

A Case of Cystic Leiomyoma Mimicking an Ovarian Malignancy

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Abstract

Introduction: We report an unusual case of a large cystic, pedunculated uterine leiomyoma mimicking a primary malignant ovarian tumour on sonography and computed tomography (CT). **Clinical Picture:** A 56-year-old post-menopausal woman presented with a right pelvi-abdominal mass. Sonography and CT examination showed a large extrauterine mass arising from the right adnexa and extending into the abdomen. The mass was predominantly cystic with a solid component at the periphery. A preoperative diagnosis of a primary malignant ovarian tumour was made. **Treatment:** The patient underwent laparotomy. The large mass was found to arise from the uterine fundus; the ovary was not involved. The mass was resected, followed by total hysterectomy and bilateral salpingo-oophorectomy. Histology was that of a leiomyoma with extensive cystic degeneration. **Outcome:** The patient made an uneventful recovery. **Conclusion:** A pedunculated, subserosal uterine leiomyoma with extensive cystic degeneration can mimic an ovarian tumour on imaging and should be considered in the differential diagnosis of an adnexal mass.

Ann Acad Med Singapore 2004;33:371-4

Key words: Computed tomography, Ovarian tumour, Sonography, Uterine leiomyoma

Introduction

Uterine leiomyomas are the most common gynaecological tumour. Typical appearances of leiomyomas are easily recognised on imaging. However, the atypical appearances that follow degenerative change can cause confusion in diagnosis. We report the sonographic and computed tomography (CT) appearances of a large pedunculated, subserosal uterine leiomyoma that was found to have undergone extensive cystic degeneration on histology.

Case Report

A 56-year-old post-menopausal woman presented with a history of abdominal distension. On abdominal examination, a vague right abdominal fullness was palpated. Per vaginal examination revealed an adnexal mass. The uterus did not feel enlarged and the cervix appeared atrophied. A pelvic sonogram (Fig. 1) showed a large, complex and predominantly cystic mass, measuring approximately 17 x 17 x 9 cm, located just above the uterus. There were multiple thin internal septations and an irregular solid nodular component in the right posterior corner of the

mass, measuring approximately 6 x 4 x 3 cm. Colour Doppler sonography showed some arterial flow within the solid component with non-specific spectral indices (resistive index of 0.53 and pulsatility index of 0.79). No normal ovaries or free intraperitoneal fluid was detected. CT scan of the abdomen and pelvis, following the administration of intravenous, oral and rectal contrast media (Fig. 2), also showed a large, well-circumscribed and predominantly cystic extrauterine mass arising from the right side of the pelvis and extending into the upper abdomen. It measured approximately 19 x 18 x 7 cm. A thin internal septum was clearly seen in the right superolateral aspect. There was a solid nodular component at the lower posterior wall measuring approximately 4 cm. No left-sided adnexal masses were detected. There were no ascites, regional nodal or distant metastasis.

The sonographic and CT findings were highly suspicious of a primary malignant ovarian tumour, most likely a mucinous cystadenocarcinoma. However, the serum tumour markers, namely, the beta subunit of human chorionic gonadotropin (beta-hCG), carcinoembryonic antigen (CEA), cancer antigen 125 (CA-125) and alpha-fetoprotein

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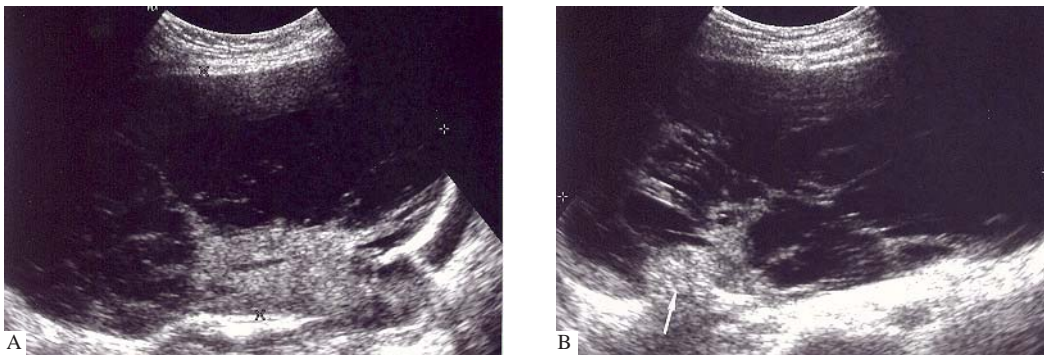


Fig. 1(A). Pelvic sonogram of a 56-year-old post-menopausal woman showing a large and predominantly cystic mass located just above the uterus, with multiple thin internal septations, in the longitudinal plane. (B) In the transverse plane, it shows an irregular solid nodular component (arrow) in the right posterior corner of the mass.

