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Presentation of Diffuse Large B-Cell Lymphoma with Shoulder Pain: A Case Report

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Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Patient: Male, 31-year-old
Final Diagnosis: Diffuse large B cell lymphoma
Symptoms: Shoulder pain
Medication: —
Clinical Procedure: —
Specialty: General and Internal Medicine • Oncology

Objective: Challenging differential diagnosis

Background: Diffuse large B-cell lymphoma (DLBCL) is a type of aggressive lymphoid malignancy, which can present with an array of clinical features. DLBCL is notorious for having the highest rate of mortality in the developed areas of the world among the non-Hodgkin lymphomas (NHL). Although lymph node involvement is most commonly encountered, extranodal occurrence is also seen in up to 30% of the cases with involvement of structures such as the skin, lung, gastrointestinal tract, and musculoskeletal tissues. In view of the high mortality, especially in patients with delayed diagnoses, recognizing symptoms of this disease is vital for timely diagnosis and successful treatment.

Case Report: We present the case of a 31-year-old white man with isolated shoulder pain. After the most common causes of shoulder pain were investigated and ruled out, further evaluation with an X-Ray, magnetic resonance imaging (MRI) scan, and biopsy revealed that B-cell lymphoma was the unlikely source of the pain. The patient received appropriate chemotherapy and achieved remission, as confirmed by a positron emission tomography scan.

Conclusions: This case highlights the uncommon clinical presentation of DLBCL with isolated shoulder pain. With primary bone DLBCL accounting for less than 2% of bone malignancies involving structures such as the femur, humerus, vertebra, and pelvis, this case reiterates the importance of further investigations and the possibility that bone pain may be the only clinical presentation of an underlying lymphoma. Examination by X-ray, MRI, and bone biopsy should be done to confirm diagnosis, followed by treatment with combined chemotherapy and immunotherapy.

MeSH Keywords: Lymphoma, Large B-Cell, Diffuse • Lymphoma, Non-Hodgkin • Shoulder Pain

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/927828

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Background

The primary clinical entity of DLBCL is a rapidly growing tumor mass located at nodal or extranodal sites [1]. Along with the presence of a mass, "B" symptoms such as fever, night sweats, and weight loss are observed in about 30% of patients [2]. With primary bone DLBCL accounting for a paltry 3% of bone malignancies and only 10% of those cases showing involvement of the humerus, seldom have there been patients with DLBCL who presented with shoulder pain unaccompanied by other clinical manifestations [3–5], thus alerting us to a rare presentation of DLBCL in our present case. The clinical presentation, diagnostic workup, and management of this unusual case are provided in detail.

Case Report

This is a case of a 31-year-old white man with no significant past medical history who presented to the emergency department with left shoulder pain of a 3-day duration. The patient reported that the pain started shortly after a minor trauma in which a heavy box fell on his shoulder. He described the pain to be continuous, progressively worsening in nature, non-radiating and with an intensity of 8/10 on the pain severity scale. Additionally, he noticed swelling with redness gradually developing in the area of pain, extending from the tip of the shoulder to the mid-arm region. He denied having fever, extremity weakness, and any tingling or numbness in his left upper extremity. The patient had no past history of a similar complaint, intravenous drug abuse, infections, or immunosuppression.

On evaluation of the patient's vital signs, his temperature was 36.2°C, blood pressure was 107/71 mmHg, pulse rate was 74 beats per min, respirations were 14 breaths per min, and SpO2 was 98% on room air. Detailed musculoskeletal and skin examination of the area of pain showed swelling and warmth around the left shoulder and clavicle with no crepitus on palpation. This edema spread to the extent of the left mid-forearm. The anterior and posterior range of motion of the shoulder joint was normal, with pain elicited on both active and passive movements. The acromioclavicular joint was mildly tender but non-fluctuant. A strength of 5/5 was demonstrated in the muscle groups around the shoulder, elbow, and wrist joints. All peripheral pulses, including the brachial and radial pulses, were clearly appreciated. The anterior chest wall was mildly tender and warm with 2 enlarged, non-tender cervical lymph nodes palpable in the left anterior cervical chain. The remainder of the systemic examination was negative for additional pertinent findings.

Laboratory test results showed a normal complete blood count with hemoglobin of 13.2 g/dL (range, 13–17 g/dL), white blood cell count of 5.6×10^3/uL (range, 4–11×10^3/uL), red blood cell count of 4.72×10^6/uL (range, 3.8–5.6×10^6/uL) and platelet count of 249×10^3/uL (range, 150–372×10^3/uL). The C-reactive protein level was less than 0.4 mg/dL and the erythrocyte sedimentation rate was 5 mm/h; both within normal limits. Radiograph images of the left shoulder did not show any findings suggestive of osseous pathology. There was some narrowing of the subacromial space, raising the possibility of rotator cuff impingement. A left upper extremity venous Doppler ultrasonography was done to exclude venous thrombosis as a probable diagnosis. This ultrasound study showed no evidence of deep vein thrombosis. However, complex, irregular subcutaneous fluid was visualized in the palpable area of concern in the left clavicular region, suggesting a hematoma or a complex seroma. An MRI scan was ordered to provide a more detailed view of the left shoulder. MRI results, with and without contrast, eventually shed light on the etiology of the shoulder pain. A severe infiltrative bone marrow abnormality was visualized with large confluent soft-tissue masses surrounding the shoulder, highly suggestive of a lymphoma (**Figure 1**). A core-needle biopsy was subsequently taken from the soft tissue and anterior chest wall, revealing a high-grade, malignant B-cell lymphoma (BCL) consistent with DLBCL. The malignant cells were positive for markers such as cluster of differentiation (CD)20, CD45, CD10, CD43, BCL-6, BCL-2, and paired box protein 5, and the antigen Ki-67 was 100%. The oncology team was consulted and further investigations such as positron emission tomography (PET) scan were done to rule out other foci of cancer. The patient was then started on 8 cycles of a combined chemotherapy and immunotherapy regimen of rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP). Two months after completing the

