Littoral Cell Angioma: A Morphologic and Immunohistochemical Study

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ABSTRACT

Littoral cell angioma is a splenic vascular tumor of splenic sinus lining cells that is considered benign in general. This report describes a case of littoral cell angioma with no malignant histological features. The lesion is composed of anastomosing vascular channels resembling splenic sinus; they are lined by endothelial cells which show mitotic activity very rare. Immunohistochemically, the tumor cells were positive for both endothelial (Factor VIII-AG, CD31) and histiocytic markers (KP1 or CD68). The morphologic and immunohistochemical findings in this tumor confirm the presence of dual (endothelial / histiocytic) characteristics of the reticuloendothelial cells lining the splenic sinus, justifying the term littoral cell angioma.

Keywords: Angioma, Spleen, Iran

Introduction

Vascular tumors are the most common primary neoplasms of the spleen. Most of these lesions are derived from vascular endothelium (1,2). Less common is originated from the cells in the red pulp sinuses (littoral cells) (1,3). Littoral cell angioma is a unique splenic tumor that may be present with abdominal pain or may be an incidental finding. The tumor is characterized by a mixture of papillary and cystic areas lined by plump cells with nuclear enlargement, but lacks mitotic activity. Littoral cells have a mixed vascular and histiocytic origin. Normal littoral cells, express CD8, but the lining cells of littoral cell angioma do not express CD8 or CD34, although express CD31, CD68,CD163 (1,4-7).

Here we present a patient with a splenic tumor with morphologic and immunophenotypic features of littoral cell angioma. All antibodies were from DAKO company and used according to the standard methods at the Pathology Department, Kermanshah University of Medical Sciences.

Case Report

A 31-year-old man from west part of Iran presented with recent vague abdominal pain and discomfort with a history of brucellosis 3 years ago. Physical
examination disclosed only a mildly enlarged, non-
tender spleen. Laboratory examination showed
anemia of 11.1 g/dL hemoglobin. Leukocyte count,
platelet count, liver function tests, and coagulation
tests were normal. Abdominal ultrasound, and
computed tomography (CT) scans confirmed mild
splenomegaly with non-homogeneous texture and
one round, hyperdense lesion, and a normal liver.
Splenectomy was performed. The patient promptly
recovered. No further therapy was administered.

The spleen was immediately placed in 10% buffered
formalin solution, fixed for 24h, and routinely
processed for paraffin embedding. Sections were
stained with hematoxylin and eosin. Immunostaining
was performed manually using routine steamer antigen
retrieval and the envision system, HRP (DAB) kit
(DAKO, Carpinteria, CA), following manufacturer’s
instructions. Negative and positive controls were run
for each antibody (CD31, CD34, CD68, Factor VIII.
AG).

The enlarged spleen was 16x 8.5x 5.5cm. The ca-
psule was intact. Cut sections, show a red, hemorrhagic
tissue with a relatively well-circumscribed mass
measuring 6.5x 5.5cm. It had spongy configuration
with few delicate gray septa. Histological sections
showed diffuse replacement of splenic parenchyma
by vascular channels, a few with cystic dilation
harboring intraluminal papillary projections and
other areas with solid architecture. The cells lining
the channels and papillary fronds and comprising
the solid areas had abundant clear-to-eosinophilic
cytoplasm and oval-to-spindle large vesicular nuclei,
including indented and grooved nuclei (Fig. 1).
Some cells had foamy cytoplasm, and a few showed
erythrophagocytosis. Nuclear atypia was mild, and
mitoses were not seen (Fig. 2). Remainder of splenic
parenchyma was unremarkable.

On immunohistochemistry, the lining cells exhibit
strong positivity for factor VIII and CD34 (Fig. 3, 4).
In addition, they react with monoclonal antibodies
against the macrophage-associated CD68 antigen. The
cytoplasmic reactivity was granular and of variable
intensity in the cell lining the vascular channels;
however, reactivity was faint or absent in littoral cells
with scant cytoplasm and small nuclei.

Fig. 1: Anastomosing vascular channels, a few
with cystic dilation (H&E Staining x100)

Fig. 2: The cells lining the channels showed clear
to eosinophilic cytoplasm and oval large vesicular
nuclei (H&E Staining x400).

Fig. 3: The lining cells were positive for factor
VIIIag
**Discussion**

Littoral cell angioma (LCA) is a vascular proliferation unique to the spleen (5). The lesion may occur either as solitary nodules or as multiple lesions, but they are always situated within the splenic red pulp (1). Although its cellular origin is assumed to be the normal splenic sinus lining cells, the tumor cells show slight immunophenotypic differences from this normal cellular component of the spleen (4,8).

The basic morphologic feature is the presence of vascular channels that are reminiscent of splenic sinuses and that may anastomose with normal sinuses at the periphery of the tumor the appearance of these vascular channels is quite variable, because cyst like spaces, papillary fronds as well as solid intraluminal proliferations, may be present within the same lesion.

The lining cells observed in the lesions point to sinus endothelium, as they may be morphologically indistinguishable from normal littoral cells, at least in some areas of the lesions (1,9). Characteristically, however, most areas of LCA show lining cells that possess vesicular nuclei and more abundant cytoplasm and may phagocytose as well as slough off into the vascular lumina (1,10). Immunohistochemically, the proliferating cells expressed both endothelial and histiocytic-associated antigen. Our case had morphologic and immunophenotypic findings similar to those previously described, with reactivity for the vascular marker CD_{31}, as well as expression of the CD_{68} antigen (3,11,12). Expression of the CD_{68} antigen was not unique to this type of tumor in the spleen and although CD_{68} antigen expression is common in histiocytic cells, its expression is also not lineage specific (1,5,13). Some of the hemangiomas as well as half of the angiosarcomas of the other studies also had lining cells expressing CD_{68}. However, CD_{31} expression was unique to the LCA cases. LCAs are proposed to be tumors of the splenic sinus lining cells or littoral cells (1,3,14).

LCA appears to be a benign neoplasm. Follow-up obtained for many cases reveals that patients with typical LCA did not develop either recurrence or metastatic disease, but in rare case metastasis has been reported (15). In our case, following up 14 years after splenectomy reveals no recurrence or specific pathologic finding. In summary, LCA constitutes a distinct clinicopathologic entity that broadens the spectrum of vascular tumors of the spleen and that must be considered in differential diagnosis of these lesions (spleenic hemangioma, angiosarcoma, vascular hamartoma and peliosis) (1). Its peculiar morphologic and immunophenotypic properties reflect the dual, i.e., endothelial / histiocytic, differentiation potential of splenic sinus-lining cells and thus underline the importance of the “reticuloendothelial system” concept.

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**References**


