Primary Retroperitoneal Tumor with Unexpected Gingival Involvement

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Abstract

Retroperitoneal tumors present diagnostic challenges, although a definitive diagnosis can be established based on a histopathological analysis. We herein report the case of a 62-year-old woman with a massive retroperitoneal tumor who was referred to our department for surgery. Although we initially planned to perform an incisional biopsy, we unexpectedly detected gingival swelling, and a gingival biopsy subsequently confirmed a pathological diagnosis of Burkitt’s lymphoma (BL). We successfully avoided the use of more invasive diagnostic procedures and were able to promptly initiate chemotherapy. Obtaining an immediate pathological diagnosis is essential for providing successful treatment in such cases, as the disease is potentially curable with chemotherapy. BL should therefore be considered in the differential diagnosis of massive retroperitoneal tumors, highlighting the importance of routine systemic screening.

Key words: retroperitoneal tumor, Burkitt’s lymphoma, diagnostic biopsy


Introduction

Primary retroperitoneal neoplasms are rare, accounting for 0.1-0.2% of all malignancies, and are difficult to diagnose using radiological examinations. The differential diagnosis of these lesions includes sarcoma (e.g., liposarcoma, leiomyosarcoma and malignant fibrous histiocytoma), neurogenic tumors, lymphoma and extragonadal germ cell tumors (1). Because the treatment strategies for sarcoma and lymphoma are entirely different, it is important to consider the patient’s clinical presentation, radiological imaging and physical findings and results of appropriate histopathological examinations in order to obtain an accurate diagnosis (1).

When performing a biopsy, an adequate amount of tissue is needed to properly conduct immunophenotyping or genetic analyses, in addition to histopathological examinations, especially with respect to determining lymphoma subtypes. However, it is often difficult to obtain a sufficient amount of tissue for a definitive diagnosis using simple procedures. For example, the accuracy of fine-needle biopsies for the diagnosis of malignant lymphoma is reported to be <78% (2). Although a previous study showed that laparoscopic or retroperitoneoscopic biopsies targeting retroperitoneal organs are effective techniques (3), the application of invasive diagnostic procedures may delay the prompt initiation of treatment and complicate the patient’s condition if the disease is rapidly progressive.

In this report, we describe a case of Burkitt’s lymphoma (BL) in a 62-year-old Japanese woman who presented with a massive retroperitoneal tumor involving the left kidney that was successfully diagnosed based on the rare findings of gingival involvement.

Case Report

A 62-year-old Japanese woman presented to an orthopedic clinic with a two-month history of left flank pain and leg weakness. A computed tomography (CT) scan revealed a retroperitoneal tumor suggestive of liposarcoma involving the left kidney, and the patient was referred to the department of urology at the University of Tokyo Hospital.

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biopsy of the retroperitoneal mass in order to clarify the diagnosis. Although the results of a cytological examination suggested malignant lymphoma, the lymphoma subtype could not be confirmed because the tissue specimen obtained via the needle biopsy was largely necrotic and insufficient for flow cytometry or gene rearrangement or chromosomal testing. However, because we noted swelling of the patient’s right premolar gingiva, we performed a gingival tissue biopsy to assess possible lymphoma invasion. Consequently, the pathological results showed medium atypical lymphocytes with nuclear constriction; a subset of the cells had small nuclei with a “starry sky” appearance (Fig. 3a). In addition, immunohistochemical and in situ hybridization analyses indicated that the malignant cells were positive for CD20, CD79a and CD10 and negative for CD3, CD5, Bcl-2, TdT and Epstein-Barr virus-encoded RNA-1, and the tumor proliferation index on MIB-1 staining was greater than 95% (Fig. 3b). Although fluorescence in situ hybridization was negative for IgH/c-Myc, we confirmed the diagnosis of sporadic BL based on the patient’s overall clinical features.

No central nervous system or bone marrow invasion was detected, and the patient was classified as having stage IV B disease. She immediately received treatment with the Cancer and Leukemia Group B (CALGB) prophase regimen [cyclophosphamide (CPA) (200 mg/m²) on days 1-5 and prednisolone (PSL) (60 mg/m²) on days 1-7], followed by hyperfractionated CVAD [CPA (600 mg/m²) BID on days 1-3 + vincristine (1.4 mg/m²) on days 4 and 11 + doxorubicin (16.6 mg/m²) on days 4-6 + dexamethasone (40 mg/m²) on days 1-4 and 11-14] and MA [methotrexate (1,000 mg/m²) on day 1 + cytarabine (3 g/m²) twice/day on days 2-3 and mPSL (40 mg/m²) on days 2-4] alternating therapy. After receiving two courses of MA, the patient achieved transient complete remission, as noted on positron emission tomography; however, the disease later became refractory and uncontrollable with salvage treatment.