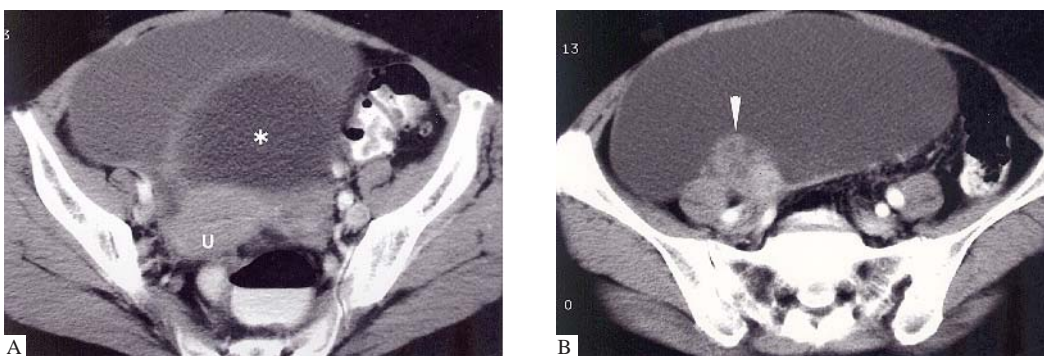


Fig. 2. Axial computed tomography (CT) scan of the same patient showing (A) a large thin-walled cystic mass in the right iliac fossa, superior and to the right of the uterus and urinary bladder, with (B) an approximately 4-cm solid nodular component at its right posterior wall (arrowhead). [*: Bladder; U: Uterus]

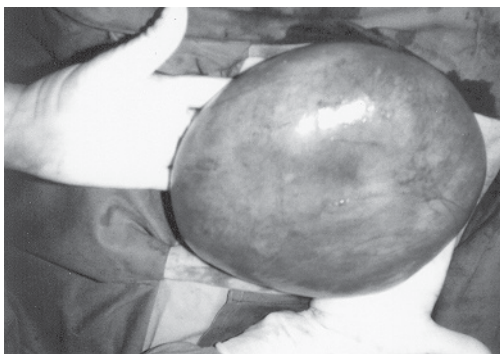


Fig. 3. Laparotomy of the same patient showing a large pedunculated tumour of approximately 20 cm, with a smooth glistening surface arising from the fundus of an otherwise unremarkable uterus.

(AFP) levels, were within normal limits.

At laparotomy, a large pedunculated tumour (Fig. 3) of approximately 20 cm arising from the fundus of an otherwise unremarkable uterus was found. Both fallopian tubes appeared normal and both ovaries were atrophied. Frozen section of the pedunculated tumour showed a spindle cell tumour. The mass was ligated at the base and resected in its entirety, followed by total hysterectomy and bilateral salpingo-oophorectomy.

Gross pathologic examination revealed a smooth multi-loculated cystic mass measuring 19 x 18 x 8 cm with yellowish contents of fluid consistency. A firm pale and pink solid nodule measuring 4.5 cm was found. Microscopic examination of the cystic mass (Fig. 4) showed a benign tumour with degenerative changes. There were interlacing fascicles of smooth muscle cells amidst marked oedema. The investing stroma was minimal, showing focal hyalinisation. Areas of cystic degeneration were seen. There was no nuclear atypia or increased mitotic count in the sections studied.

The final diagnosis was a pedunculated uterine leiomyoma with marked cystic degeneration.

Discussion

Leiomyomas, also known as fibroids, are the most common uterine neoplasm and are composed of smooth muscle with varying amounts of fibrous connective tissue. They occur in 20% to 30% of women of reproductive age. Leiomyomas most commonly involve the uterine corpus, but may also occur in the cervix in a minority of cases. According to their location, leiomyomas are classified as submucosal (projecting into the endometrial canal), intramural (within the substance of the myometrium) or

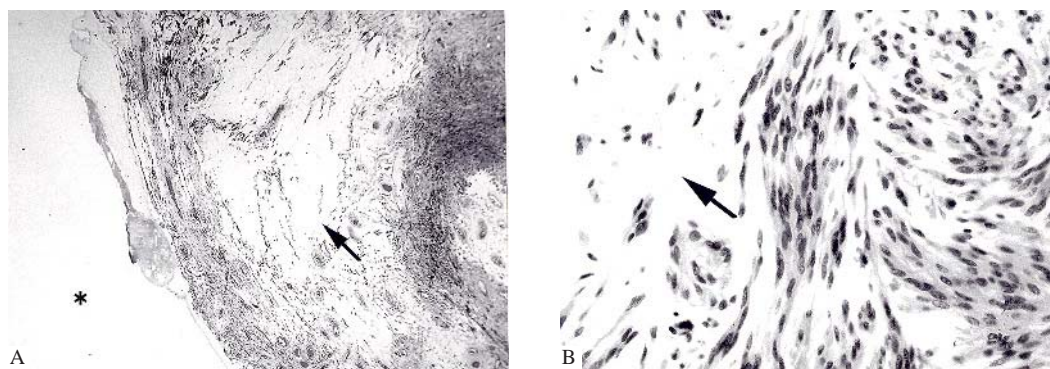


Fig. 4(A). Photomicrograph of the cystic leiomyoma showing a large cyst cavity (*). The cyst cavity is surrounded by smooth muscle cells. Hypocellular areas are due to oedema (arrow). (Haematoxylin & eosin, x20)

Fig. 4(B). Photomicrograph showing fascicles of smooth muscle cells with foci of oedema (arrow). (Haematoxylin & eosin, x400)

subserosal (beneath the serosa).¹ The latter may be pedunculated and simulates ovarian neoplasms.

