

Uterine leiomyoma with amianthoid-like fibers

Zámečník M.¹, Kaščák P.²

¹ Medicyt s. r. o., Laboratory Trenčín, Slovak Republic

² Department of Gynecology and Obstetrics, Faculty Hospital, Trenčín, Slovak Republic

SUMMARY

A rare case of a gynecologic type leiomyoma with amianthoid-like fibers is presented. The 6 cm tumor was found in the uterus of a 46-year-old woman. Histologically, it contained a cellular spindle cell population with numerous eosinophilic amianthoid-like fibers. The morphology closely resembled that of palisaded "amianthoid" myofibroblastoma. Immunohistochemically, the lesion showed a smooth muscle phenotype with expression of h-caldesmon, desmin, alpha smooth-muscle actin, and with negativity for CD10 and the S100 protein. The finding of amianthoid-like fibers expands the morphologic spectrum of leiomyomas. It represents one of the overlapping features between leiomyoma and palisaded myofibroblastoma.

Keywords: uterus – amianthoid-like fibers – gynecologic-type leiomyoma – palisaded myofibroblastoma

Leiomyóm maternice s amianthoid-like vláknami

SÚHRN

Prezentovaný je leiomyóm gynekologického typu s obsahom amianthoid-like vlákní. Šlo o 6-centimetrový tumor maternice u 46-ročnej ženy. Histologicky obsahoval celulárnu populáciu hladkosvalových buniek, v ktorej boli početné eozinofilné amianthoid-like vlákna. Morfológicky tumor napodobňoval palisádovaný "amiantoidný" myofibroblastóm. Immunofenotyp tumoru bol hladkosvalový, s expresiou h-caldesmonu, desminu, alfa hladkosvalového aktínu a s negatívnosťou CD10 a S100 proteínu. Nález amianthoid-like vlákní rozširuje morfológické spektrum leiomyómov a demonštruje fenotypické prekrytie leiomyómu a palisádovaného myofibroblastómu.

Kľúčové slová: maternica – amianthoid-like vlákna – leiomyóm gynekologického typu – palisádovaný myofibroblastóm

Cesk Patol 2011; 47(3): 125–127

So called amianthoid-like fibers are thick mats of acellular collagen surrounded by spindle cell proliferation (1–3). They strongly resemble amianthoid fibers histologically. However, they lack defining ultrastructural features of these fibers, and therefore it is more appropriate to label them with the adjective "amianthoid-like" (4). In surgical pathology practice, they are known as the main feature of palisaded (amianthoid) myofibroblastoma (1,2). They are believed to be an atypical extracellular collagen product of myofibroblasts. We would like to present briefly a uterine leiomyoma that contained numerous amianthoid-like fibers inside a spindle cell proliferation, creating a strong resemblance to the pattern of palisaded myofibroblastoma. This case demonstrates phenotypical similarity and a possible histogenetic relationship between gynecologic-type leiomyoma and palisaded myofibroblastoma.

MATERIAL AND METHODS

The tissue was fixed in 4% formalin and processed routinely. The sections were stained with hematoxylin and eosin. For immunohistochemistry, the following primary antibodies were used: alpha-

smooth muscle actin (clone 1A4), h-caldesmon (clone h-CD), desmin (clone D33), melanosome (clone HMB45), S100 (polyclonal), estrogen receptor (clone 1D5), progesterone receptor (clone PgR636) (all from DAKO, Glostrup, Denmark), CD10 (clone 56C6, Novocastra, Newcastle, UK), and CD34 (clone Qbend/10, NeoMarkers, Westinghouse, CA, USA).

Immunostaining was performed according to standard protocols using an avidin-biotin complex labeled with peroxidase or alkaline phosphatase. Microwave antigen pretreatment was used for immunoreactions with h-caldesmon, CD10, CD34, estrogen receptor, and progesterone receptor. Appropriate positive and negative controls were applied.

CASE REPORT

A 46-year-old para 3 gravida 3 woman underwent laparoscopic-assisted vaginal hysterectomy for uterus myomatosis. She was followed up with diagnoses of leiomyoma uteri, hyperprolactinemia and dysmenorrhoe during the 5 years before this operation. In the past, she took hormonal contraception and gestagens, but stopped using them six years ago because they caused her headaches and depression. Further, her previous medical history includes paroxysmal atrial fibrillation, an appendectomy and a cholecystectomy.

