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Aggressive angiomyxoma of the pelvis surgical management in a case with delayed diagnosis

Setareh Akhavan^a, Somayeh Nikfar^b, Behnam Behboudi^c, Mahrooz Malek^d, Hana Saffar^e, Narges Zamani^{a,*}

^a Department of Gynecologic Oncology, Vali-Asr Hospital, Tehran University of Medical Sciences, Tehran, Iran

^b Department of Obstetrics and Gynecology, Taleghani Hospital, Arak University of Medical Sciences, Arak, Iran

^c Department of Surgery Division of Colon and Rectal Surgery, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran

^d Advanced Diagnostic and Interventional Radiology Research Center (ADIR), Radiology Department, Imam Khomeini Hospital Complex (IKHC), Tehran University of Medical Sciences (TUMS), Tehran, Iran

^e Department of Anatomical and Clinical Pathology, Cancer Institute, Imam Khomeini Hospital Complex (IKHC), Tehran University of Medical Sciences (TUMS), Tehran, Iran

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ABSTRACT

INTRODUCTION AND IMPORTANCE: Aggressive angiomyxoma is characterized as a non-capsulated soft mass with the ability to progress to surrounding tissues but without metastasis to distant tissues. Slowing tumor extension leading delayed tumor diagnosis, expression of different types of hormonal receptors, therapeutic ineffectiveness of noninvasive treatment approaches and misdiagnosis have remained as the major challenges for managing this tumor.

CASE PRESENTATION: Herein, we described a case of aggressive angiomyxoma located in the posterior of the uterus and vagina that as successfully managed surgically to remove tumor mass followed by gonadotropin-releasing hormone (GnRH) agonist to prevent tumor recurrence.

CLINICAL DISCUSSION: Surgical resection is the treatment of choice in aggressive angiomyxoma with complete success rate, however despite such successfulness, about two-thirds of patients experienced postoperative recurrence rate that could be prevented by hormone-based therapy especially GnRH agonist.

CONCLUSION: Aggressive angiomyxoma is a rare tumor with locally invasive behavior. As misdiagnosis is common imaging like MRI with DWI should be considered. The best treatment is surgical resection by experienced surgeons in tertiary referral hospitals. Even with complete resection, the recurrence rate is high. So adjuvant medical treatment seems to be necessary.

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1. Introduction

Aggressive angiomyxoma was described primarily in 1983 by Steeper and Rosai as a mesenchymal tumor located mainly in pelvis and perineum [1]. This tumor is characterized as a non-capsulated soft mass with the ability to progress to surrounding tissues but without metastasis to distant tissues [2]. In histological assessment, bland nuclei without any evidence of mitotic activity are prominent [3]. Due to the aggressive local recurrent behavior of this tumor, it is of particular clinical importance and its timely diagnosis

and therapeutic management are very important. Herein, we described a case of aggressive angiomyxoma located in the posterior of the uterus and vagina that as successfully managed surgically to remove tumor mass followed by gonadotropin-releasing hormone (GnRH) agonist to prevent tumor recurrence.

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

This work has been reported in line with the SCARE 2020 criteria [4].

2. Case presentation

A 33-year-old G2P2L2 woman came to our hospital with a regular menstrual cycle, complaining of abdominal pain from about 1 year ago as well as problem in intercourse. No abnormality was reported in past medical history. There was also no report of familial

Abbreviations: GNRH, gonadotropin-releasing hormone; AAM, aggressive angiomyxoma; MRI, magnetic resonance imaging; DWI, diffusion-weighted imaging.

* Corresponding author at: Vali-Asr Hospital, Imam Khomeini Hospital Complex (IKHC), Keshavarz Blvd., Tehran, Iran.

E-mail address: dr.narges.zamani@gmail.com (N. Zamani).

