Case Report

Primary Splenic Lymphoma Presenting As Splenic Abscess: A Rare Entity

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ABSTRACT

Primary splenic lymphoma are rare lymphomas which comprise less than 1% of the all malignant lymphoma. We present a case of 35 years old female with fever and pain in abdomen for a period of 20 days. The main purpose of this paper is to report a rare occurrence of primary splenic lymphoma and to demonstrate the possibility of it being misdiagnosed as splenic abscess clinically and on imaging.

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Introduction

Non-Hodgkin lymphoma (NHL) originates from lymphovascular system and can be classified as B cell lymphomas (about 90% of all NHL) and T cell lymphomas (10% of all NHL).[1] Since spleen is the major site for filtration of blood so primary tumors of spleen are generally haematological malignancies, in which most are lymphomas.[2] However primary splenic lymphoma (PSL) is an extremely rare neoplasm with a reported incidence of less than 1%.[3] To define primary splenic lymphoma, the lymphoma should be confined to the spleen and/or splenic hilar lymph nodes, although few authors also accept the presence of bone marrow involvement.[4] Histomorphologically great majority of cases are of B-cell type, with diffuse large B-cell lymphoma being the most common.[5] PSL of spleen is difficult to diagnose with the common differentials being hemangioma, lymphangioma, abscess, hamartoma, infarct and metastatic disease.[6] The patients usually present with abdominal pain or mass due to splenomegaly, with or without fever, systemic upset, or thrombocytopenia.[4].

Here, we present a case of PSL in a 35-year-old female patient, which was initially diagnosed as splenic abscess.

Case Report

A 35-year-old female patient presented with fever and pain abdomen for 20 days. General examination revealed the presence of mild pallor. On abdominal examination, spleen was palpable approximately 7 cm below the left costal margin. On palpation spleen was nodular and firm in consistency. No other significant systemic finding was noted. Complete blood count of patient revealed microcytic hypochromic anemia (hemoglobin level - 10 g/dL). The total and differential counts were within normal limits. ESR was found to be raised. Other routine investigations including liver function test, renal function test, and lactate dehydrogenase levels were within the normal limits. An ultrasonogram of the abdomen revealed single well circumscribed, lobulated hypoechoeic lesion which favoured the diagnosis of splenic abscess. The computed tomographic findings of abdomen revealed a circumscribed rounded, low attenuated lesion (figure 1a&1b). For splenomegaly the patient underwent splenectomy (figure 1c). Grossly spleen measured 12x10x9cms and weighed 1.3kg. Cut section revealed a single white nodule mixed with necrotic areas, involving almost whole of the spleen and measuring 11x 9x9cm (figure 1d). Imprint cytology of the specimen showed many degenerated atypical cells with prominent nucleoli mixed with inflammatory cells and necrosis (figure 2a). Histopathology showed diffuse sheets of large sized cell with central vesicular nucleus, prominent nucleolus, focally prominent and atypical mitotic activity. Section also showed large areas of ischemic necrosis mixed with neutrophilic infiltrate (figure 2b&2c). Immunohistochemistry revealed positivity for CD 20 (figure 2d) while tumor cells were negative for CD5 and CD10. Following this a final diagnosis of DLBCL was made. The patient had received six cycles of CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) postoperatively and was disease free and was on regular follow up for seven months.

Discussion

The definition of PSL is variable and remains a matter of controversy. The earliest definition was given by Dasgupta *et al*., who defined PSL as a condition confined to spleen or hilar lymph nodes with no recurrence of disease for at least 6 months after splenectomy.[7] In the present case, the patient fulfilled the criteria of this definition.

On the other hand, Skarin et al [8] and Kehoe J et al [9] suggested that the diagnosis of PSL be made if splenomegaly is a predominant feature in any lymphoma involving the spleen. While Kraemer et al [10] recommended the diagnosis of PSL, as patients with splenomegaly, cytopaenia of at least two haematological cell lines and the absence of peripheral adenopathy.

The etiology of splenic lymphoma largely remains unknown. However it has been suggested that chronic hepatitis due to hepatitis C virus infection along with some poorly defined genetic and environmental factors play a significant role in its development.[11]

Symptoms of PSL may be variable, with few presenting as fever, weight loss, weakness and left upper quadrant discomfort, mimicking clinically as splenic abscess.[12]

In the present case, the patient presented with fever along with pain abdomen and splenomegaly.

Among the lab findings, significant features include cytopenia or increased ESR or b2 microglobulin level. [13] In our case also the patient had increased ESR along with microcytic hypochromic anemia.

The radiological investigation of choice for the diagnosis is contrast enhanced computed tomography (CECT), in which the lesions appear hypoechoic, but sometimes anechoic areas may be seen, which suggest liquefactive necrosis thereby causing confusion with splenic abscess.[8] In our case both clinical presentation and imaging studies mimicked splenic abscess.

