



# Imaging Diagnosis of Testicular Lymphoma in Young Male Patient: Incidental Finding in Ultrasonography

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## Abstract

**BACKGROUND:** Ultrasonography is a common diagnostic procedure in patients with testicular abnormalities. Primary testicular lymphoma (PTL) is rarely discovered and is more common among elderly populations.

**CASE PRESENTATION:** This case describes a young male patient with a history of painless testicular enlargement. Ultrasonography reveals an incidental finding of hypoechoic echo structural mass and increased vascularity using color Doppler ultrasonography. The further pathological examination discovered the findings indicative of a non-Hodgkin, diffuse, and large B-cell lymphoma. These distinctive features should be helpful in suggesting a diagnosis of PTL on imaging.

**CONCLUSION:** PTL is a rare and aggressive extranodal NHL. Despite its low incidence, it is an extremely rare testicular cancer at a young age. Careful ultrasound imaging examination should be applied in patients with testicular enlargement. The presence of hypoechoic echostructural and an increase in vascularity should be considered for the possibility of a diagnosis of primary testicular tumor.

**Edited by:** Eli Djulejic  
**Citation:** Sutrisno S. Imaging Diagnosis of Testicular Lymphoma in Young Male Patient: Incidental Finding in Ultrasonography. Open Access Maced J Med Sci. 2023 Jan 18; 11(C):30-32. https://doi.org/10.3889/oamjms.2023.11335  
**Keywords:** Lymphoma; Testicular; Ultrasound; Young patient  
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**Received:** 30-Nov-2022  
**Revised:** 06-Jan-2023  
**Accepted:** 09-Jan-2023  
**Copyright:** © 2023 Sony Sutrisno  
**Funding:** This research did not receive any financial support  
**Competing Interests:** The authors have declared that no competing interests exist  
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## Introduction

Primary testicular lymphoma (PTL) is one of the extranodal manifestations of non-Hodgkin lymphoma (NHL) with a very rare prevalence rate, accounting for 1%–2% of malignant lymphoma and 1%–5% of primary testicular tumors [1]. Histologically, diffuse large B-cell lymphoma can be found in nearly 90% of patients with PTL. Furthermore, the extensive invasion of testicular neoplasm is frequently featured among men over 60 years of age [2]. In our case, we report an incidental finding of PTL which was discovered during an ultrasonography examination. We also reviewed previously reported cases of testicular lymphoma and their imaging findings.

## Case Presentation

A 28-year-old male patient presented with a history of orchiepididymitis which was previously confirmed by a urologist. He had received antibiotic

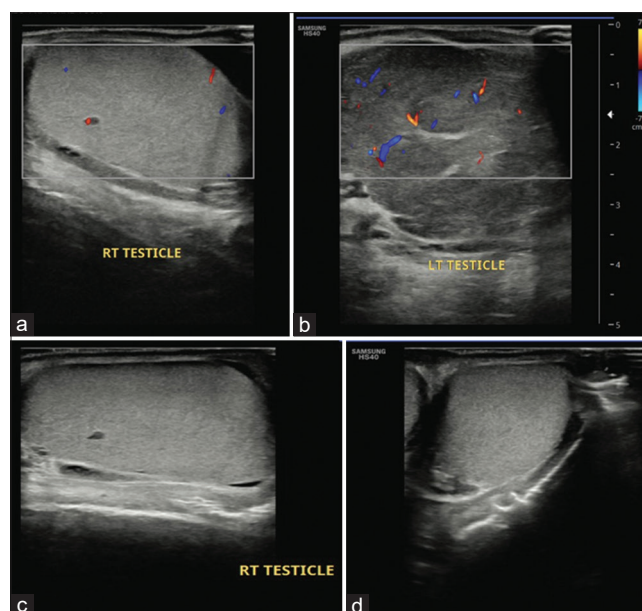


Figure 1: (a, c, and d) Ultrasonography examination confirmed a normal size and shape of the right testicle, homogeneous parenchyma, with no intra-parenchymal hypoechoic/hyperechoic lesions. The epididymis was not enlarged, homogeneous parenchyma and no intraparenchymal hypoechoic/hyperechoic lesions were seen. Testicular veins were not dilated. In contrast, (b) ultrasound Doppler showed a generalized enlargement and hypoechoic left testis with increased vascularity