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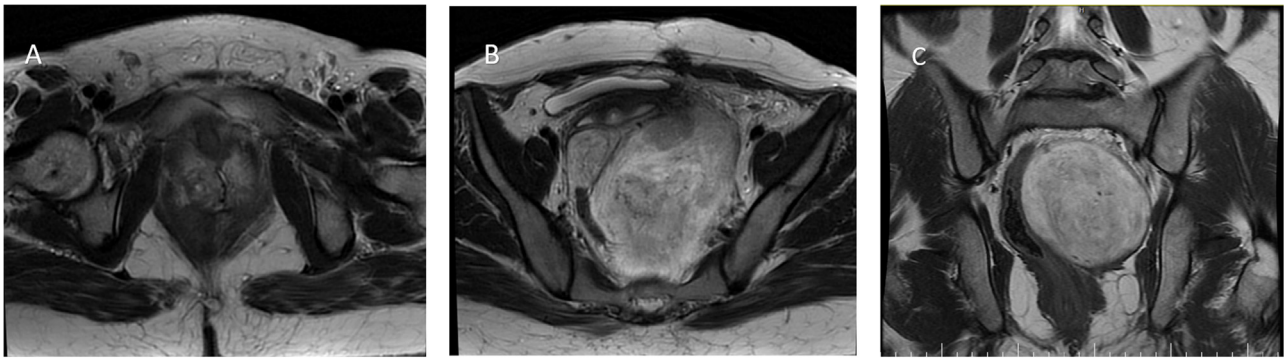


Fig. 1. axial (A, B) and coronal (C) T2 shows a lesion originated from the perineum, breaks through the puborectal and levator ani muscles, extended into the left ischiorectal fossa and pushed to the right and anterior the rectum, uterus and bladder, without invading them.

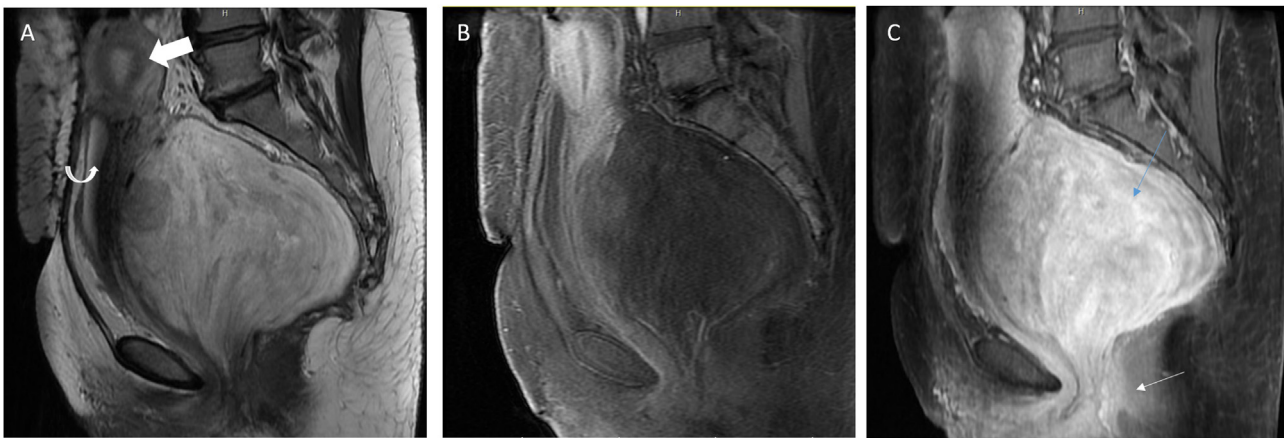


Fig. 2. (A) Sagittal T2-weighted image of the pelvis, (B) sagittal T1-weighted fat saturated image and (C) Contrast-enhanced sagittal T1-weighted fat saturated image showed tumor extending from the extraperineal (thin white arrow(C)) into the pelvis (thin blue arrow (C)). The mass demonstrates marked enhancement and has internal low-intensity "swirled" signal on all image sequences. Adjacent structures, including the urinary bladder (curved arrows) and uterus (thick arrow), are shifted to the anterior but are not invaded by the tumor.

disorders or receiving special medications. The patient had a history of two surgeries due to pelvic mass in the last year. Due to abdominal pain, the patient was scheduled for an ultrasound in which the dermoid mass was proposed and thus the patient underwent CT scanning of the abdomen, pelvis, and lungs about one year ago. On CT scan, a soft tissue mass with a diameter of 95×120 mm was seen in the pelvic area, behind the bladder with non-uniform enhancement with displacement of the uterus and bladder to anterior and rectum to posterior. Other organs were reported to be normal. The patient underwent a laparotomy by a general gynecologic surgeon in which the mass was felt behind the vagina. Due to retroperitoneal location of the mass and lack of surgeon experience, the abdomen was closed without manipulation and the patient was referred to another center. She had another laparotomy about 4 months later revealing a simple ovarian cyst that led to cystectomy. In ovarian pathological assessment, a simple serous cyst was reported. So again they could not help the patient to eliminate her tumor. The patient did not seek further treatment until about 12 months later, when she came to our center due to continued pain and intercourse problem. On vaginal examination, a large mass was revealed posterior to the cervix, which caused the posterior wall of the vagina to bulge and the cervix to deviate anteriorly and below the pubic symphysis. The patient was thus planned for abdominal and pelvic MRI with and without contrast along with diffusion-weighted imaging (DWI) imaging. In this assessment, it was reported a $120 \times 120 \times 105$ mm pearl shape lobulated mass seemed to be originating from rectovaginal space, extraperitoneal, and extended upward and left in presacral space and deviating rectum to right side and



Fig. 3. The feature of tumor resected surgically. The large size of tumor in comparison with large pick-ups with teeth is shown.