Grossly, a 6 cm tumor was found in the right lateral wall of the uterine corpus. It was round and well circumscribed, but in comparison with common fibroids, it was softer in consistency and more yellowish in color (therefore, the endometrial stromal nodule was suggested by gross examination).

✉ Correspondence address:

Dr. M. Zamečník

Medicyt s. r. o.

Legionárska 28, 81171 Trenčín, Slovak Republic

e-mail: zamecnikm@seznam.cz

tel.: +421-907-156629

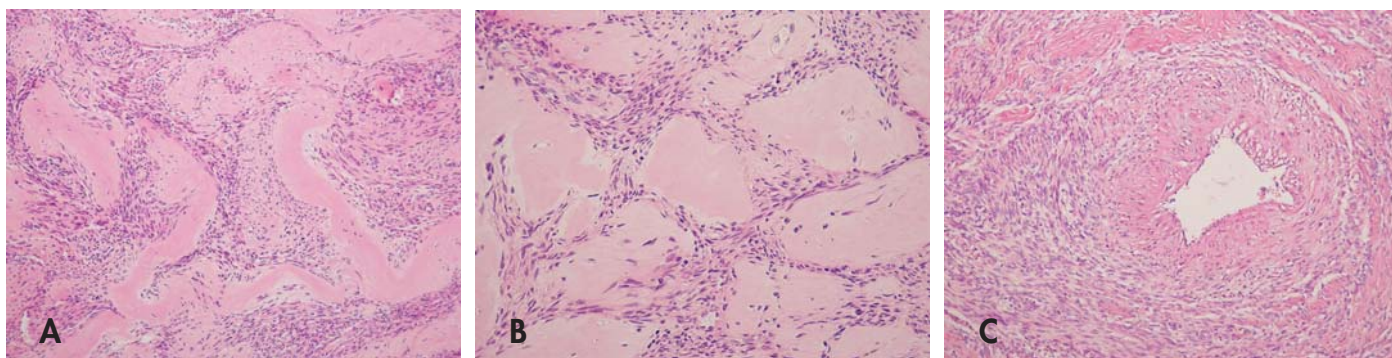


Fig. 1. Uterine leiomyoma with amianthoid-like fibers. Histologic features: (A) low-power field shows cellular proliferation with eosinophilic amianthoid-like fibers; (B) amianthoid-like fibers at higher power; (C) spatial relationship between tumor cells and wall of the vessel. On the left, vague palisaded arrangement of the nuclei is seen. (HE, magnifications x40, x250, and x160, respectively).

