

Case Report

Uterine leiomyoma with indolent B-lymphoblastic proliferation

Zhaoming Wang¹, Ke Sun¹, Wenbo Xiao²

¹Department of Pathology, ²Department of Radiology, the First Affiliated Hospital, College of Medicine, Zhejiang University, Hangzhou, Zhejiang Province, PR China

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Abstract: Uterine leiomyoma with TdT positive B lymphocytes infiltrating is very rare and may simulate precursor B-cell lymphoblastic lymphoma (B-LBL). To the best of our knowledge, this is the first description of such a lesion in English literature. A 51-year-old Chinese woman was noted a mass in her uterus in a routine physical examination. The myomectomy specimen was identified as a well-defined 8.0x6.8 cm tumor and the cut surface was fresh and yellow-tan. A massive small lymphocytic infiltration accompanied by plasma cells and histiocytes was noted in the leiomyoma but not in the surrounding non-neoplastic myometrial fibers. These cells were small in size without significant nuclear irregularities and mitotic figures can not be seen. Immunohistochemical analysis has shown some small lymphocytes were CD20+, CD79a+, Pax5+B cells and some were CD2+, CD3+, CD5+, CD43+T cells. The small B cells coexpressed TdT and Ki67 and were in patchy dense distribution. The postoperative course was uneventful within a 30-month follow-up period without chemotherapy and radiotherapy. The true nature of these TdT+ B cells has not been determined.

Keywords: Leiomyoma, lymphoblastic lymphoma, terminal deoxynucleotidyl transferase (TdT)

Introduction

B lymphoblastic lymphoma (B-LBL) is a neoplasm of precursor cells committed to the B-cell lineage [1]. B-LBL is composed of immature lymphocytes that demonstrate lymphoblastic morphology and express precursor and B-cell markers such as terminal deoxynucleotidyl transferase (TdT), CD10, CD19, CD20, and CD79a [2]. Nearly all cases of B-LBL have clonal rearrangements of the IgH gene. Clinically B-LBL usually involves the skin, soft tissue, bone, lymph nodes and predominantly occurs in childhood or young adulthood [3]. Rare cases of indolent TdT+ T-lymphoblastic proliferation has been reported. But indolent B-lymphoblastic proliferation has not been reported [4-8]. We present an unusually case of an adult woman with TdT positive B lymphocytes infiltrating in the uterine leiomyoma that possibly suggesting indolent TdT+ B-lymphoblastic proliferation.

Clinical history

A previously healthy 51-year-old female, gravida3, para3, was admitted to the hospital for a

mass in her uterus in a routine physical examination. Abdominal ultrasonography revealed an 8.0x6.8 cm low enhancing mass in her uterus (**Figure 1**). Serum lactate dehydrogenase level was normal. The complete blood cell count revealed a white blood cell count of $6.4 \times 10^9/L$, hemoglobin of 123 g/L, and a platelet count of $186 \times 10^9/L$. Bone marrow showed overall 20-30% of marrow cellularity with no involvement of immature lymphoid cells. A peripheral blood smear showed no blasts. There was no evidence of superficial lymphadenopathy in any other region including the neck, axilla, and groin.

Pathological findings

A total abdominal hysterectomy was performed. On gross examination an 8.0x6.8 cm nodular mass was found in the uterine corpus. The mass was soft and its cut surface was fresh and yellow-tan. Microscopic examination (**Figure 2**) showed a hypercellular spindle cell tumor, consisting of mature smooth muscle cells with marked infiltration of small lympho-

