

## Primary testicular lymphoma with solitary cutaneous nodule as the initial presentation

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### Abstract

Primary testicular lymphoma (PTL) is an uncommon disease, and accounts for about 1% to 2% of non-Hodgkin's lymphomas and less than 5% of all testicular malignancies. Of all testicular malignancies, primary testicular diffuse large B-cell lymphoma is the most common type, whose incidence is estimated at 0.26/100 000 per year. At presentation or relapse, PTL tends to spread to several extranodal sites, such as the contralateral testis, the central nervous system, skin, lung, pleura, Waldeyer's ring, and soft tissues. Orchiectomy and chemotherapy are the preferred treatment. We report a case of a 40-year-old male presenting with a nodule on the anterior abdominal wall and with right scrotal swelling on physical examination. Histopathologic examination led to the diagnosis of cutaneous metastasis of testicular lymphoma.

### Introduction

Lymphoma of the testis comprises 3% to 5% of all testicular tumours. It is an aggressive extranodal lymphoma that arises primarily in the testis or as a part of generalized non-Hodgkin's lymphoma.<sup>1</sup> Lymphomas of the testis usually present as a unilateral testicular mass of variable size and can show contiguous spread to rete testis, epididymis, spermatic cord and rarely to tunica albuginea. They can frequently involve extranodal sites like skin, central nervous system, and Waldeyer's ring at presentation and at relapse. Less common sites are the lung, bone, liver, gastrointestinal tract, and nodal sites, especially the paraaortic lymph nodes.<sup>2-4</sup> We present a case of primary testicular lymphoma (PTL) involving the tunica albuginea with rupture and abdominal skin.

### Case report

A 40-year-old male presented with a progressively increasing nodule in the anterior abdominal wall for 2 months. Physical examination revealed a subcutaneous mass in the left hypochondrium, 8 × 8 cm in size associated with ulcer-

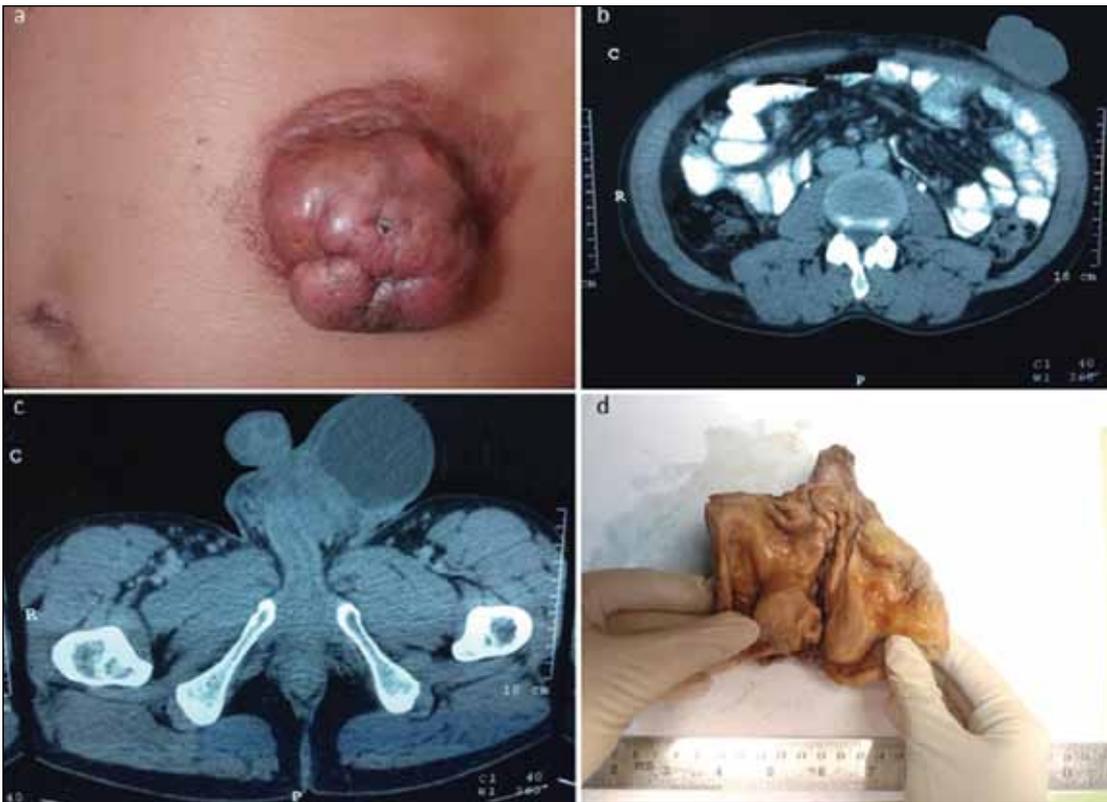
ation and firm on palpation (Fig. 1, part A). A clinical diagnosis of dermatofibrosarcoma protuberans was made. On further probing, the patient revealed a history of an enlarging testicular mass for 8 months. A computed tomography scan revealed a well-circumscribed homogeneously enhancing soft tissue mass measuring 6 × 3.5 cm on the anterior abdominal wall in the left lumbar region abutting abdominal muscles with no intraperitoneal extension (Fig. 1, part B). Multiple small subcutaneous nodules of variable size were also noted in the anterior abdominal wall and chest wall above this mass on the ipsilateral side. We also found a heterogeneously enhancing left testicular mass measuring 5.6 × 5 cm involving the epididymis and surrounding scrotal sac wall (Fig. 1, part C). The testicular and abdominal masses were excised and sent for histopathologic examination. On gross examination, the testicular mass measured 10 × 6.5 × 4 cm, with a homogenous, grey-white and fleshy cut surface with cystic change (Fig. 1, part D).

