

Case Report

Splenic littoral cell angioma with severe hypoproteinemia: a rare case report of 2 years follow-up

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Abstract: Splenic littoral cell angioma (LCA) is a comparatively rare vascular neoplasm of the spleen. LCA always presents with thrombocytopenia, fever, weight loss, and abdominal pain, and may also involve splenic rupture. To our knowledge, however, splenic LCA is rarely accompanied by severe hypoproteinemia. This report describes a 36-year-old woman with multiple splenic LCA, accompanied by severe hypoproteinemia. Computed tomography (CT) and magnetic resonance imaging (MRI) showed multiple hemangiomas in the spleen. Splenectomy was performed. Postoperative histological and immunohistochemical examinations showed that the lesion was an LCA. Diagnosing splenic LCA is difficult, not only because it is infrequent but because of its nonspecific clinical presentation and variable radiological findings. The findings in this patient show the importance of a very rare, not fully understood cause of severe hypoproteinemia.

Keywords: Littoral cell angioma, hypoproteinemia, splenectomy, anemia

Introduction

Splenic littoral cell angioma (LCA), first described in 1991 as a benign tumor, is a comparatively rare condition, with few reported cases to date [1]. Nearly 200 cases of splenic littoral cell angioma have been reported. LCA presents with signs such as abdominal distension, splenomegaly, malnutrition, disseminated intravascular coagulation (DIC), anemia, thrombocytopenia and fatigue, but LCA with severe hypoproteinemia has not reported yet. This report describes a patient with splenic LCA accompanied by severe hypoproteinemia.

Case report

In May 2014, a 36-year-old woman was admitted to our hospital with edema of the lower extremities. She had no medical history of malnutrition, fever, abdominal distension, or hemorrhage. Laboratory tests revealed severe hypoproteinemia. Blood tests showed a total serum protein (TP) concentration of 35.3 g/L, a serum albumin concentration of 23.2 g/L, a platelet count of 16×10^9 /L, a hemoglobin concentration of 71 g/L, and a white blood

cell count of 3.0×10^9 /L. Serum concentrations of tumor markers, including carcinoembryonic antigen (CEA), carbohydrate antigen (CA) 19-9, CA 125, CA 724, CA 153, and α -fetoprotein (AFP), were not elevated. Enhanced CT scanning showed multiple round hypodense lesions in the spleen (**Figure 1**). T2-weighted MRI showed multiple high signals in the spleen (**Figure 2**). The patient was diagnosed with a splenic tumor with the possibility of a lymphoma. Splenectomy was performed under general anesthesia. Gross examination of the spleen showed multiple nodules, ranging in diameter from 10 mm to 70 mm. Tumor density was non-uniform, with unclear boundaries (**Figure 3**). Microscopic examination revealed anastomosing vascular channels lined with flat and tall endothelial cells in the red pulp; the endothelial cells lining the cystic spaces had abundant cytoplasm (**Figure 4**). The patient was diagnosed with LCA. Immunohistochemical examination showed that the tumor was positive for CD31 (**Figure 5**), VIM (**Figure 6**), CD68 (**Figure 7**), and factor VIII (**Figure 8**). Within a few days after surgery, her albumin, and hemoglobin concentrations and her platelet and white blood cell counts returned to normal. One

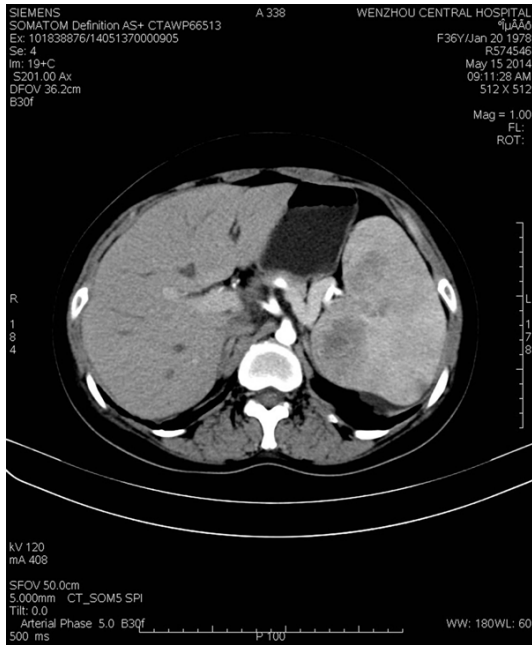


Figure 1. Enhanced CT scanning showed multiple round hypodense lesions in the spleen.