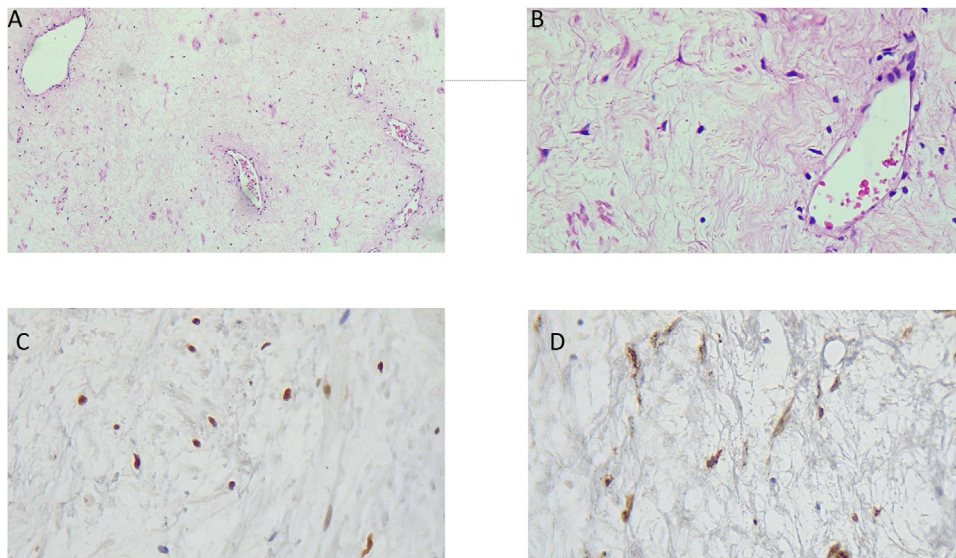


Fig. 4. (A): x100 H & E staining feature (B): x400 H& E staining feature (C): IHC for estrogen receptors (D): IHC for SMA.

uterus and vagina anteriorly. No invasion to adjacent structures was revealed, but the adhesion to rectal wall, vaginal posterior wall, levator ani muscle was found with extension between internal and external sphincter (Figs. 1 and 2). all findings could be aggressive angiomyxoma or other benign mesenchymal tumors. other organs are normal. In this regard, the diagnosis of aggressive angiomyxoma was made. Laboratory assessment found no abnormal findings (white blood cell count of 10,000/mm³, serum hemoglobin level of 12.5 g/dl, platelet count of 156,000/mm³, carcinoembryonic antigen (CEA) of 1.2 ng/mL, cancer antigen-125 (CA 125) of 9 u/mL, and carbohydrate antigen 19-9 (CA19-9) of 14 u/mL. The patient underwent re-laparotomy. The surgery was done by the first author with more than 20 years of experience in gynecologic oncology surgery. The abdomen was opened with a midline incision. The uterus had completely changed position anteriorly and a mass was felt deep behind the uterus and vagina. Due to the lack of access to the mass and also because the patient did not want to maintain fertility, hysterectomy and salpingectomy were performed first however the ovaries were preserved according to the patient's age. Then the retroperitoneal space opened that a large mass was found behind the vaginal wall, the rectum had changed position to the right and extended to the pre-sacral space and down to the anal sphincter with the adhesion to the levator ani muscles. A 10 cm mass was completely and evenly removed (Fig. 3). Due to its adhesion to the rectum, a temporary ileostomy was implanted for the patient and then a sample was sent for pathological assessment. The patient did not have any complications after the operation and was discharged in good general condition with serum hemoglobin level of 10.5 g/dl. About 6 weeks later, the patient's ileostomy was removed and the patient did not have any complications. The pathological report's aggressive angiomyxoma with clear margins (Fig. 4). To prevent recurrence, GnRH agonist was prescribed. At six-month follow-up, the patient's symptoms completely disappeared and no mass was seen on imaging.