The abdominal mass measured 9 × 8 × 5 cm and showed a similar appearance on cut section as that of the testicular mass. Multiple sections processed from the testicular mass showed sheets of atypical lymphoid cells replacing most of the testicular parenchyma. Tumour cells were intermediate to large in size, with moderately abundant cytoplasm and round to ovoid nuclei with prominent nucleoli at places (Fig. 2, parts A, B). Brisk mitotic activity was noted. Immunohistochemistry revealed positive tumour cells for leukocyte common antigen (Fig. 2, part C) and CD20 (Fig. 2, part D), and negative for CD3, CD30 and CD117.

A diagnosis of diffuse large B cell lymphoma (DLBCL) testis was made based on the morphological and immunohistochemical features. Sections from the abdominal mass revealed a tumour in the dermis showing a morphology and immunohistochemical profile similar to that of the testicular tumour (Fig. 2). Thus a diagnosis of testicular DLBCL with cutaneous metastasis was rendered.

### Discussion

Non-Hodgkin's lymphoma of the testicle is an uncommon extranodal presentation.<sup>1</sup> Although this condition occurs in



**Fig. 1.** A: Anterior abdominal swelling in the left hypochondrium; B: Well-circumscribed homogeneously enhancing soft tissue mass  $6 \times 3.5$  cm on anterior abdominal wall in left lumbar region abutting abdominal muscles with no intraperitoneal extension; C: Heterogeneously enhancing left testicular mass  $5.6 \times 5$  cm with involvement of epididymis and surrounding scrotal sac wall; D: Testicular mass  $10 \times 6.5 \times 4$  cm with a homogenous grey-white and fleshy cut surface.