The common differential diagnoses of solitary splenic lesion include hemangioma, lymphangioma and hamartoma.

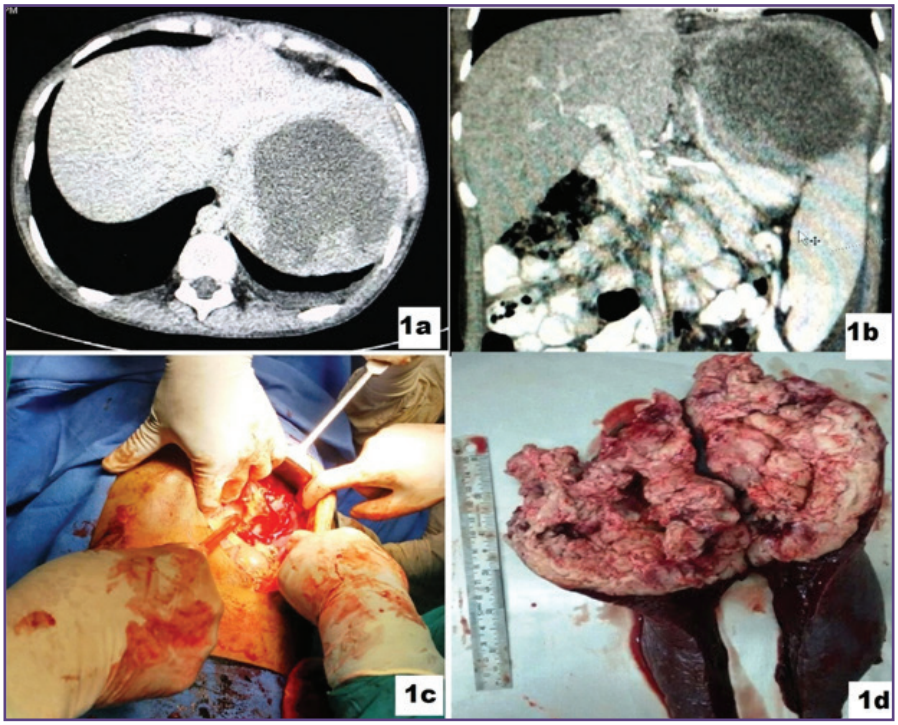

Fig. 1a: Computed tomography showing massive splenomegaly (axial section); 1b- Computed tomography showing massive splenomegaly (coronal section); 1c- Per opereative photo showing ligation of splenic hilum; 1d- Cut Section shows single large grayish white lesion with abundant central necrosis and a rim of normal splenic parenchyma at the periphery.

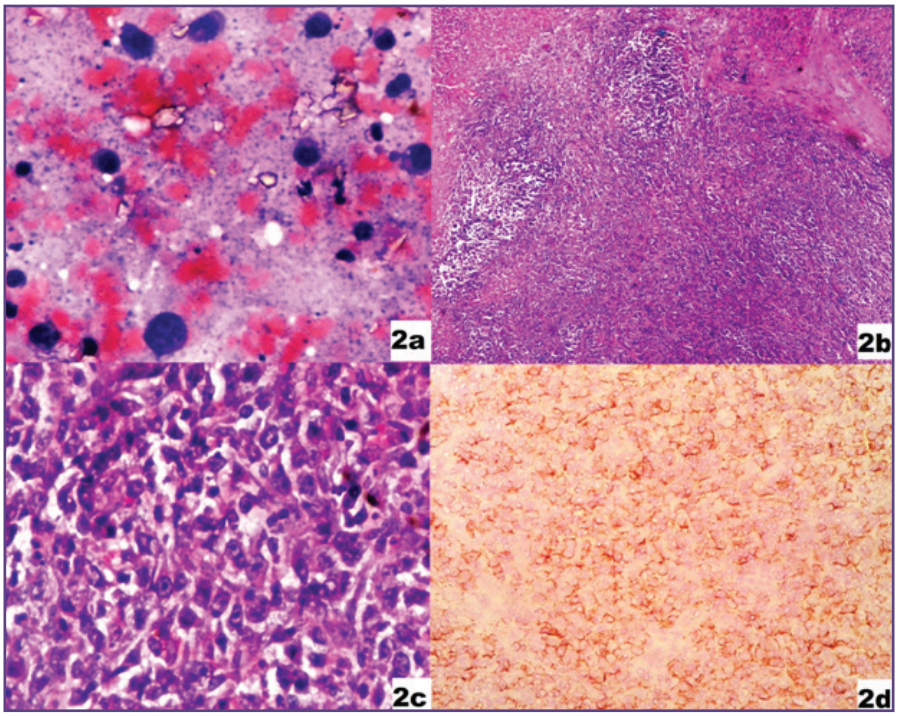

Fig. 2a: Imprint cytology showing occasional degenerated scattered atypical lymphoid cells in a hemorrhagic background (H&Ex 40x); 2b- Low power view showing sheets of monotonous tumor cells mixed with areas of necrosis (H&Ex 10x); 2c- High power view showing tumor cells with prominant nucleoli (H&Ex 40x); 2d- Immunohistochemistry of primary splenic lymphoma showing CD20 positive tumor cells (x40x)