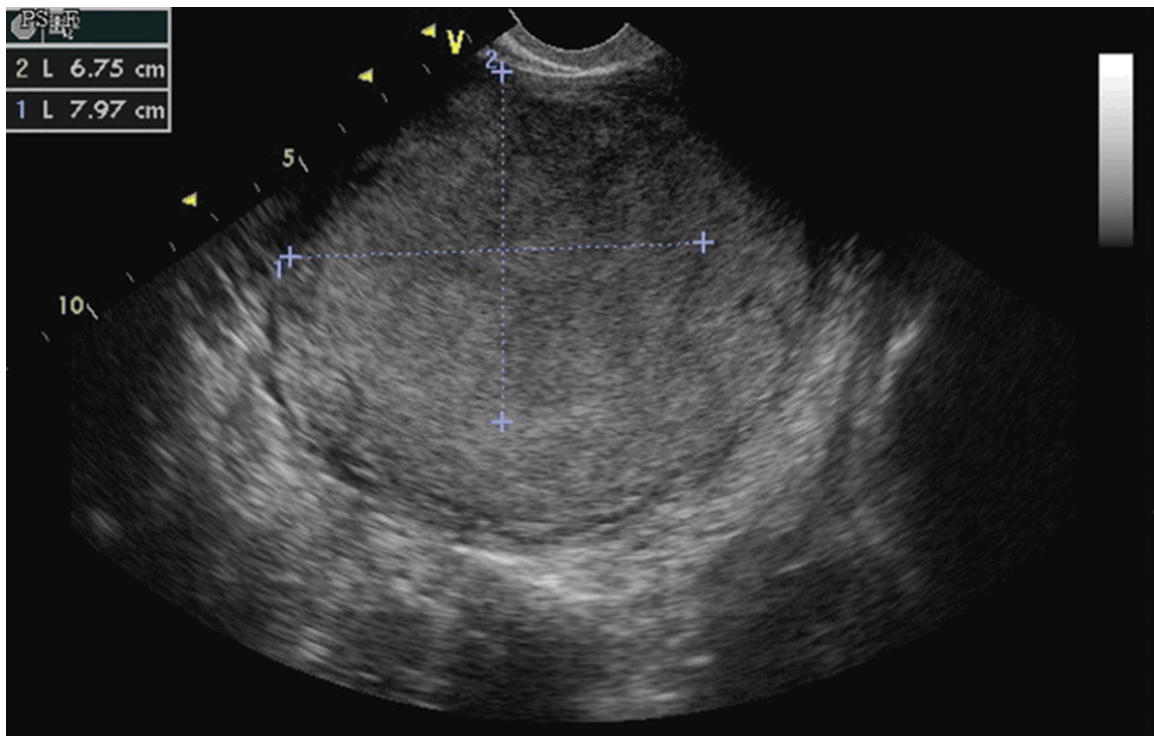


Figure 1. Ultrasonography revealed an 8.0x6.8 cm low enhancing mass in the patient's uterus.

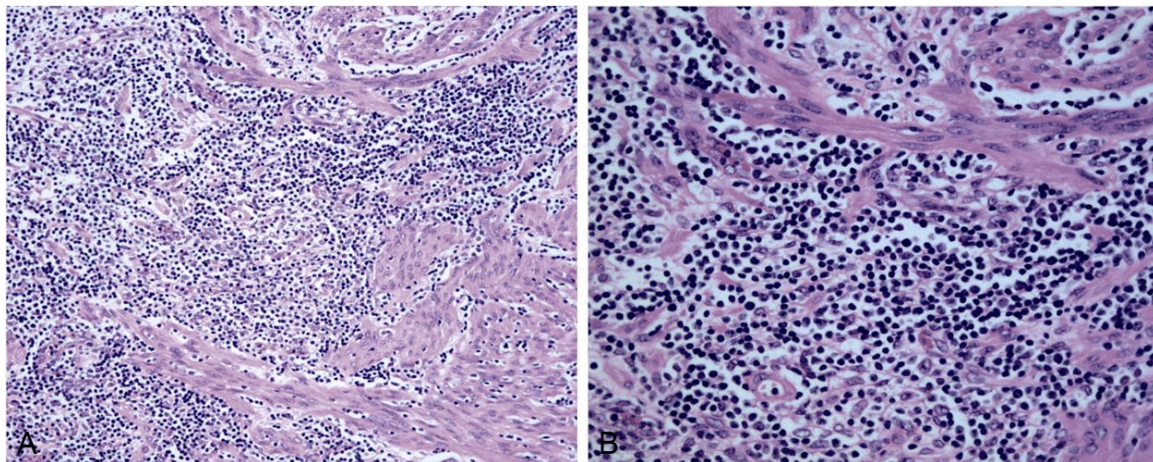


Figure 2. A massive small lymphocytic infiltration was noted in the leiomyoma (A: hematoxylin and eosin, x200). These cells were small in size without significant nuclear irregularities and mitotic figures can not be seen (B: hematoxylin and eosin, x400).

cytes. These small lymphoid cells have round nuclei and scant cytoplasm. Scattered larger lymphoid cells, histocytes and plasmacytes were present. The infiltration did not contain neutrophils and confined to the leiomyoma. Reactive follicles and ectopic thymic tissues have not been observed. Immunohistochemical analysis has shown some small lymphocytes

were CD20+, CD79a+, Pax5+B cells and some were CD2+, CD3+, CD5+, CD43+T cells (**Figure 3**). These small B and T lymphocytes were in approximately equal amount. The small B cells coexpressed TdT and Ki67 and were in patchy dense distribution (**Figure 4**). They were negative for Bcl-2, Bcl-6, pan-cytokeratin (CK AE1/3), CD1a, CD10, CD23, CyclinD1, MPO and CD56.

