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Clinical report

Leiomyomatoid angiomatous neuroendocrine tumor of the myometrium

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Background: Only a few cases of Leiomyomatoid angiomatous neuroendocrine tumor (LANT) have been reported in the literature. Our case adds clinical, pathological, and immunohistochemical features.
Objective: To investigate the clinicopathological characteristics of LANT.
Material and Method: One case of LANT of the myometrium was reported in a review of literature. The morphological and immunohistochemical features were analyzed.
Results: In the course of an annual health examination of a 40-year-old woman, ultrasound results revealed a mass in the myometrium, which was clinically diagnosed as uterine leiomyoma. The patient underwent hysterectomy. Histological examination demonstrated that the tumor was composed of prominent vasculature and cellular stromal around vessels. Mitotic activity was absent. Both vascular and stromal cells showed diffusely expressed CD56 and chromogranin A. Stromal cells also expressed actin, SMA, and desmin, but not CK or HMB45. The pathological diagnosis was LANT of the myometrium. Follow up reported no evidence of recurrence three months after surgery.
Conclusion: LANT is a possible new disease entity. LANT is a dimorphic tumor consisting of smooth muscle and neurosecretory phenotype cells surrounding intratumoral vessels. Surgery may be the best treatment, resulting in good prognosis.

Keywords: Immunohistochemistry, neuroendocrine neoplasm, pathology, uterus

In a recent inspection, a case of uterine muscle mass was found, with macroscopic and histological changes exhibiting unique characteristics. Through a review of literature and subsequent comparison, the case was found to be consistent with smooth muscle tumor hemangioma of neuroendocrine tumors.

Materials and methods

Clinical data

The patient is 40 years old. The ultrasound examination revealed a uterine myometrium occupying 10 cm × 9 cm × 4 cm; echo was not equal, and the uterine myometrium boundary was not clear. The patient was admitted to the hospital with uterine leiomyoma, and uterine myomectomy was performed. During surgery, we found that the mass was not consistent with general uterine fibroids performance, and was difficult to completely remove; en bloc resection of most tumors from frozen section diagnosis showed benign lesions. Hysterectomy was conducted because the tumor and the uterine myometrium were difficult to separate.

Methods

Specimens were fixed with 4% formaldehyde, routinely dehydrated, embedded in paraffin, sectioned, HE stained, and microscopically observed. Immunohistochemical staining was performed using two-step EnVision and the following: CD31 and CD34 antibodies, as well as factor VIII, vimentin, SMA factor, desmin, actin, CD56, CgA, S-100, NSE, syn, ER, PR, CK5 / 6, AE1 / AE3, HMB-45, CD10, D2-40, CD117, TGF, WT-1, Ki-67.

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Results

Gross examination

Tissue blocks were submitted for examination under frozen section during surgery; the volume was 8 cm × 7 cm × 3 cm, and appeared as a dark red, jellyfish dermoid, with marked edema, and of soft texture. Intraoperative frozen section diagnosis showed a benign tumor. During postoperative examination, the uterine volume was 11 cm × 11 cm × 8 cm. Using an anterior opening, a dark red bleeding area was visible in the uterine body, bottom of the endometrium, and the superficial muscle layer. The dopant distribution jellyfish dermoid lengths protruded, and there was edema. The texture was soft, and uterine muscle layer separation would be difficult (**Figure 1**). The rest of the observations were found to be normal.

The microscopic examination revealed that the structure of the tumor tissue was generally loose, rich in blood vessels, and there was a thin, irregular wall fracture in the sample lumen. Hyalinized vascular cells were found around the wall thickness (**Figures 2 and 3**). Single, moderate void or short spindle cells were visible between blood vessels. The boundary between cells was not visible, nuclei were oval, chromatin was fine, and either there was no nucleolus or the small nucleoli were barely visible (**Figure 4**). Ovoid or short spindle cells were dispersed or aggregated to form a cord; the cord was interconnected to form a net structure, and there were reddish collagen fiber networks in the mesh. Part of the region formed a circular of collagen fiber winding section **(Figure 5**) or arranged around blood vessels, and closely with vascular adventitial cells, which seemed to have the vascular adventitia "budding" (**Figure 6**). There were no atypical cells, no mitotic fission, and no necrosis. The tumor tissue and the womb muscle layer were in zigzag, superficial, infiltrative growth (**Figure 7**).

