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Renal involvement in diffuse large B-cell lymphoma: A case report

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ABSTRACT

Diffuse large B-cell lymphoma is the most common subtype of non-Hodgkin lymphoma. Approximately 40% of cases have extranodal involvement. Renal involvement is rare, however, it is associated with poor prognosis. Furthermore, renal involvement increases the risk of central nervous system (CNS) recurrence. Therefore, it is recommended that CNS prophylaxis should be included in lymphoma treatment in cases of renal involvement.

Keywords: Diffuse large B-cell lymphoma, Extranodal, Kidney, Involvement

1. INTRODUCTION

Lymphomas are malignant neoplasms originating from lymphoid cells. They are classified under two categories as Hodgkin lymphoma and non-Hodgkin lymphoma (NHL). Diffuse large B-cell lymphoma (DLBCL) constitutes 30%–58% of all NHLs. There are 3-4/100,000 new cases per year in the European Union, and its incidence increases with age [1]. Extranodal involvement occurs in approximately 40% of DLBCL cases (with 36% in the gastrointestinal tract, 20% in the head and neck region and 14% in the bone marrow) [2]. Renal involvement, which is rare, occurs in 1%–2% of DLBCL patients [3-5].

2. CASE REPORT

A 74-year-old female with a history of hypertension, diabetes mellitus and coronary artery disease presented at our hospital with complaints of weight loss and abdominal pain that had been persisting for a month. Physical examination revealed tenderness in the abdomen. An abdominal ultrasound scan showed a vascularised heterogeneous hypoechoic lesion of approximately 7.5 × 5.5 cm in the left kidney and two hypoechoic lesions with a diameter of 8.5 cm that surrounded the vascular structures in the pancreatic duct and adjacent to the left iliac artery. Positron emission tomography/computed tomography (PET/CT) scan showed a pathological increase in 18-fluoro-2-deoxyglucose (18F-FDG) uptake, lymphadenopathies in the right mediastinal region (SUV_{max}: 8.9), a mass with a diameter of approximately 9 × 6.5 × 10.5 cm in the pancreatic duct (SUV_{max}: 27.9) and a mass with a diameter of 9 × 6 cm in the left kidney (SUV_{max}: 26.5). Conglomerate lymph nodes, the largest one being 5 × 3.5 cm, were observed on the mesenteric, para-aortic, left main iliac and right iliac chain (SUV_{max}: 26.0) (Figure 1). The tru-cut biopsy results performed at the pancreatic duct and left kidney indicated non-germinal centre diffuse large B-cell lymphoma [vimentin (+), LCA (+), CD20 (+), CD10 (–), BCL-6 (+), BCL-2 (–), MUM-1 (+), p53 (+) and KI67 index of 98%] (Figure 2). Laboratory test results showed that hemoglobin level was 13.48 g/dl, leukocyte count was 7.95 mm^3, platelet count was 377,000, creatinine level was 0.79 mg/dl, LDH level was 510 U/L, Eastern Cooperative Oncology Group (ECOG) performance score was 3, Ann Arbour stage was 4 and international prognostic index (IPI) score was 5 (high). Owing to old age and poor performance, the patient was initiated on R-mini-CHOP (rituximab plus cyclophosphamide, doxorubicin, vincristine, prednisone) treatment. Cerebrospinal fluid test results did not reveal any involvement. Intrathecal methotrexate was administered for CNS prophylaxis.

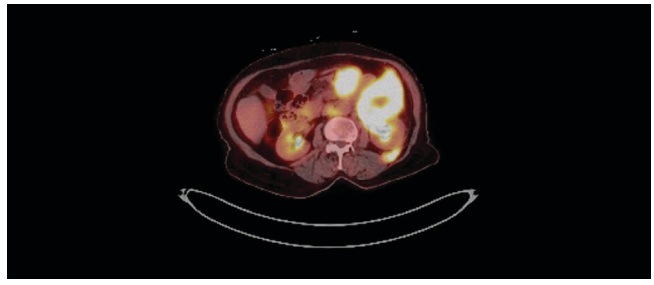

Figure 1. In the left kidney, peripheral and pathological increase in 18F-FDG uptake is observed in a soft tissue mass that has a hypodense hypometabolic area (necrosis) at its center.