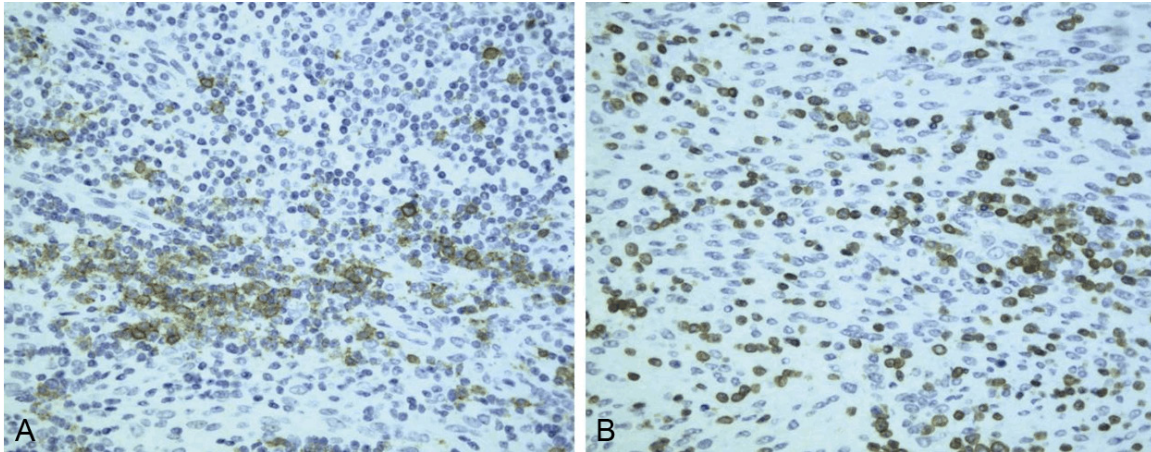


Figure 3. Immunohistochemical analysis has shown that some small lymphocytes were CD20+B cells (A: immunohistochemistry, x400) and some were CD3+T cells (B: immunohistochemistry, x400).

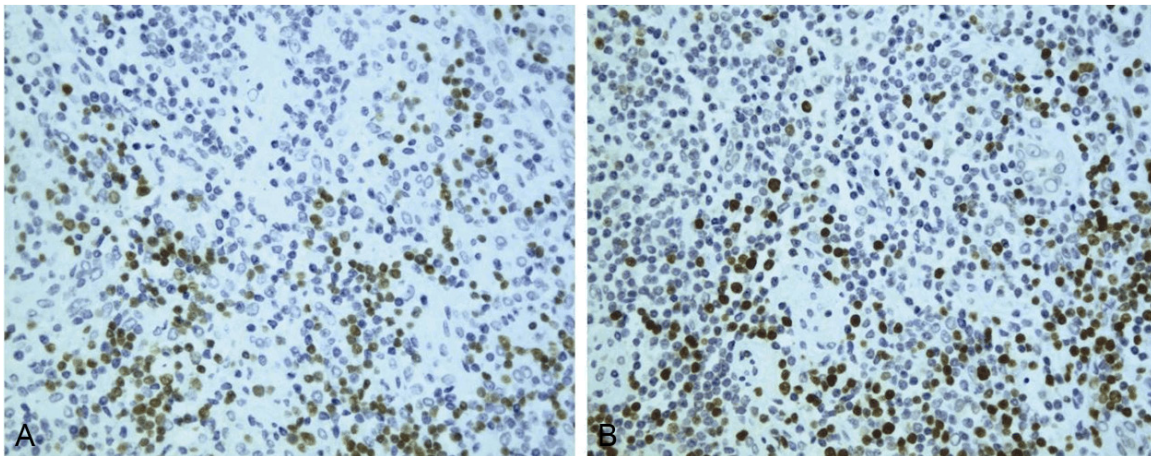


Figure 4. The small B cells coexpressed TdT (A: immunohistochemistry, x400) and Ki67 and both were in patchy dense distribution (B: immunohistochemistry, x400).