However in an afebrile and symptomatic patient the likely diagnosis is a metastatic lesion. In cases of acute ischemic lesion, the condition is usually painful and clinical evidence of the predisposing cause for example trauma, is usually present. Febrile or immunocompromised patients, splenic abscess are a possible diagnosis. As the patients of PSL usually have no lymphadenopathy, and they have a normal general blood picture, diagnosis becomes difficult. [8]

Grossly primary splenic lymphoma has been classified into four categories: (1) Homogeneous enlargement without masses, (2) miliary masses, (3) 2-10 cm masses and (4) large solitary mass. Our case was fitting in the last category i.e. a large solitary tumor occupying almost 3/4th of the spleen.[14]

When considering the type of primary splenic lymphoma, most are of B cell origin, with the common subtypes (seen in almost 50 % of cases) being low-grade or intermediate-grade lymphomas.[15] Diffuse large B-cell lymphoma (DLBCL) of spleen is the most common type, accounting for almost 1/3 of the primary splenic lymphoma cases. [16]Next in frequency come the splenic marginal zone lymphomas (SMZL), [17] while less common one include mantle cell lymphoma, Tcell rich large B cell lymphoma, small lymphocytic lymphoma, lymphoplasmacytic lymphoma, follicular lymphoma and hepatosplenic T cell lymphomas.

DLBCL of spleen usually presents as a single or multiple confluent nodules with majority being derived from the white pulp.[18] Other lymphomas with similar pattern of involvement are those in which spleen is secondarily involved. These include SMZL, follicular lymphoma and small lymphocytic lymphoma.[19]

DLBCL usually occur in sixth and seventh decade of life, more commonly presenting as a single tumor mass, which is large and occupies more than 50 % of the spleen; this pattern however, is not specific to primary DLBCL as secondary involvement by DLBCL will also have the same pattern. Bone marrow involvement is usually negative at the time of presentation.[16] Microscopically DLBCL have large cells with vesicular to clumped chromatin, containing one to many nucleoli and relatively abundant cytoplasm. They are positive for B cell markers CD19 and CD20 with variable expression of germinal centre markers CD10 and BCL6. [20]

Next common differential of splenic lymphoma is SMZL. It is characterized by cytopenias, splenomegaly or detection of middle sized mature villous lymphocytes on peripheral blood smear [21]. Diagnosis is usually made by histological examination of the spleen/ bone marrow, along with immunophenotyping. On microscopic examination of spleen, small, mature lymphocytes surrounding the germinal centers is seen in the white pulp and sometimes infiltrating the red pulp. Immunophenotyping shows expression of B-cell antigens and surface immunoglobulin, along with lack of expression of CD5, CD10, CD43 and CD103. [22]

Other lymphomas with similar pattern of splenic involvement are follicular lymphoma, which on histopathology reveals preserved or mild alteration of germinal center, having centrocytes (i.e., small, mature and cleaved lymphocytes) often with CD 10 positivity and overexpression of BCL2; mantle cell lymphoma, which presents with mature lymphocytes having irregular nucleus and positivity for CD5 while negative for CD23 along with universal overexpression of cyclin D1; and lastly small lymphocytic lymphoma, which presents as expanded and effaced white pulp areas due to small lymphocytes with condensed chromatin, high nucleus-to-cytoplasm ratio and positivity for both CD5 and CD23. [23]

The present case was diagnosed as NHL - large cell type on histopathology. However final diagnosis of diffuse large B-cell type NHL was rendered only after immunohistochemistry showed CD20 positivity only.

A staging system has also been proposed for PSL: Stage I - Tumor confined to spleen only; Stage II - Involvement of spleen and hilar lymph nodes; Stage III - Involvement of extra splenic nodes or liver[14]. In this case since the hilar lymph nodes were not involved, the patient had Stage I disease.

There are controversies with regard to the treatment protocol for PSL. The proposed methods include splenectomy only, splenectomy followed by chemotherapy, splenectomy followed by radiotherapy or a combination of chemotherapy and radiotherapy.[24]

The standard chemotherapeutic regimen used is CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone). Some authors suggest that the overall survival rates are better with early splenectomy, followed by multidrug chemotherapy compared with splenectomy alone or splenectomy, followed by single agent chemotherapy.[25]

Conclusion

Primary splenic lymphoma is an extremely rare entity. Both radiologically and clinically they can mimic splenic abscess that may delay the proper diagnosis and management. Hence, it is important that the clinicians keep this differential diagnosis in their minds while dealing with similar cases and undertake necessary steps like biopsy and immunohistochemical analysis to reach the correct diagnosis.

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Competing Interests
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