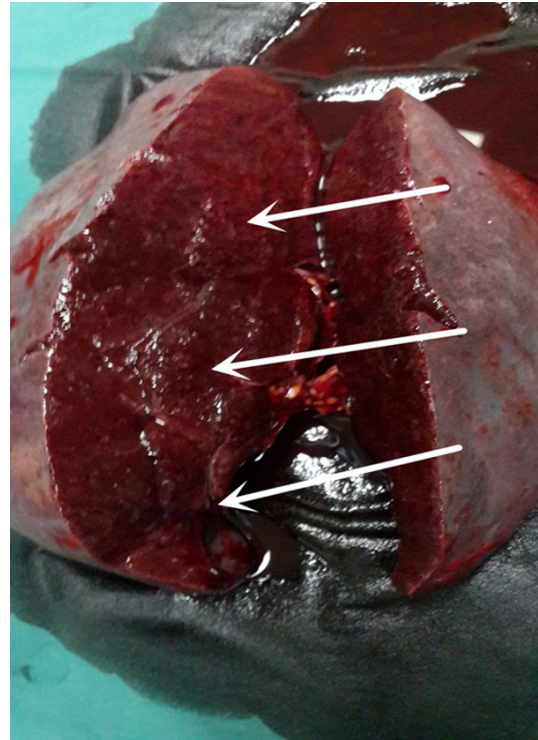


Figure 3. Gross examination of the spleen showed multiple nodules.



Figure 2. MRI scanning showed multiple splenic high signal on T2WI.

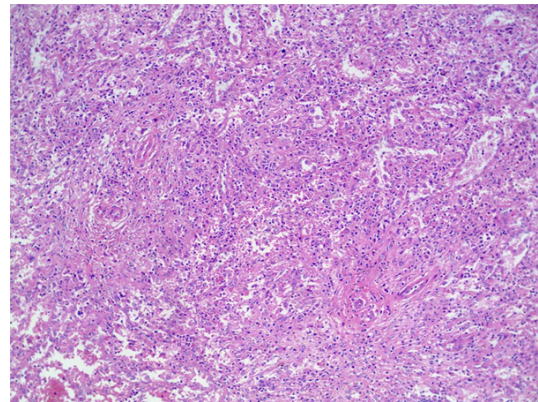


Figure 4. Anastomosing vascular channels lined with flat and tall endothelial cells in the red pulp, the endothelial cells lining the cystic spaces had abundant cytoplasm (H&E stain).

month after splenectomy, the patient was fully recovered, with a normal work and social life and no evidence of disease. Her postoperative course was asymptomatic and uneventful, without clinical or radiological evidence of recurrence at 2 year follow up.

Discussion

LCA is a rare primary tumor of the spleen, found in patients of all ages (median age 50 years; range 1 to 77 years), with no sex-based predilection (female:male ratio, 5:3) [2]. Its pathogenesis is not yet clear. LCA has been reported associated with cancer, specifically lymphoma, and the use of immunosuppressants [3, 4], as

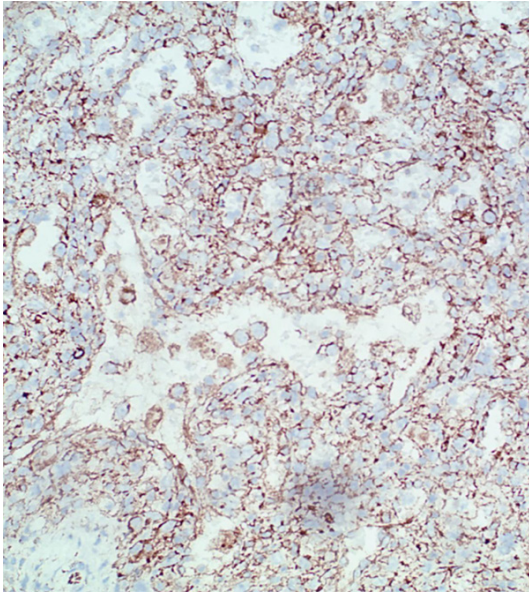


Figure 5. Immunohistochemical staining revealed tumour cell positivity for CD31.

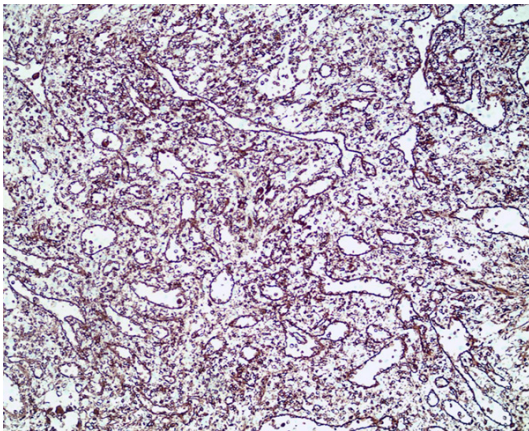


Figure 6. Immunohistochemical staining revealed tumour cell positivity for VIM.

well as with neoplasms of the colon, kidney, pancreas, lung and ovary [4, 5]. Although most patients with LCA are asymptomatic, some have splenomegaly, abdominal pain, abdominal distension, fever, fatigue, anemia and/or DIC [6]. The patient described in this report initially present with edema of the lower extremities. Hematological laboratory testing suggested severe hypoproteinemia.