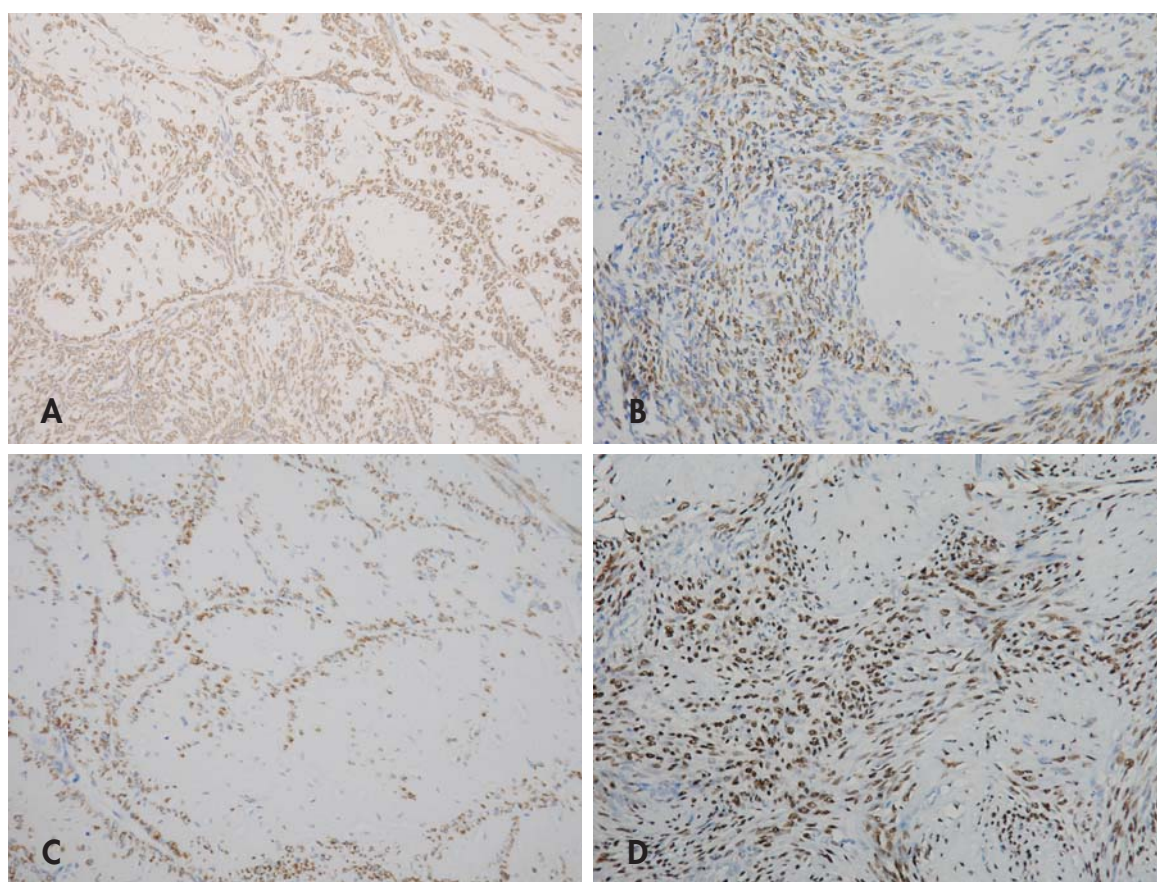


Fig. 2. Uterine leiomyoma with amianthoid-like fibers. Immunohistochemical findings: (A) diffuse actin positivity accentuated in the periphery of the amianthoid-like nodule; (B) reactivity for h-caldesmon; (C) desmin positivity; (D) progesterone receptor expression in almost all tumor cells. (ABC technique, magnifications x160, x200, x160, and x200, respectively).

Histologically, the tumor was well circumscribed, composed of cellular spindle cell proliferation with numerous amianthoid-like fibers (Figures 1A, B). The spindle cells were arranged in short fascicles, occasionally with vaguely palisaded nuclei. The nuclei were slender, regular appearing, and the typical cigar shape was found in a few areas only. A high cellularity created a pattern often resembling an endometrial stromal tumor. The lesion contained numerous small to medium sized vessels. Larger vessels were thick-walled and muscular. The cells of the vascular wall frequently showed continuity with the tumor cell proliferation like that seen commonly in vascular leiomyomas (angioleiomyomas) (Figure 1C). The mitotic rate was 1/50HPF, and no abnormal mitosis was found. Additional findings in the resectate were as follows: a dysfunc-

nal proliferative endometrium with focal atrophy, and a cervical squamous cell metaplasia with ovulosis.

Immunohistochemically, the tumor cells expressed diffusely h-caldesmon, desmin, actin, progesterone receptor, estrogen receptor (Figure 2), and they were negative for CD10, CD34, S100 protein and HMB45. Actin showed accentuation of the staining in the peripheral zones of amianthoid-like fibers (Figure 2A).

DISCUSSION

The present tumor was unquestionably leiomyoma because it showed, although focally, cigar shaped nuclei and abundant

eosinophilic cytoplasm, and it expressed diffusely h-caldesmon, desmin and actin. An interesting feature of the tumor is represented in the amianthoid-like fibers. To our best knowledge, only two similar leiomyomas were described recently by Bagwan et al. (4). One tumor was located in the uterus and the other was extrauterine leiomyoma of the female pelvis. It is interesting that all three of the leiomyomas (including our case) with amianthoid-like fibers described to date were of the gynecologic-type, i.e., they were sex steroid hormone-dependent in contrast with somatic-type leiomyomas which lack steroid receptors (5,6). However, the number of cases remains small and additional study is needed to determine whether amianthoid-like fibers are limited to gynecologic-type leiomyomas or whether they can occur also in somatic-type smooth muscle tumors.