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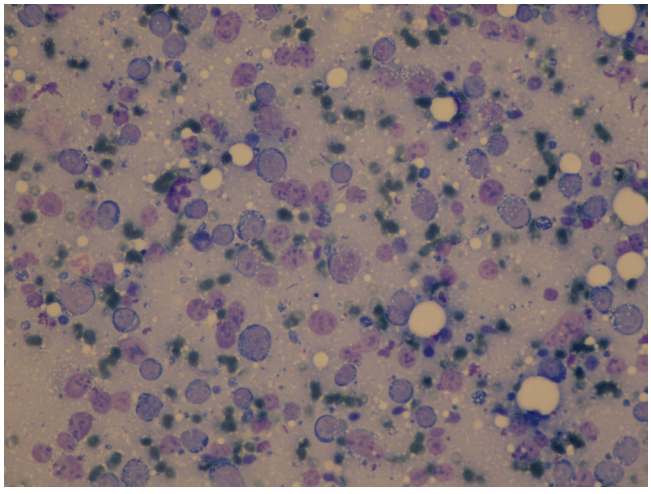

Figure 2. Renal biopsy findings were compatible with DLBCL: Atypical lymphocytes singly scattered on a base consisting of erythrocytes and lymphoglandular bodies, having a cytoplasm with vacuoles, nuclear pleomorphism and irregular nuclear contours and prominent nuclei, are observed in the smear (MGG staining, original magnification 40× with objective lens).

3. DISCUSSION

In a study with 821 patients diagnosed with DLBCL, renal involvement was noted in 22 (3%) of them at the time of diagnosis. Among the patients with renal involvement, 86% had advanced stage DLBCL with high IPI scores and 32% had renal insufficiency. It was demonstrated that renal involvement leads to a 3-year progression-free survival (PFS) rate of 44% and a 3-year overall survival (OS) rate of 52%, indicating that the survival rates are worse with renal involvement than without renal involvement. In addition, it was observed that the rate of CNS recurrence was high (36%) [6]. In other studies, renal involvement was found to be an independent risk factor for CNS recurrence [7-9]. Intrathecal methotrexate administration is the most widely used prophylaxis method for the risk of CNS in high-risk patients. However, recent studies have demonstrated this method to be insufficient in reducing the risk of CNS recurrence [10,11]. Conclusions concerning the insufficiency of intrathecal treatment for the prevention of parenchymal CNS recurrence have led to the administration of intravenous high-dose methotrexate as CNS prophylaxis. The positive effect of intravenous high-dose methotrexate administration in patients with a high risk for CNS recurrence has been demonstrated in many studies [12,13]. Our patient had no CNS involvement at the time of diagnosis. Owing to old age and a low-performance score, intrathecal methotrexate was included in our patient's treatment regimen instead of high-dose methotrexate for CNS prophylaxis.

Several published studies on DLBCL patients treated with R-CHOP-like regimens have reported the 3-year PFS rate to be 62%–79% and the 3-year OS rate to be 72%–93% [14-17].

Extranodal involvement at multiple sites has been identified as an independent risk factor for NHL [18]. Additionally, renal involvement has been demonstrated to be associated with poorer survival [6]. It is known that acute kidney damage adversely affects survival in patients with hematological malignancy [19]. In one study, one-third of patients with DLBCL with renal involvement had renal failure. The presence of renal failure was associated with poor outcome [6]. In our patient, renal failure was not identified at the time of diagnosis.

Following the discovery of rituximab, the R-CHOP chemotherapy regimen (rituximab plus cyclophosphamide, doxorubicin, vincristine, prednisone) has been accepted as the standard treatment approach in DLBCL [15, 20-23]. However, it is recommended that primary mediastinal DLBCL and high-grade B-cell lymphomas should be treated with more intense chemotherapy regimens, such as DA-EPOCH – R (dose-adjusted etoposide, doxorubicin, and cyclophosphamide with vincristine, prednisone, and rituximab) [24,25]. There is still no standard approach regarding the treatment regimen to be followed for cases with renal involvement. However, successful cases of treatment with the DA-EPOCH-R regimen have been reported in the literature [26,27].

In conclusion, renal involvement in DLBCL is rare, however, it is associated with poor prognosis. Moreover, it involves an increased risk for CNS recurrence. Therefore, CNS prophylaxis is recommended for such patients. However, randomized controlled trials are required to establish a standard treatment approach.

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