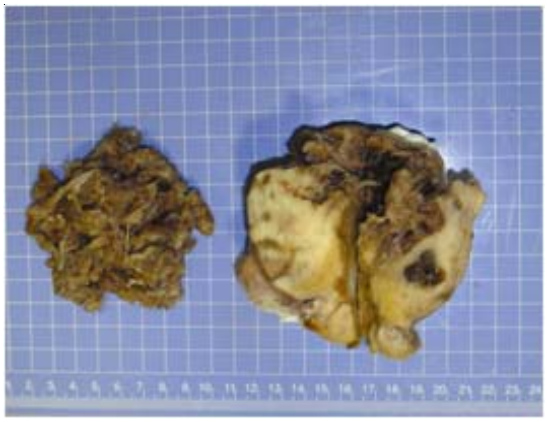

Figure 1. Gross examination. **Left:** the submission of intraoperative frozen tumor tissue, gray red, jellyfish-like. **Right:** The uterus, end of the uterus shows dark red bleeding area, and distribution of residual tumor tissue could be visible.

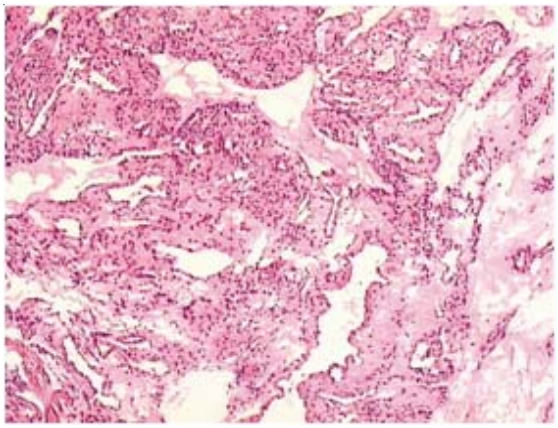

Figure 2. The tumor was formed by rich blood vessels and mild cells surrounding the loose, vascular structure.

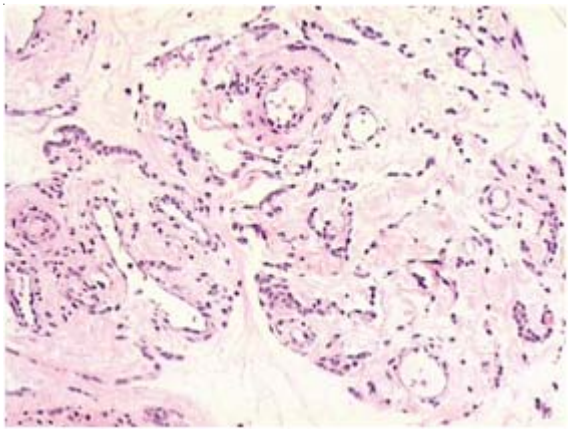

Figure 3. Rich in blood vessels, part of the wall thickness, and a part of the wall is thin and crack-like.

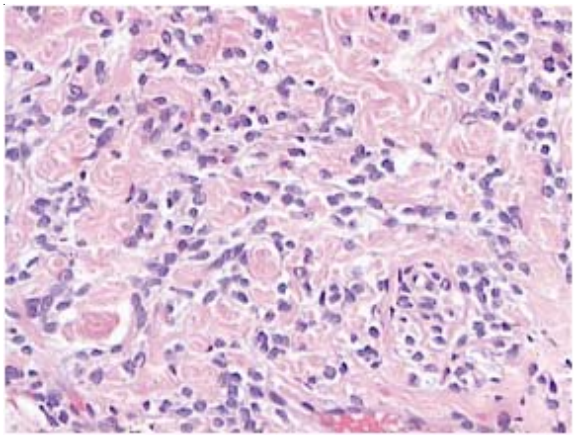

Figure 4. Stromal cells with oval nuclei, fine chromatin, faintly visible small nucleoli, no atypia.