regimens with partial improvement of symptoms. Patients were readmitted due to a persistent increase in testicular volume, induration, and a painless local inflammatory reaction. On physical examination, there was an enlarged left scrotum with a firm mass that extended along the left spermatic cord. The skin of the scrotum and the right testis was within normal range. There was no abdominal organomegaly, and no lymph node masses were palpable in the abdomen, inguinal, and supraclavicular areas. Ultrasonography examination revealed a large left testicular mass suggestive of hypoechoic echostructural (Figures 1 and 2). The blood test indicated a normal level of  $\alpha$ -fetoprotein (3.15  $\mu\text{g/L}$ ) and  $\beta$ -human chorionic gonadotropin (0.30 IU/L). However, a significant increase in lactate dehydrogenase level (1300 U/L) was reported.

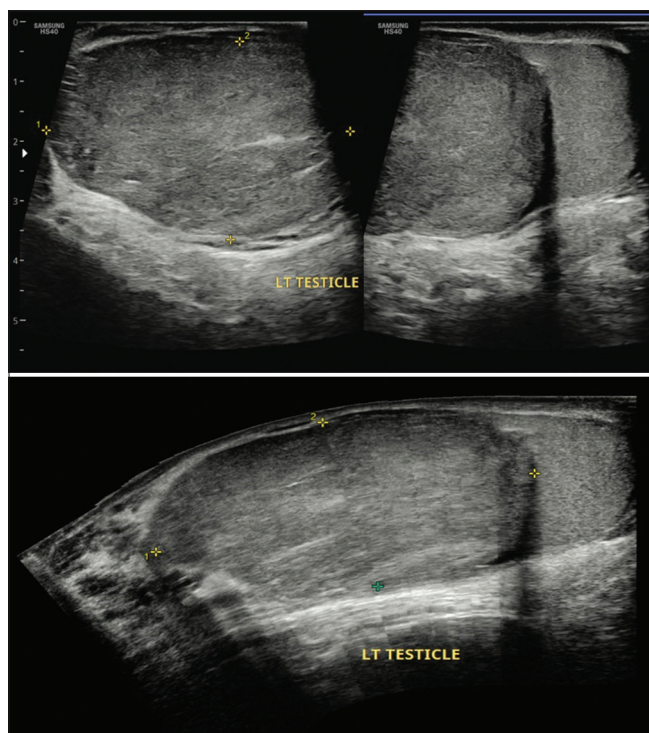


Figure 2: Ultrasound examination confirmed that the size of the left testicle was partially enlarged in the proximal part of the left testis with a hypoechoic echostructural mass, 6.26 cm  $\times$  3.23 cm in size. Color Doppler ultrasonography showed an increase in vascularity. The left epididymis appeared enlarged with increased vascularity. Left testicular veins were not dilated

Ultrasound-guided left testicular biopsy was performed. The pathological results confirmed that non-Hodgkin, diffuse, and large B-cell lymphoma was highly positive for the B-cell markers CD19 and CD10 (Figure 3), but negative for CD20. The patient was encouraged to be treated with six-course chemotherapy regimens using rituximab, cyclophosphamide, vincristine, and prednisone (R-CHOP). Further follow-up examinations were carried out outpatient in Oncology Department. A left radical orchiectomy was subsequently performed after a complete cessation of chemotherapy. The left testis had returned to its normal size and consistency. Pathology examination revealed total tumor necrosis with no tumor involvement of the spermatic cord.

## Discussion

PTL is an uncommon pathological manifestation that only represents 1%–5% of all malignant NHL. It predominantly concerns men over 50 years of age, with a median age of 65 years [3]. Liu *et al.* acknowledged PTL as the most common testicular tumor in the sixth decade of life, comprising 45% of all testicular tumors. It is mainly characterized by enlargement or swelling in the scrotum and inguinal area [4]. In our patient, we reported a case of PTL in a young patient; surprisingly, it was incidental by ultrasound examination. Zucca *et al.* reported that testicular lymphoma can also occur in younger men with more aggressive histologic features. The presenting symptom is a painless enlargement of the testis, often with more rapid progression [5].