Of various causes, malignant tumor, nephropathy, liver disease, immunological disease, Tuberculosis, infectious disease can all lead to hypoproteinemia. In this report, the patient

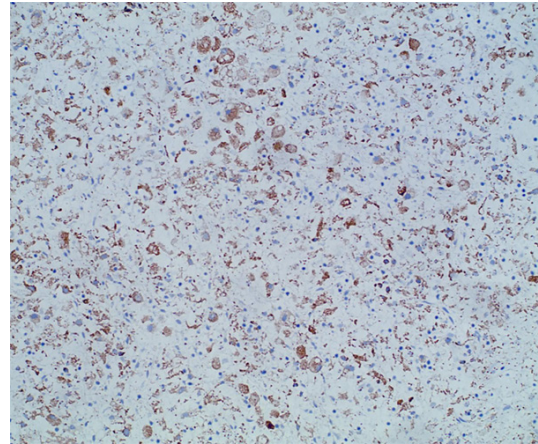


Figure 7. Immunohistochemical staining revealed tumour cell positivity for CD68.

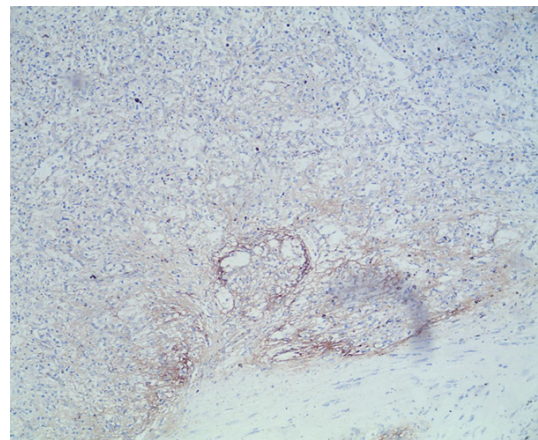


Figure 8. Immunohistochemical staining revealed tumour cell positivity for Factor VIII.

presented with severe hypoalbuminemia. The mechanism of hypoalbuminemia was unclear. Some known and hypothetical clinically important factors influencing albumin metabolism. Various cytokines such as interleukin-1 and interleukin-6 exert inhibitory action on albumin synthesis, may increase breakdown and capillary escape of albumin [7, 8]. A more definitive mechanism may require further basic research and more clinical case studies.

At present, radiological methods can hardly achieve a definitive diagnosis of LCA because of its similar appearance to both benign splenic neoplasms, such as hemangiomatosis, lymphangioma, hamartoma, hemangiopericytoma, hemangioendothelioma, and angiosarcoma, as well as malignant tumors such as me-

tastasis, lymphoma, and Kaposi sarcoma [9]. Some of the performance of the imaging may be helpful to the diagnosis [10]. On CT, LCAs usually appear as round or roundish lesions of low density, especially during early arterial and early portal vein phases [11]. Later stages of portal veins and delayed phase scans showed equidensity lesions and even partial enhancement with perfusion of the lesions [12]. MRI showed multiple abnormal nodular signals of different sizes. Boundaries were clear and of equal or slightly lower density on T1 weighted imaging. T2 weighted imaging showed clear lesions and mainly high signals, but no fat signals. Enhanced CT scanning of this patient showed multiple round, hypodense lesions in the spleen, and T2 weighted MRI scanning showed multiple high signals in the spleen. Based on preoperative CT scanning, this patient was initially misdiagnosed with a lymphoma.

The final diagnosis of LCA relied on pathological examination. The gross specimen showed splenomegaly, along with multiple round or roundish lesions of different sizes and a few single lesions. Microscopic examination showed that the normal structure of the spleen had disappeared in tumor tissue. The lesion was composed of complementary tubular lacunae of different sizes and irregular shapes. A monolayer of endothelial cells lined the surface of the cavity wall and nipple. Two types of endothelial cells were present in the lining. Most were highly differentiated metatypical columnar cells with large nuclei, moderate eosinophilic cytoplasm, and rare mitotic figures. The other type was morphologically similar to normal littoral cells, with small, jagged, and basophilic nuclei and minimal cytoplasm. Immunohistochemical staining revealed that the tumor cells were positive for CD31, CD68, CD34, Factor VIII, and CD163 and strongly positive for VIM, but negative for CD34. Immunohistochemical staining for CD31, CD68, CD163 and CD21 is regarded as helpful for diagnosis.

LCA is an extremely rare splenic tumor, difficult to distinguish from other splenic tumors, including lymphomas, hemangiomas and angiosarcomas. The diagnosis is entirely histopathological. The findings in this patient illustrate the clinical characteristics of a very rare, not fully understood cause of severe hypoproteinemia, as well as emphasizing the need for a complete

check-up in patients with severe hypoproteinemia. LCA should be considered in the differential diagnosis of patients who present with severe hypoproteinemia. Splenectomy is the treatment of choice.

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Disclosure of conflict of interest

None.

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