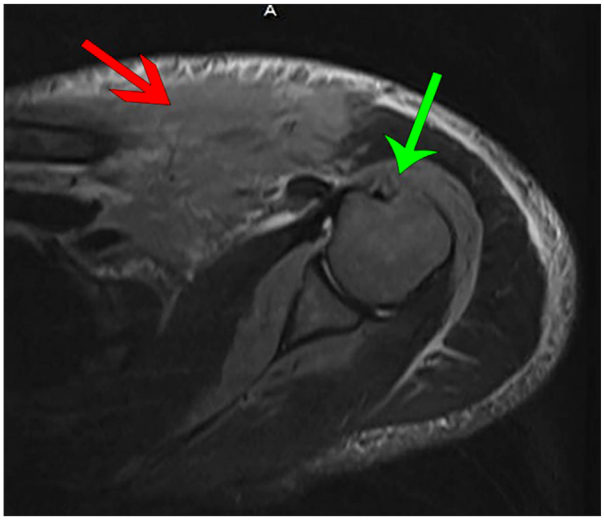

Figure 1. Magnetic resonance imaging of the left shoulder: soft tissue component of the mass (red arrow) and infiltration of the mass into the bone marrow (green arrow).

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treatment course, the patient underwent a PET scan, which showed a successful response to chemotherapy. He was declared cured and has been in remission to date.

Discussion

Lymphoma, a cancer arising from immune cells called lymphocytes, is broadly classified into 2 categories: Hodgkin lymphoma (HL) and non-Hodgkin lymphoma (NHL), with the classification being based on the microscopic appearance of the malignant cells [6]. In the United States, NHL is the more commonly occurring type of lymphoma, with an estimated 70 000 new cases diagnosed per year [7]. NHL is further categorized into low, intermediate, and high grades on the basis of the nature of the nucleus and cytoplasm, overall size of the lymphocyte from which the cancer originates, and its pattern of growth [8]. This means of classification, by way of analyzing the histological origin, has been shown to be imperative in determining therapeutic and prognostic information. Of all the NHL subtypes, DLBCL, which belongs to the intermediate grade, is the most commonly observed form, with more than two-thirds of the patients over the age of 60 years at the time of diagnosis [9].

The factors and pathogenesis contributing to the development of DLBCL are areas of ongoing studies and are thought to be attributable to factors such as race, genetics, autoimmune disorders, and infections, to name a few [10]. Lifestyle factors such as obesity and the use of hair dyes have also been linked to an increased risk of DLBCL [11,12]. DLBCL is also recognized as an AIDS-defining malignancy, although the cause for this correlation is poorly understood [13]. Because DLBCL is known to be a heterogeneous clinical entity owing to its diverse clinical presentation, its diagnosis is often challenging. Most patients present with generalized, painless lymphadenopathy and/or hepatosplenomegaly with or without "B" symptoms. However, depending on the organ of involvement and extent of spread, the symptoms and prognosis vary immensely. Even though DLBCL can arise from virtually any organ in the body, the most common extranodal site is the gastrointestinal tract. Relatively rarer sites include the breast, salivary glands, and bone. A study conducted in a group of 1085 patients with DLBCL, which attempted to estimate the common primary sites of this lymphoma, demonstrated that only 3.4% of the patients were known to have DLBCL arising from the bone [14]. This rare incidence prompts us to be observant of bone symptoms as a possible presentation of DLBCL.

Depending upon the site, a biopsy of the lymph node is the preferred method of diagnosis. Because fine-needle aspiration does not allow for a detailed study of the surrounding nodal architecture, procedures such as excision of the lymph node, incisional biopsy, or multiple core-needle biopsies can be taken for an accurate assessment [15]. Once the diagnosis has been established, prompt treatment for this malignancy needs to be initiated. DLBCL is an aggressive lymphoma, and without treatment, survival has been known to be measured in months. Rituximab, a monoclonal antibody against CD-20 on the surface of B lymphocytes, is the initial treatment in all patients with DLBCL. As most patients are not diagnosed until they have reached an advanced stage, management with chemotherapy in combination with immunotherapy with or without radiation to the involved area is given, with the most widely used regimen being R-CHOP [16]. Prognosis for DLBCL is calculated based on the International Prognostic Index, which takes into consideration factors including age more than 60 years, performance status of the patient, stage of the disease, and the number of extranodal sites involved, to determine the 5-year overall survival rate [17]. Response to treatment is assessed using a PET scan, and surveillance for relapse should be done at periodic intervals.

Conclusions

There are a few aspects from our case which can serve as learning points in identifying atypical presentations of DLBCL. It usually presents in patients aged more than 60 years, whereas in our case, the patient was only 31 years old. The patient's negative family history coupled with no prior infections, absence of autoimmune infections, immunodeficiency, or other notable risk factors led us to include DLBCL considerably lower on our list of possible differential diagnoses. The typical "B" symptoms were also absent, with isolated shoulder pain being the only clinical complaint. Therefore, this case has brought to light the importance of further investigations and the possibility that bone pain may be the only clinical presentation of an underlying lymphoma. Investigations by X-ray, MRI, and bone biopsy should be done to confirm diagnosis, followed by treatment with combination chemotherapy and immunotherapy.

Department and Institution where work was done

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Conflict of interest

None.

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