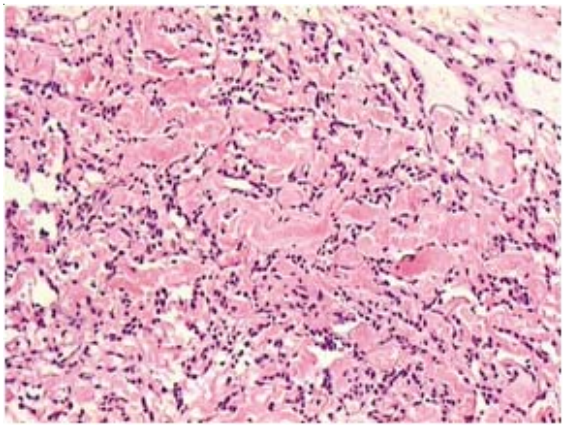

Figure 5. Stromal cells together with each other form cords, the cords connected to each other to form a mesh structure; pinkness is between fibers

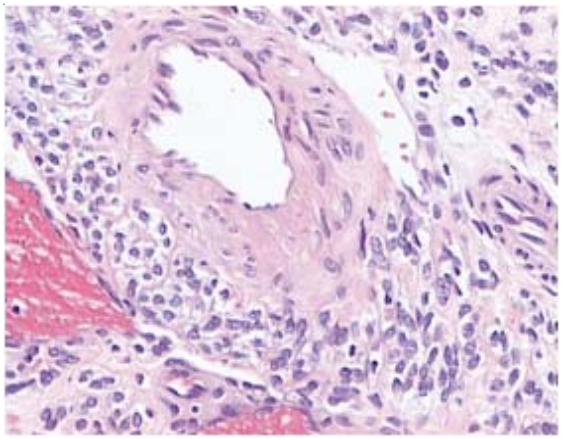

Figure 6. Stromal cells are high closed with vascular adventitia

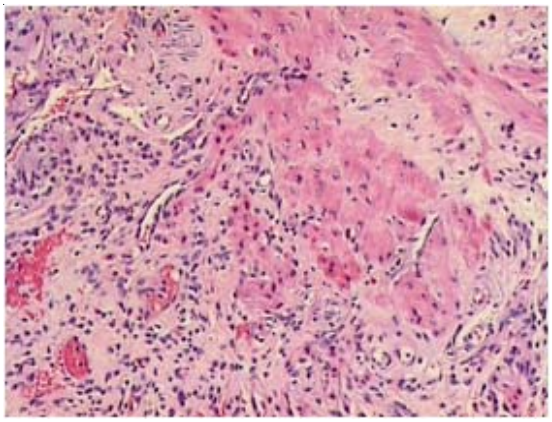

Figure 7. Tumor interdigitated with the myometrium interface.

Immunohistochemistry

CD31, CD34, VIII, CgA, ER factor, PR expressed in vascular endothelial cells, but CD56, NSE, S-100, syn, CK5 / 6, AE1 / AE3, HMB-45, CD10 expression were not. Actin, SMA, ER, PR expression were detected in vascular smooth muscle cells, whereas desmin expression was not. CD56, CgA, actin, SMA, Desmin, Vimentin, ER, PR expressed in cellular interstitial components expression (**Figures 8 and 9**), NSE, S-100, syn, CK5 / 6, AE1 / AE3, HMB-45, CD1 were not expressed. In addition, D2-40 was only expressed in a few, thin luminal fissures. The mesenchymal component of a few cells and endothelial cells expressed CD117. The mesenchymal component of the cells and endothelial component diffusely showed weakly expressed TGF-B (diffuse pale staining). WT-1 was expressed in a few cells' interstitial components, and in the majority of vascular endothelial cells. The entire cell proliferation index Ki-67 was 1%. The pathological diagnosis revealed myometrial smooth muscle tumors of neuroendocrine tumors like hemangioma. The patient recovered well after her operation, and the follow-up showed no recurrence after six months.

Discussion

In view of the case of unique macroscopic and histological characteristics, as well as preliminary immunohistochemical markers shown: components between vascular expression showed the myogenic markers, do not express epithelial markers, HMB-45, can exclude foreign adenomatoid tumor, and lymphangioleiomyomatosis and angiomyolipoma. Despite a few cells expressing CD117, histological manifestations and typical gastrointestinal stromal tumors were different. More importantly, the cell proliferation index was apparently lower, and not in accord with standards for gastrointestinal stromal