**Discussion**

We herein reported a case of a primary retroperitoneal tumor with unexpected gingival involvement. Initially, we suspected retroperitoneal liposarcoma as the primary differential diagnosis with tumor involvement in the hilum of the kidney only and thus avoided performing a core biopsy due to the risk of bleeding, subsequently selecting a fine-needle biopsy. Although a needle biopsy of the abdominal mass resulted in a possible diagnosis of lymphoma instead of liposarcoma, we were unable to definitively confirm the lymphoma subtype because the tissue specimen was insufficient. We then noticed the patient’s mandibular gingival swelling, and a biopsy of this area led to a definitive pathological diagnosis of sporadic BL. Hence, we successfully avoided the need for more invasive diagnostic procedures and were able to begin chemotherapy without delay.

In this case, the differential diagnosis of dedifferentiated liposarcoma versus lymphoma was unclear radiologically.
Liposarcoma is a mesenchymal neoplasm with atypical adipocytes and lipoblasts in adipose tissue. Preoperative biopsies are often not performed in cases of suspected well-differentiated retroperitoneal liposarcoma, as the sensitivity of CT for low-grade lesions is nearly 100% and there is virtually no role for preoperative therapy for these tumors (4). Nevertheless, dedifferentiated liposarcoma is difficult to diagnose, even on enhanced MRI, due to the presence of infiltrative, hypervascular lesions mixed with areas of necrosis and focal nodular/water density. In contrast, lymphomas tend to be hypovascular and poorly enhanced on contrast-enhanced CT. Such lesions also exhibit hypointense signals on T1-weighted MRI scans and are slightly hypointense or isointense relative to the normal renal cortex tissue on T2-weighted images (5). In cases in which the patient has a high soluble interleukin-2 receptor level or presents with B-symptoms, a diagnosis of malignant lymphoma is more plausible. Although the usefulness and safety of image-guided percutaneous biopsies have been confirmed, surgical biopsies remain mandatory for confirming the diagnosis of lymphoma (6), although open biopsies may be associated with adverse effects on survival and/or delays in treatment for more than one month due to the need for postoperative recovery.

In 1958, Denis Burkitt reported the detection of BL with predominant jaw involvement in young African children in Central and East Africa (7). BL is a high-grade B-cell non-Hodgkin lymphoma, representing 3-5% of all lymphomas. These lesions usually affect children, comprising up to 40% of head and neck lymphomas (8, 9), and endemic, sporadic and human immunodeficiency virus-associated types are the three clinical subtypes of BL. The presence of the translocation t(8;14)(q24;q32) and its variants or c-MYC rearrangement and consequent overexpression are the hallmarks of BL (10). These features result in a high cell-cycle fraction, as defined by a Ki-67 index of close to 100%. Endemic BL frequently develops in the jaw and facial bones in African children and is almost invariably associated with Epstein-Barr virus infection. The sporadic form has no geographic predilection and usually develops in the abdomen or pelvis in adults (8, 9). The current case was classified as sporadic BL with a massive tumor in the retroperitoneal space and an
invasive gingival lesion despite the findings of negative results for IgH/c-Myc. It should be noted that MYC translocations are not observed in approximately 5% of BL cases (11). In addition, the translocation is not necessarily specific for BL, having also been reported in other B-cell lymphomas. Because immunohistochemical markers showed a typical pattern for BL in our patient, we finally diagnosed her with sporadic BL based on the entire clinical presentation.

Although the current patient did not present with acute critical abdominal symptoms, BL is highly malignant and grows rapidly, frequently involving acute abdomen (12). In particular, the sporadic form commonly presents with abdominal swelling induced by large mesenteric, retroperitoneal or pelvic masses, in addition to symptoms of tenderness, pain or fullness. Some patients complain of symptoms similar to those of acute appendicitis, associated with tumor growth (12). In cases of sporadic BL, the second most common presentation involves the head and neck region, while the incidence of jaw involvement is reported to be 7-32% (13-16).

BL is one of the most rapidly growing neoplasms, and obtaining an immediate diagnosis is critical for providing successful treatment, as the disease is potentially curable with chemotherapy. Although sporadic BL rarely presents with oro-facial involvement without bone destruction, the current case suggests that this tumor should be considered in the differential diagnosis of primary retroperitoneal neoplasms and that examinations of the entire body, including the oro-facial region, are particularly important in patients with massive retroperitoneal tumors.

Author’s disclosure of potential Conflicts of Interest (COI).
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