As leiomyomas enlarge, they may outgrow their blood supply, resulting in various types of degeneration. These include hyaline, cystic, myxoid or red degeneration and dystrophic calcification.² Hyalinisation is the most common type of degeneration, occurring in up to 60% of cases. Cystic degeneration, observed in about 4% of leiomyomas, may be considered an extreme sequela of oedema.³

Transabdominal and transvaginal sonography are the primary and most cost-effective imaging modalities for the detection of leiomyomas. The relative echogenicity of leiomyomas depends on the ratio of fibrous tissue to smooth muscle, the extent of degeneration and the presence of dystrophic calcification. Typically, the uterus may be focally or globally enlarged. The individual leiomyoma typically appears solid in echogenicity (slightly hypoechoic with poor through-transmission). Although lacking a true capsule, leiomyomas are usually well-circumscribed, rounded and often cause focal alterations in the uterine contour or acoustic shadowing if calcifications are present.³ The endometrial echo complex may be distorted and displaced. A pattern of recurrent refractory acoustic shadowing, highly suggestive of a uterine leiomyoma, has been described.⁴ Degenerative changes further result in a heterogeneous or unusual appearance that adds to the diagnostic confusion.⁵

Pedunculated lesions can have obscure origins and may be mistaken for a lesion of ovarian origin.⁵ If a pelvic mass is seen separate from both the ovary and uterus, a sonographic diagnosis of a pedunculated, subserosal leiomyoma can be made if a vascular pedicle is demonstrated or if a recurrent shadowing sign suggestive of leiomyoma is present.^{4,6} However, these features may not always be detected sonographically. Magnetic resonance (MR) imaging may show the vascular pedicle or its attachment to

the uterus and may show the characteristic hypointense T1 and T2 signals of non-degenerated leiomyomas.^{3,7-9} Degenerated leiomyomas, however, show variable MR signal characteristics and cystic ones typically show decreased T1 and increased T2 signals with no enhancement of the cystic areas.¹⁰ Exclusion of an ovarian origin can also be made on sonography or MR imaging if normal ovaries are demonstrated separately.

CT is not the primary modality for diagnosing or evaluating leiomyomas. However, leiomyomas are often found incidentally on CT. Therefore, familiarity with their various CT appearances is important.¹⁰ Uterine enlargement with associated focal masses and uterine contour deformity are the most common CT findings. Leiomyomas that have undergone degeneration have a lower attenuation appearance, with diminished contrast material enhancement. Solid "mass-type" or dense and amorphous calcifications in a uterine mass are the most specific sign for a leiomyoma; however, these occur in only 10% of cases.¹¹

Two recognised pitfalls of sonography and CT are shown in our case. The first is the non-visualisation of atrophied, but otherwise normal, ovaries in post-menopausal patients and, second, the failure to demonstrate the pedicle of a subserosal uterine leiomyoma. The latter was probably obscured due to distortion by the sheer size of the mass. The predominantly cystic nature of the lesion, therefore, led to the presumptive diagnosis of a primary epithelial ovarian tumour, the normal serum CA-125 and CEA notwithstanding. The lesion's large size and multi-locularity are features typical of a mucinous epithelial subtype and the suspicion of malignancy was raised due to a solid peripheral component. The final pathologic diagnosis, however, proved to be a large pedunculated leiomyoma arising from the uterine fundus and showing extensive cystic degeneration. The internal septations separating the cystic spaces represent interlacing fascicles of smooth muscle amidst marked oedema.

In the English literature, case reports of predominantly pedunculated, cystic uterine leiomyoma mimicking an ovarian tumour on sonography and CT are rare.¹²⁻¹⁴ Our case demonstrates the atypical imaging features of a very common uterine tumour, in terms of its appearance and location and its mimicry of a primary cystic epithelial ovarian tumour. Pedunculated leiomyomas with extensive cystic degeneration should be considered in the differential diagnosis of a multi-locular and predominantly cystic adnexal mass. MR imaging may be a useful imaging tool to demonstrate the pedicle or presence of a normal uninvolved ovary, findings which are likely to enable a more accurate preoperative diagnosis.

Acknowledgements

We thank Dr Tay Eng Hseon, Head and Senior Consultant, Gynaecological Oncology Unit, KK Women's and Children's Hospital, for his surgical input and photograph of the surgical specimen. We also thank Dr Chew Sung Hock, Senior Consultant Pathologist, KK Women's and Children's Hospital, for the photomicrographs.

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