Leiomyoadenomatoid Tumors of the Uterus: A Case Report and Literature Review

ABEF 1 Bayan Hafiz
AE 2 Mariam H. Silimi
BEF 3 Walaa Felimbah

Corresponding Author: Bayan Hafiz, e-mail: Bayanz.hafiz@gmail.com

Financial support: None declared
Conflict of interest: None declared

Objective: Rare disease

Background: An adenomatoid tumor is a benign neoplasm that originates in the mesothelial lining, commonly present in the male and female genital tracts. The leiomyoadenomatoid tumor (LMAT) is rare and considered an adenomatoid variant, characterized microscopically by prominent smooth muscle proliferation within an adenomatoid tumor. Areas of pseudo-glandular infiltration and tubular and slit-like spaces can mimic metastatic carcinoma or malignant tumors. Most cases of LMAT were incidentally discovered microscopically after an impression of leiomyoma. Eighteen cases have been reported in studies published in English.

Case Report: We present a case of a 35-year-old woman who experienced recurrent vaginal bleeding and underwent a myomectomy. Microscopically, the mass showed smooth muscle proliferation in fascicles with areas of tubular, slit-like spaces, and gland-like areas, which showed reactivity for Wilms tumor-1 and calretinin by an immunohistochemistry study. The final pathology examination showed a 9-cm LMAT, which is the largest size ever reported to the best of our knowledge. There was no recurrence or other symptoms at the 2-year follow-up.

Conclusions: An LMAT should be considered in the differential diagnosis of leiomyomas that present areas of pseudo-infiltrative glands and slit-like spaces, which can lead to misdiagnosis as a malignant tumor.

Keywords: Adenomatoid Tumor • Leiomyoma • Neoplasms, Mesothelia

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/934012
Background

An adenomatoid tumor (AT) is a tumor of mesothelial origin that commonly develops in the male and female genital tracts [1]. This type of tumor was initially discovered by Sakaguchi in 1916 and was called adenomyomata before Golden et al renamed the condition as “adenomatoid tumor” [2,3]. The microscopic features include the presence of hypertrophied smooth muscle bundled in areas exhibiting anastomosing tubular, gland-like, vascular-like, or cystic branch morphologies. However, when the smooth muscle is exceedingly prominent and gives the appearance of leiomyoma within the AT, the lesion is then referred to as a leiomyoadenomatoid tumor (LMAT) [4]. Clinically, LMAT is considered an incidental finding during hysterectomies or leiomyoma diagnosis.

It is important to recognize these tumors because the prominence of smooth muscle in this particular gland-like structure can mimic features of malignancy.

We report the case of a 35-year-old woman with an LMAT incidentally found in her uterus, which was mistaken for a different kind of tumor and was therefore removed as a uterine fibroid. The diagnosis was challenging due to the presence of cribriform gland-like morphology infiltrating the smooth muscle.

Case Report

A 35-year-old woman arrived at the Obstetrics and Gynecology clinic with concerns for lower abdominal pain. The pain started 3 months previously, was characterized by intermittent occurrences, and was usually managed with regular analgesia. No constitutional symptoms were recorded. The patient’s menstrual history was regular; however, 7 months prior to her presentation, her menses became heavy and was associated with severe lower abdominal pain. During the physical examination, the patient appeared conscious, oriented, and alert. Her vital signs were within the standard ranges. The abdominal examination revealed a soft and lax abdomen with no masses or tenderness. Other systemic examinations were unremarkable. The initial investigation, which consisted of a complete blood count, blood electrolytes, and hepatic function tests, were all within the standard ranges. A radiological study was conducted, including an ultrasound, revealing multiple uterine fibroids. Based on the clinical and radiological findings, a myomectomy was performed, and the specimen was sent for histopathology examination.

On gross examination, multiple well-circumscribed white-tan pieces were noted, and the largest piece measured 9.0×3.0×2.5 cm. The others measured in aggregate 3.0×2.0×0.5 cm. The outer surfaces of all pieces were smooth and characterized by trabeculae, white-tan firm surfaces, and a whorled appearance. As shown in Figure 1, no necrosis or hemorrhage was seen.

The microscopic testing uncovered bundles of smooth muscle arranged in fascicles separated by well-vascularized connective tissue. The cells were elongated with eosinophilic cytoplasm and distinct cell membranes. A gland-like, tubular, and slit-like structure infiltrated the smooth muscle. Those structures were lined by a flattened cuboidal lining with small and uniform nuclei and contained a scanty and eosinophilic cytoplasm, as illustrated in Figure 2A-2D. The mitosis was rarely less than 3 per 10 high-power fields. No necrosis was observed. Immunohistochemistry revealed diffuse strong staining to the calretinin and D2-40, as displayed in Figure 2E-2F; low-molecular-weight cytokeratin (CK7); wide-spectrum CKs; and a negative reaction to CK20, endothelial antigens (CD31), and Ki 67, which revealed a low proliferative index (<3%). The smooth muscle component expressed positive activity in reaction to smooth muscle actin. A follow-up appointment 3 months after showed the patient was doing well, with no signs of recurrence or malignant transformation.