3. Discussion

Aggressive angiomyxoma is recognized as a benign mesenchymal neoplasm with local infiltrative behavior. Tumors are more common in women (more than 6 times more common in women than men) [5]. The presented age of tumor at initial presentation widely range 11–70 years with the peak of reproductive ages [5]. The primary size of mass considerably varies (ranged 1–60 cm), but

its rapid growth is common even before it becomes symptomatic and can thus commonly displace adjacent viscera and even destruct the organs [6]. Because of its slow-growing behavior, it may remain asymptomatic for a long time until it is accidentally discovered during clinical evaluations or abdominopelvic imaging [7]. Although invasion of aggressive angiomyxoma is rarely reported, this event can occur to adjacent organs including bowel, bladder, and even bone. Due to aggressive behavior and invasion to adjacent organs, excisional resection of these tumors is difficult and is associated with high morbidity. Its main differential diagnoses include pelvic and vaginal cysts, vulvar masses or abscesses, the Bartholin duct cysts, perineal masses, and even hernias [8]. So the diagnosis of these tumors may be difficult, although MRI with DWI is helpful nowadays.

Due to its high recurrent behavior but no metastasis, its diagnostic differentiation from other tumors with a high chance of metastasis is very important, and in this regard, the use of diagnostic methods, especially pathological evaluation, is essential. In pathological assessment, aggressive angiomyxoma is manifested with bulky gelatinous mass with infiltrative margin and also visible small vessels [9]. In microscopic assessment, the lesions are paucicellular with minimal nuclear atypia and infrequent mitoses [9]. Potential myogenic differentiation has been also reported in such mass. The expression of vimentin, desmin, and muscle-specific actin has been also reported in stromal cells, but with negative reactivity for myoglobin, CD68, cytokeratin, S-100, or type-IV collagen [10]. In this regard, because of its overlapping with some other tumor lesion such as cellular angiofibroma or angiofibroblastoma, the pointed immunoreactivity may not be sensitively diagnostic [11]. The definitive therapeutic approach is surgical resection with pre-procedural imaging (particularly MRI) to determine the best surgical root to achieve complete margin-free excision [12]. Although its recurrence is common, we should have a plan to prevent it. Along with surgical planning, the use of hormonal manipulation especially for preventing its recurrence is of special interest. It has been found that prescribing GnRH agonist even without mass surgical resection can lead to reduce in tumor size as well as prevent its recurrence [13]. It should be noted that because of low mitotic activity of aggressive angiomyxoma tissue, the beneficial effects of chemotherapy or radiotherapy have remained doubtful.

Our described case initially complained of abdominal pain and problem in intercourse, as nonspecific symptoms that could not be improved by initial management. Thus, in further assessment

by imaging followed by diagnostic laparotomy and histological assessment, the definitive diagnosis of aggressive angiomyxoma was made. Following ultimate diagnosis, the operation could lead to successful tumor resection, and prescribing GnRH agonist could prevent tumor recurrence with success. According to two retrospective studies by Kumar et al. and Haldar et al. on ten and seven patients with aggressive angiomyxoma, surgical resection is the treatment of choice in aggressive angiomyxoma with a complete success rate, however, despite such success, about two-thirds of patients experienced postoperative recurrence rate that could be prevented by hormone-based therapy especially GnRH agonist [14,15]. Overall, slowing tumor extension leading to delayed tumor diagnosis, expression of different types of hormonal receptors, therapeutic ineffectiveness of noninvasive treatment approaches such as radiotherapy have remained as the major challenges for managing this tumor.

4. Conclusion

Aggressive angiomyxoma (AAM) is a rare and benign tumor with a locally invasive behavior, but not distant metastasis. As misdiagnosis is common imaging like MRI with DWI should be considered as a helpful diagnostic tool. The best treatment of AAM is surgical resection but because of the location and local invasion, it may be hard. So it's better done by experienced surgeons in tertiary referral hospitals. Despite complete resection, the recurrence rate is high. then close follow-up and adjunct medical therapies are essential parts of treatment.

Declaration of Competing Interest

The authors report no declarations of interest.

Sources of funding

Nothing to declare.

Ethical approval

Not applicable.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

1. S.AKH.: Main surgeon of the patient, Editing the final manuscript.
2. S.N.: collecting data.
3. B.B.: one of the patient surgeon.
4. M.M.: reporting and interpretation of patient's imaging.
5. H.S.: pathologist, and preparing pathology figures.
6. N.Z.: writing and editing the article, corresponding.

Registration of research studies

Not applicable.

Guarantor

Narges Zamani.

Provenance and peer review

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