptoms

The presence of progressive axillary swelling with systemic B symptoms (fever, night sweats, weight loss) raised suspicion of an underlying lymphoma, consistent with known clinical red flags for lymphoma.[15]

FNAC limitations in lymphoma

The case highlights the limitations of FNAC due to its inability to preserve lymph node architecture, which is necessary for identifying diagnostic RS cells.[8]

Excisional biopsy as the diagnostic gold standard

It reaffirms that an excisional lymph node biopsy is the gold standard for diagnosing lymphoma, providing sufficient tissue for the accurate histopathological diagnosis.[9]

Identification of RS cells

Detection of RS cells in the lymph node biopsy was pivotal and is characteristic for the diagnosis of classical HL.[7]

Immunohistochemical confirmation

The immunohistochemistry results in this case (CD15 and CD30 positivity) are typical for classical HL and were crucial in confirming the diagnosis.[10]

Surgical approach

The surgical management ensured complete removal of the involved lymph nodes while preserving vital neurovascular structures, an important consideration in achieving diagnostic and therapeutic goals without added morbidity.[19]

Multidisciplinary approach

This case highlights the importance of a multidisciplinary approach-combining clinical evaluation, imaging, surgical pathology, and oncology input-for accurate diagnosis and optimal management of lymphoma.[11,13]

Impact on treatment decisions

Obtaining an excisional biopsy not only provided a diagnosis but also guided timely referral and appropriate treatment, underscoring the role of surgical biopsy in improving patient outcomes.[9]

Challenges in diagnosis

The sensitivity of FNAC in diagnosing lymphoma is limited, especially in cases with atypical presentations.

Excisional biopsy provides adequate tissue sampling, allowing for complete architectural and cytological evaluation.[9]

The proximity of the axillary lymph nodes to the axillary vein and other neurovascular structures made the surgical procedure technically challenging.

Achieving complete excision of the lymph nodes without injury to adjacent structures was crucial to ensure diagnostic accuracy and patient safety.

Postoperatively, the patient had an uneventful recovery and was followed up until suture removal. She was then referred to a higher oncology centre for further staging work-up and management, including PET-CT and initiation of chemotherapy as per standard protocols.[11,12]

CONCLUSION

This case underscores the importance of excisional biopsy in the diagnosis of lymphoma, particularly for atypical presentations like axillary involvement. The surgical challenges of removing multiple enlarged nodes adjacent to major vascular structures were successfully managed, yielding a definitive diagnosis. It highlights the limitations of FNAC and the crucial role of histopathology and immunohistochemistry in confirming HL. Early diagnosis via excisional biopsy, followed by appropriate multidisciplinary management (including systemic therapy), is key to improving patient outcomes in such unusual presentations.

HL should be considered in cases of persistent lymphadenopathy, even at uncommon sites like the axilla. Surgical excision biopsy is important when FNAC is inconclusive, as it provides tissue architecture for accurate diagnosis. A multidisciplinary collaboration (surgery, pathology, radiology, oncology) is essential for accurate diagnosis and optimal management of lymphomas.

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