Discussion

An AT is a benign tumor that arises from mesothelial cells [4]. ATs commonly form in organs covered by mesothelial linings, such as the genital tract, and therefore mainly occur in the testis and uterus [4]. Extra-genital sites, particularly in the organs closed to serosal membranes (eg, pleura, peritoneum, and pericardium), the adrenal gland, and other visceral organs can be involved [5]. An AT is usually located suberosally in...
Figure 2. Histopathology examination by hematoxylin and eosin (H&E) staining and immunohistochemistry studies. (A-C) Examination revealed prominent smooth muscle with a gland-like area infiltrated between (H&E 4×, 10×). (D) High-power examination of the gland-like areas reveals a gland lined by a flattened cuboidal lining with small and uniform nuclei and scanty and eosinophilic cytoplasm (H&E; 40×). (E) D2-40 reveals diffuse staining in a gland-like structure (40×). (F) Calretinin reveals diffuse staining in a gland-like structure (40×).
the posterior wall near the uterine cornu and is < 4 cm in size. Previous studies have mentioned the association between leiomyomata and adenomyosis [5,6].

The microscopic description of the AT shows an intersecting hypertrophied smooth muscle with unremarkable nuclei within a slit-like cystic area as well as glands infiltrating between the muscles lined by round to cuboidal cells. Those cells express immunoreactivity for Wilms tumor-1, calretinin, CK AE1/AE3, and CK7, as in our case.

Differential diagnosis is not uncommon in cases of AT owing to various histological patterns, as mentioned previously. These include leiomyoma, angioleiomyoma, leiomyoma with malignancies, malignant mesothelioma, yolk sac tumors, and metastatic adenocarcinoma. AT can mimic leiomyoma or malignant tumors infiltrating smooth muscle when smooth muscle is prominent, thus concealing the AT component. This type of tumor, the LMAT, was described by Epstein in 1992 and is considered a variant of the AT with a prominent smooth muscle component [4]. In the present case, the first impression was a metastatic tumor infiltrating the smooth muscle, which made it challenging to reach the diagnosis of LMAT.

After a review of the available studies published in English on PubMed, Ovid, and Google Scholar, we found only 18 cases that were diagnosed as LMATs, as shown in Table 1 [5-19]. One was in the cervico-uterine junction [7], 1 was in the ovary [8], and the remaining 16 cases, in addition to ours, were discovered in the uterus. The patients’ ages ranged from 24 to 76 years, and the size of the tumors ranged from 1.5 to 4 cm. However, the size of the tumor in our case was 9 cm, which was the largest so far, to the best of our knowledge. We found only 1 other case in Saudi Arabia, reported by Junainah et al [16], and our case is the second reported in the country.

### Table 1. Summary of cases of leiomyoadenomatoid tumors in the uterus.

| Author, Year | Age | Sex | Location | Size |
|--------------|-----|-----|----------|------|
| 1. Amre et al [5] | 52 | Female | Anterio-lateral wall of the uterus | 2.5 cm |
| 2. Erra et al [6] | 44 | Female | Anterior uterine wall | 3 cm |
| 3. Hong et al [8] | 24 | Female | Posterior wall of the uterus and right ovary | 4 cm |
| 4. Mathew et al [9] | 51 | Female | Posterior wall of the uterus | 3 cm |
| 5. Amérigo et al [10] | 55 | Female | Posterior wall of the uterus | 2.5 cm |
| 6. Dobrosz et al [11] | 57 | Female | Posterior wall of the uterus | 3.5 cm |
| 7. Pransgaard et al [7] | 24 | Female | Cervico uterine junction | 3 cm |
| 8. Sarma et al [12] | 54 | Female | Posterior wall of the uterus | 2 cm |
| 9. Bahuguna et al [13] | 65 | Female | Uterus, intramural | Multiple 3.5-0.5 cm. |
| 10. Bedir R et al [14] | 51 | Female | Uterus, intramural | Two 1.5-2 cm |
| 11. Erşavas et al [15] | 30 | Female | Uterus, intramural | 4.5 cm |
| 12. Ranjan et al [16] | 36 | Female | Uterus, intramural | Multiple 0.5-3.0 cm |
| 13. Ranjan et al [16] | 40 | Female | Uterus, intramural | 2 cm |
| 14. Ranjan et al [16] | 43 | Female | Uterus, intramural | 1.2 cm |
| 15. Junainah et al [17] | 45 | Female | Uterus | Multiple 2.0-0.5 cm |
| 16. Koufopoulos et al [18] | 76 | Female | Antero-lateral wall of the corpus uteri | 2.5 cm |
| 17. Adorno et al [19] | 38 | Female | Uterus, intramural | 3.8 cm |
| 18. Adorno et al [19] | 26 | Female | Uterus, intramural | 3.3 cm |
| 19. Present case | 35 | Female | Uterus, intramural | 9 cm |
Conclusions