An additional interesting feature of leiomyomas with amianthoid-like fibers is its morphologic and immunophenotypical resemblance to palisaded myofibroblastoma (1–4,8–10). In fact, the lesion being in the inguinal region, we would have considered the diagnosis of palisaded myofibroblastoma in the first place. Both palisaded myofibroblastoma and leiomyoma with amianthoid-like fibers show spindle myoid appearing cells, focal nuclear palisading, and actin positivity with accentuation of periphery of amianthoid-like fibers. Hyaline actin-rich intracytoplasmic globules seen in many cases of palisaded myofibroblastoma may be found also in uterine leiomy-

oma (7). The difference is only in the expression of h-caldesmon. Positivity for smooth-muscle marker desmin was already described in palisaded myofibroblastoma (8). Moreover, ultrastructural features of palisaded myofibroblastoma also favor specialized smooth muscle differentiation (9) related probably to smooth muscle of the vascular wall (10). In our opinion, the finding of amianthoid-like fibers in gynecologic-type leiomyoma along with the mentioned overlap with palisaded "amianthoid" myofibroblastoma favor further the smooth muscle differentiation of the latter.

Regarding differential diagnosis of the present case, an exclusion of a uterine mixed stromal smooth muscle tumor was necessary (11). This tumor often contains stellate hyalinized nodules that are very similar to the amianthoid-like fibers and that can represent deposition of an abnormal collagen as well. In contrast to leiomyoma, these lesions show unquestionable stromal cell differentiation characterized by dense small cell proliferation with numerous vessels and CD10 immunoeexpression (11).

In conclusion, we demonstrated a case of uterine leiomyoma with amianthoid-like fibers, with some overlapping features with palisaded myofibroblastoma. The presence of amianthoid-like fibers expands the morphologic spectrum of leiomyomas. In addition, this finding gives further information to the knowledge on histogenetic relationships between myofibroblastic and smooth muscle lesions.

REFERENCES

1. **Suster S, Rosai J.** Intranodal hemorrhagic spindle-cell tumor with "amianthoid" fibers. Report of six cases of a distinctive mesenchymal neoplasm of the inguinal region that simulates Kaposi's sarcoma. *Am J Surg Pathol* 1989; 13: 347–357.
2. **Weiss SW, Gnepp DR, Brathauer GL.** Palisaded myofibroblastoma. A benign mesenchymal tumor of lymph node. *Am J Surg Pathol* 1989; 13: 341–346.
3. **Weiss SW, Goldblum JR.** Benign tumors of smooth muscle. In: Enzinger and Weiss, eds. *Soft Tissue Tumors* (5th ed) Philadelphia, PA: Mosby Elsevier; 2008: 517–545.
4. **Bagwan IN, Moss J, Fisher C, El-Bahrawy M.** Amianthoid-like fibres in leiomyoma. *Histopathology* 2008; 53: 606–609.
5. **Billings SD, Folpe AL, Weiss SW.** Do leiomyomas of deep soft tissue exist? An analysis of highly differentiated smooth muscle tumors of deep soft tissue supporting two distinct subtypes. *Am J Surg Pathol* 2001; 25: 1134–1142.
6. **Rao UN, Finkelstein SD, Jones MW.** Comparative immunohistochemical and molecular analysis of uterine and extrauterine leiomyosarcomas. *Mod Pathol* 1999; 12: 1001–1009.
7. **Dundr P, Povýšil C, Tvrđík D, Mára M.** Uterine leiomyomas with inclusion bodies: an immunohistochemical and ultrastructural analysis of 12 cases. *Pathol Res Pract* 2007; 203: 145–151.
8. **Kim DC, Kang TH, Kim MA, Jeon YK.** Intranodal palisaded myofibroblastoma with desmin expression: a brief case report. *Korean J Pathol* 2009; 43: 263–265.
9. **Eyden B, Chorneyko KA.** Intranodal myofibroblastoma: study of a case suggesting smooth-muscle differentiation. *J Submicrosc Cytol Pathol* 2001; 33: 157–163.
10. **Michal M, Chlumská A, Povýšilová V.** Intranodal "amianthoid" myofibroblastoma. Report of six cases: immunohistochemical and electron microscopical study. *Pathol Res Pract* 1992; 188: 199–204.
11. **Oliva E, Clement PB, Young RH, Scully RE.** Mixed endometrial stromal and smooth muscle tumors of the uterus: a clinicopathologic study of 15 cases. *Am J Surg Pathol* 1998; 22: 997–1005.