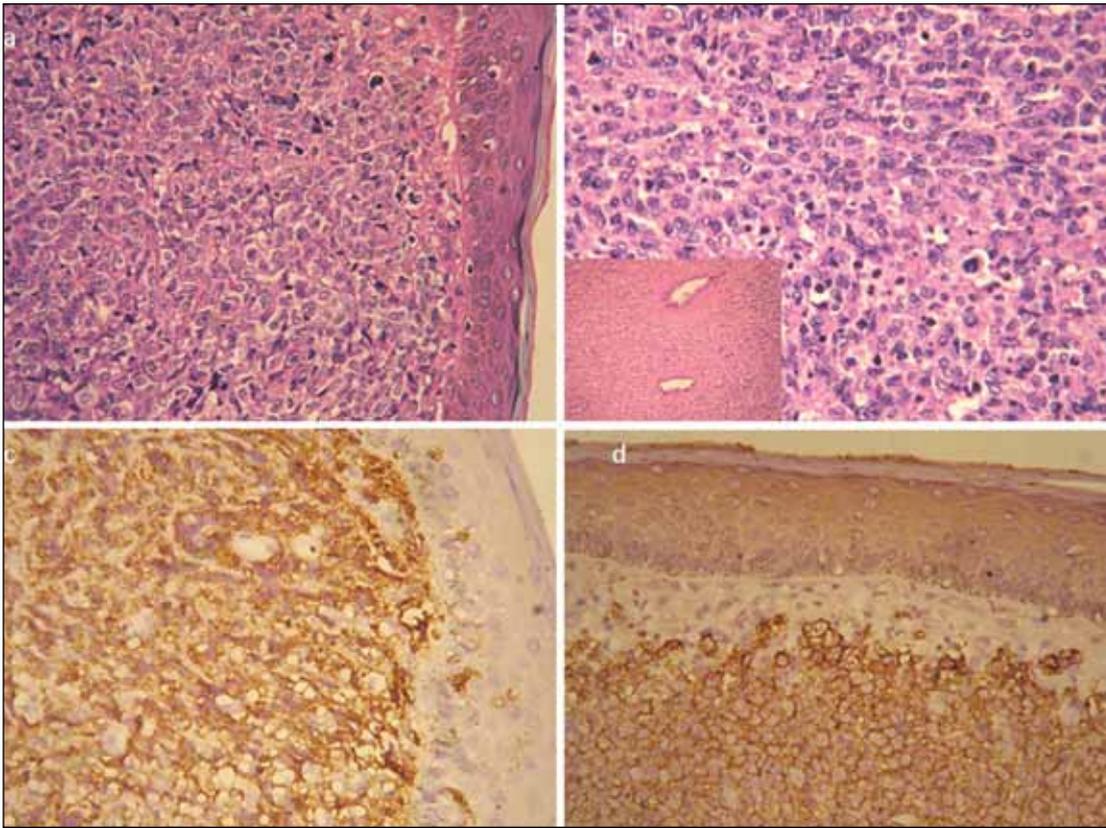
85% of patients 65 years old or older, PTL rarely occurs in children, most of whom are prepubertal. In contrast to testicular lymphomas in adults, of which 40% to 60% are primary (stage IE), most testicular lymphomas in children involve the testis by Burkitt's, diffuse large B-cell, or lymphoblastic lymphoma. However, recently primary testicular lymphoma has increased in younger patients.<sup>5,6</sup> This could be attributed to the increased prevalence of HIV infection and better immunophenotypic characterization of testicular tumours in recent years, leading to better recognition of PTL and its less frequent misinterpretation as germ cell tumour.<sup>7</sup>

PTL usually presents as a unilateral testicular mass of variable size. It has a much greater tendency for bilaterality, as about 50% of bilateral testicular tumours are lymphomas.<sup>8</sup> Grossly, lymphoma is a solid, homogenous, grey-white mass with a lobulated appearance replacing the testis. Bilateral involvement can also occur at presentation and has been reported in 18% of cases.<sup>8</sup> The tumour usually also shows contiguous spread to the tunica albuginea, rete testis, epididymis, and spermatic cord. In one large series, involvement of the epididymis and spermatic cord was seen in 60% and 39% of cases, respectively, whereas involvement of the tunica albuginea is very rare.<sup>4</sup>