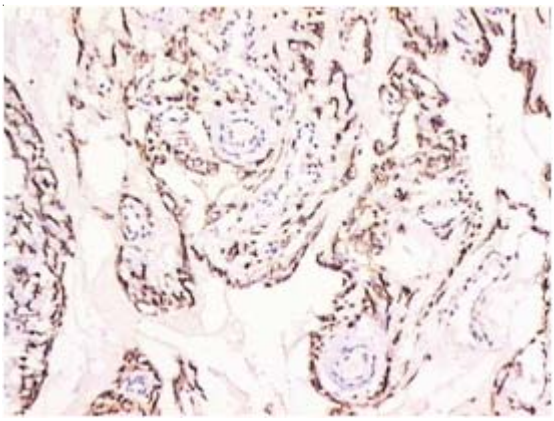

Figure 8. CD56, diffuse expression in the mesenchymal cell, did not express in vascular endothelial cells

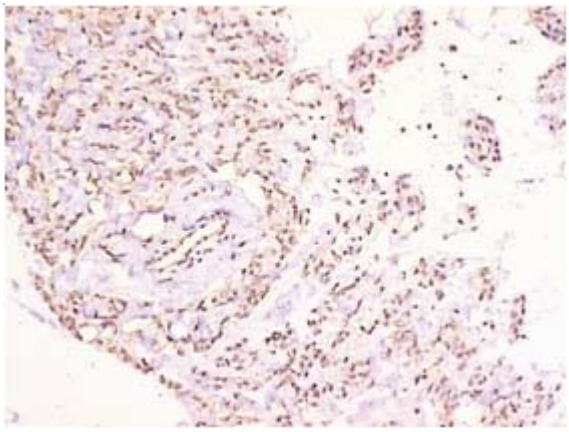

Figure 9. CgA, diffuse expression in mesenchymal cells and endothelial cells

tumor diagnosis. Thus, the sample was preliminarily considered as a rich vascular smooth muscle tumor of the uterus.

According to the literature, there are two kinds vascular smooth muscle tumor of the uterus: (1) uterine vascular leiomyoma (uterine angioleiomyoma) is rare [1-3]; well-demarcated tumor nodules within the myometrium, and histological manifestations are the same with the vascular smooth muscle tumor occurring in the soft tissues; and (2) vascular leiomyoma (vascular leiomyoma); histological manifestations show common leiomyoma, only the vascular volume increases, like a hemangioma [4].

Histological and immunological phenotypes of this case are different from the above two types. The tumor tissue structure is generally loose, rich in blood vessels, and there is a thin irregular wall fracture in the sample lumen. Hyalinized vascular was found around the wall thickness rules. This case is more consistent with the reported LANT.

In 2006, a 43-year-old female patient with pituitary tumors was reported, and was treated for secondary amenorrhea galactorrhea. Magnetic resonance examination revealed an abnormal sellar occupying a volume 3 cm × 3 cm × 1.5 cm. The clinical diagnosis was pituitary adenoma, and dopamine therapy was subsequently prescribed. Endocrine symptoms were eased, but vision was gradually lost. One year later, magnetic resonance examination revealed that the tumor size increased to 3.8 cm × 3.2 cm × 2.4 cm, and extended to the parasellar and suprasellar regions. The tumor invaded the cavernous sinus and sphenoid, optic chiasm, and the tumor was subtotally resected. Postoperative recovery was uneventful, without taking adjuvant radiotherapy [5].

In 2008, Sakashita et al. described a case where LANT characteristics showed on the tumor of a 45-year-old patient, from the results of magnetic resonance imaging. The tumor with a volume of 60

mm × 57 mm × 59 mm occupied the myometrium with mixed signals. The clinical diagnosis was smooth muscle tumor of the uterus, and laparoscopic myomectomy was prescribed. Visual examination showed surface tumors to be cauliflower-like and grey–red in color [6].

Two cases of uterine vascular leiomyoma were described in two other articles, where histological changes were similar to LANT [7, 8], but not for neuroendocrine markers, and thus, it was not determined if the cases would qualify as LANT. Whether the reported uterine vascular leiomyoma cases may or may not be LANT requires further investigation.

Histological and immunological phenotype of this case were very similar to the two reported cases, but there were also differences: NSE and S-100 were not expressed in cellular interstitial cells; D2-40 was expressed only in a few, thin slit-like lumen; CD117 expressed in a few cells of the mesenchymal component and endothelial cells; and WT-1 expressed in a few interstitial cell components, as well as the majority of vascular endothelial cells.

The authors have no conflicts of interest to report.

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