The main differential diagnoses for PTL include germ cell tumors, acute and chronic epididymal-orchitis, and leukemia. However, germ cell tumors are differentiated from lymphoma because it is associated with the elevation of serum human-chorionic-gonadotropin or alpha-fetoprotein, and frequently metastasize cranially through retroperitoneal lymph-node distribution. Histologically, PTL is classified into intermediate-grade, diffuse, and large B-cell tumors. Earlier studies showed that diffuse large B-cell lymphomas comprise the histopathological majority of non-Hodgkin PTL, with merely a lesser percentage of the T-cell type [6]. This is consistent with our finding of a diffuse large B-cell NHL.

Ultrasonography is the first-choice imaging modality in diagnosing testicular lesions, especially to determine the site of the scrotal lesion, whether intra- or extra-testicular. Extra-testicular lesions among adult patients are typically benign. Diagnosing intra-testicular lesions tend to be more challenging; therefore, a combination of B-mode and color Doppler ultrasound is needed to distinguish between benign and malignant intra-testicular disease [7]. Bertolotto *et al.* described that color Doppler ultrasonography demonstrates increased vascularization which may indicate focal lesions, whereas generalized testicular hypervascularization with high or borderline resistance indexes often suggests diffuse testicular involvement [8].

The management should be carried out aggressively in patients with good performance status. It involves contralateral testicular irradiation (25 Gy), prophylactic central nervous system (CNS) irradiation because of the high probability of CNS involvement reaching 30%, and aggressive chemotherapy using the R-CHOP regimen. However, the survival prognosis is uniformly poor among high-grade diseases, not exceeding 9–12 months [9], [10]. Testicular lymphoma frequently spreads within the epididymis, tunica albuginea, spermatic cord, or scrotal skin, or even reaches extranodal sites including the CNS, lung, and Waldeyer's ring [11]. Most PTL patients present with a relapse of their disease in the first 2 years [12].



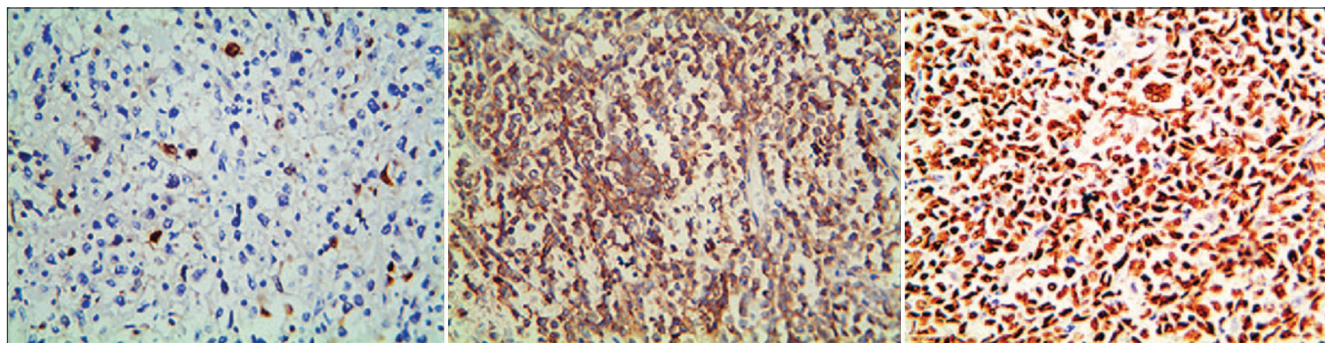


Figure 3: Primary diffuse large B cell lymphoma of the left testis. Immunohistochemical results showed that CD19 and CD10 proteins were mainly expressed in the cell membrane

Unfortunately, we did not study the outcome of the patient.

## Conclusion

PTL is a rare and aggressive extranodal NHL. Despite its low incidence, it is an extremely rare testicular cancer at a young age. Careful ultrasound imaging examination should be applied in patients with testicular enlargement. The presence of hypoechoic echostructural and an increase in vascularity should be considered for the possibility of a diagnosis of primary testicular tumor.

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