We conducted a literature review on LMATs and reported a case study of a female patient with this condition. An LMAT was found incidentally in the patient’s uterus. We recommend that if the leiomyoma has prominent smooth muscles, LMAT should be considered in the differential diagnosis to avoid being mistaken for an invasive malignancy.

References:

1. David, LW, Wunsch PH, Hartmann A, et al. Adenomatoid tumors of the female and male genital tract. A comparative clinicopathologic and immunohistochemical analysis of 47 cases emphasizing their site-specific morphologic diversity. Virchows Arch. 2011;458:593-602
2. Phillip AI, Gary JK, Sebo TJ, et al. Adenomatoid tumor of the adrenal gland A clinicopathologic study of five cases and review of the literature. Am J Surg Pathol. 2003;27:969-77
3. Golden A, Ash JE. Adenomatoid tumors of the genital tract. Am J Pathol. 1945;21:63-79
4. Epstein JJ. Urologic disorders: Differential diagnosis in pathology. New York, NY: Igasku-Shoin, 1992;173-74
5. Amre R, Constantino J, Lu S, Charney D. Pathologic quiz case: A 52-year-old woman with a uterine mass. Leiomyo-adenomatoid tumor of the uterus. Arch Pathol Lab Med. 2005;129:e77-78
6. Erra S, Pastormerlo M, Gregori G, et al. A case of leiomyoadenomatoid tumor of uterine serosa: Speculations about differential diagnosis. BMJ Case Rep. 2009;1586;bcrc02.2009.1586
7. Pransgaard T, Lykke R, Hansen ES. Leiomyoadenomatoid tumor of the uterus: Report of a rare entity. J Gynecol Surg. 2013;29:219-21
8. Hong R, Choi DY, Choi SJ, Lim SC. Multicentric infarcted leiomyoadenoma- toid tumor: A case report. Int J Clin Exp Pathol. 2009;2:99-103
9. Mathew M, Goel G. Leiomyoadenomatoid tumor of the uterus. Turk Patoloji Derg. 2010;26:168-69
10. Amério J, Amério-Góngora M, Giménez-Pizarro A, et al. Leiomyo- adenomatoid tumor of the uterus: A distinct morphological entity? Arch Gynecol Obstet. 2010;282(4):451-54
11. Dobroszl Z, Palen P, Wlaszczuk P, Stojko R. An atypical leiomyoadenoma- toid tumor of the uterus: A case report and literature review. Ginekol Pol. 2013;84:730-32
12. Sarma NH, Srinivasula M, Suchitra ML. Leiomyoadenomatoid tumor of the uterus: Report of a rare entity and review of the literature. Indian J Pathol Microbiol. 2014;57:450-52
13. Bahuguna G, Misra D, Malhotra V, Sinha A. Multicentric leiomyoadenoma- toid tumor of the uterus: A rare and distinct morphological entity. J Obstet Gynaecol India. 2014;64(Suppl. 1):152-53
14. Bedir R, Üstüner I, Mürtezaoglu AR, et al. Leiomyoadenomatoid tumor of the uterus: Case report and literature review. Natl Lab Med. 2014;3:15-18
15. Ersavaş S, Eliyatkin N, Sayhan S, Zihni I. Leiomyoadenomatoid tumor of the uterus in pregnancy: A case report. Journal of Tepecik Education and Research Hospital. 2015;25:120-24
16. Ranjan R, Singh L, Nath D, et al. Uterine adenomatoid tumors: a study of five cases including three cases of the rare leiomyoadenomatoid variant. J Obstet Gynaecol India. 2015;65(4):255-58
17. Junainah EM, Elrashidy A, Elnashar H, et al. Multifocal leiomyo-adenoma- toid tumour of the uterus a distinct pathological entity. Allied J Clin Path. 2017;1(1):13-15
18. Koufopoulos N, Karopoulou E, Arapaki A, et al. EP727 Presentation of the 14th case of leiomyoadenomatoid tumor. English literature International J Gynecol Cancer. 2019;29:A411
19. Adorno FA, Coelho KM, Bublitz GS, et al. Leiomyoadenomatoid tumor of the uterus: Two case reports with literature review. Surg Exp Pathol. 2021;4(1):s42047-020-00086-9

Declaration of Figures’ Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.