Histologically, diffuse large B-cell lymphoma is by far the most common type of non-Hodgkin's lymphoma. Other

reported types include follicular lymphoma, plasmacytoma, and lymphoblastic and Burkitt-like lymphomas.<sup>7</sup> Diffuse large B-cell lymphoma shows obliteration of testicular parenchyma by neoplastic cells arranged in solid sheets and separated by thin fibrous tissue. The tumour cells are large with ill-defined cell membrane, and variable amounts of non-vacuolated cytoplasm. Nuclei are pleomorphic with irregular and twisted nuclear borders, fine chromatin, and sometimes inconspicuous nucleoli. The differential diagnosis that should be considered in such a case include seminoma and embryonal carcinoma. Age at presentation and morphological features, along with immunohistochemistry, help to establish the correct diagnosis without much difficulty.<sup>9</sup>

Skin metastases occur in 0.6% to 10.4% of all patients with cancer and represent 2% of all skin tumours. Skin metastases from visceral malignancies are important because of their variable clinical appearance and presentation, frequent delay and failure in their diagnosis, relative proportion of different internal malignancies metastasizing to the skin, and impact on morbidity, prognosis, and treatment. They may also be the first sign of clinically silent visceral cancer. Women with skin metastases have the following distribution in decreasing order of frequency of primary malignancies: breast, ovary, oral cavity, lung, and large intestine. In men, the distribution is as follows: lung, large intestine,



**Fig. 2.** A: Dermis showing sheets of atypical lymphoid cells of intermediate to large size with brisk mitotic activity (hematoxylin & eosin staining [H&E]  $\times 400$ ); B: Sheets of atypical lymphoid cells replacing testicular parenchyma showing frequent mitoses (H&E  $\times 400$ ), inset – residual entrapped seminiferous tubules in the tumour (H&E  $\times 200$ ); C: Tumour cells showing positivity for leukocyte common antigen ( $\times 400$ ); D: Tumour cells showing positivity for CD20 ( $\times 400$ ).

oral cavity, kidney, breast, esophagus, pancreas, stomach, and liver. A wide morphologic spectrum of clinical appearances has been described in cutaneous metastases.<sup>10</sup> This variable clinical morphology includes nodules, papules, plaques, tumours, and ulcers. From a histopathologic point of view, there are 4 main morphologic patterns of cutaneous metastases, involving the dermis, namely, nodular, infiltrative, diffuse, and intravascular.<sup>10</sup> Generally, cutaneous metastases herald a poor prognosis. The average survival time of patients with skin metastases is a few months.

Metastases to skin may occur by a hematogenous route or via lymphatics. Carcinoma of the breast and carcinoma of the oral cavity spread via lymphatics, whereas the rest of the cancers spread mainly via a hematogenous route. Lymphatic dissemination may explain why skin metastases tend to be close to the primary site of the tumour.<sup>11</sup> Our patient presented with an ulceroproliferative lesion on the abdominal skin along with a testicular mass. The involvement of skin and subcutaneous tissues has been reported in 6% to 13% of testicular lymphoma cases.<sup>4</sup>

Given the rarity of PTL, there is no standard treatment. The management of PTL depends on stage, either at initial diagnosis or after relapse, following adequate initial treatment. Testicular lymphoma carries a poor prognosis com-

pared to other non-Hodgkin's lymphomas and extranodal lymphomas and may require a more prolonged course of chemotherapy compared to other extranodal lymphomas. Stage and pathologic grading are the most important predictive factors for outcome. Younger age and early stage, which are part of the international prognostic index (IPI), are independent prognostic factors affecting overall and disease-free survival.<sup>8</sup> The combination of cyclophosphamide, doxorubicin, vincristine and prednisone (CHOP) is the standard chemotherapy regimen, along with radiotherapy following orchiectomy. Treatment of relapses at extranodal sites, contralateral testis, and/or the central nervous system needs to be further investigated using new molecular approaches and/or more aggressive management.<sup>12</sup>

## Conclusion

PTL is an uncommon disease, for which orchiectomy and chemotherapy are the preferred treatment. In our case, a histopathologic examination led to the diagnosis of cutaneous metastasis of testicular lymphoma.

**Competing interests:** The authors declare no competing financial or personal interests.

This paper has been peer-reviewed.

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