Genomic DNA was extracted from paraffin-embedded tissue sections. Clonal rearrangement of T-cell receptor- γ , T-cell receptor- β and immunoglobulin heavy chain genes have not been found by polymerase chain reaction. Follow-up information: without chemotherapy and radiotherapy, the patient is well with no evidence of lymphoma 30 months after surgery.

Discussion

From the pathological findings and the follow-up results, the leiomyoma with marked infiltrate of small lymphocytes in this case was best considered to be uterine leiomyoma with indolent B-lymphoblastic proliferation.

Terminal deoxynucleotidyl transferase (TdT) labeled immature T and B lymphocytes of bone marrow. It was a specific and sensitive marker for lymphoblastic neoplasms of both T and B lineage [5]. In 1999, Velankar et al [4] reported a patient with chronic proliferation of TdT⁺ T lymphoblasts. Thereafter six cases of indolent TdT⁺ T-lymphoblastic proliferations have been reported [5-8]. The TdT⁺ T-lymphoblastic proliferations of all these cases remained chronic and required no treatment. But indolent TdT⁺ B-lymphoblastic proliferations have not been reported. Recently, Ohgami RS et al [9] found that TdT⁺ T-lymphoblastic populations were increased in lymph nodes of patients with Castleman disease, in Castleman disease in

association with follicular dendritic cell tumors and in angioimmunoblastic T-cell lymphoma. The true nature of these TdT⁺ T cells has not been determined. Thymic epithelium was lacking in all the reported cases of indolent TdT⁺ T-lymphoblastic proliferation. So these TdT⁺ immature T cells could not be postulated as representing a component of ectopic thymus tissue. Ohgami RS et al [9] speculated that these TdT⁺ immature T cells may be released from the thymus or bone marrow with homing to secondary sites where they are sequestered and maintained.

Indolent TdT⁺ B-lymphoblastic proliferations must be differentiated from precursor B-cell lymphoblastic lymphoma (B-LBL). Approximately 64% of B-LBL cases reported in the literature was less than 18 years of age. The most frequent sites of involvement in B-LBL were the skin, soft tissue, bone and lymph node. Lymphoblastic lymphoma was generally characterized by a diffuse involvement of lymph node or other tissue [2]. These lymphoblasts were relatively uniform in appearance with round to oval, indented or convoluted nuclei. The chromatin was finely dispersed and mitotic figures could be seen [1, 3]. Our patient was 51 years old and TdT⁺ B lymphocytes were confined to the uterine leiomyoma. The infiltrated small cells were composed of B and T cells in approximately equal amount. The cells were small in size without significant nuclear irregularities and mitotic figures could not be seen. The lymphoblasts in B-LBL were positive for CD10 in most cases, while TdT⁺ B lymphocytes in our case were negative for CD10. Nearly all cases of B-LBL have clonal rearrangements of IGH@ gene. In addition, T-cell receptor gene rearrangements may be seen in up to 70% of B-LBL cases [1]. The small lymphocytes of our patient showed non-clonal rearrangements for IGH@ gene and T-cell receptor. So our case would not be diagnosed as precursor B-cell lymphoblastic lymphoma.

Uterine leiomyoma with lymphoid infiltration have been reported by Chuang et al [10]. The leiomyoma was infiltrated by moderate or marked amount of small lymphocytes with scattered larger lymphoid cells, histiocytes and plasma cells and was typically confined to the leiomyoma. Immunohistochemical analysis has shown B cells in follicles and T cells outside follicles. Clonal rearrangement of IGH@ gene has

not been found [10-12]. The etiology of the process was considered as an inflammatory response to the degenerative changes within leiomyoma [11]. The clinical and pathological features of our case were similar to uterine leiomyoma with lymphoid infiltration except the small B lymphoid cells were TdT⁺. Our case can be considered as a subtype of uterine leiomyoma with lymphoid infiltration.

In conclusion, we reported the rare occurrence of uterine leiomyoma with indolent B-lymphoblastic proliferation. We believe that careful correlation with a combination of clinical, morphologic, immunophenotypic and molecular findings can lead to the correct diagnosis. The etiology of this process is not known and the biological behavior of this disorder requires long-term follow-up.

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Disclosure of conflict of interest

The authors have disclosed that they have no significant relationships with any commercial companies pertaining to this article.

Address correspondence to: Dr. Wenbo Xiao, Department of Radiology, the First Affiliated Hospital, College of Medicine, Zhejiang University, No.79 Qingchun Road, Hangzhou, Zhejiang 310003, PR China. Tel: +86-571-87236364; Fax: +86-571-87236570; E-mail: xiaowb.111@163.com

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