CASE REPORT

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Original contribution and importance: The original contribution and importance of this clinical case lies in the unique presentation in the scientific literature of parasitic, metastasizing and disseminated peritoneal leiomyomatosis in the same patient, highlighting the rarity and complexity of this phenomenon. The coexistence of these three forms of leiomyomatosis in a single patient highlights the need for a comprehensive evaluation and therapeutic approaches tailored to each situation. The challenging diagnosis highlights the importance of considering these conditions in the spectrum of differential diagnoses, especially given the scarce existing literature on metastasizing leiomyomatosis. Furthermore, the choice of surgical treatment, based on individual symptomatology and circumstances, highlights the importance of a personalized approach in cases of this uncommon nature.

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Diagnostic and therapeutic challenges in a case of disseminated parasitic, metastasizing and peritoneal leiomyomatosis: a complex approach

Desafíos diagnósticos y terapéuticos en un caso de leiomiomatosis parasitaria, metastatizante y peritoneal diseminada: un abordaje complejo

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ABSTRACT
We describe a case presenting a rare combination of parasitic, metastasizing and disseminated peritoneal leiomyomatosis, challenging diagnosis and treatment. The patient initially presented with symptoms related to compression of pelvic structures, followed by the appearance of leiomyomas in the abdominal wall and finally leiomyomas distributed throughout the peritoneum and eventually associated with ascites. The differential diagnosis is broad and complex and includes metastases of primary tumors, among others. Moreover, the lack of a standard of treatment underlines the complexity of these pathologies, advocating a comprehensive surgical approach and considering pharmacological treatment options if there is gestational desire.
Key words: Leiomyomatosis, Diagnosis, differential, Surgery

RESUMEN
Se describe un caso que presenta una rara combinación de leiomiomatosis parasitaria, metastatizante y peritoneal diseminada, desafiando el diagnóstico y tratamiento. La paciente presentó síntomas relacionados con la compresión de estructuras pélvicas inicialmente, seguidos de la aparición de leiomiomas en la pared abdominal y finalmente de leiomiomas distribuidos por el peritoneo que terminaron asociando ascitis. El diagnóstico diferencial es amplio y complejo e incluye las metástasis de tumores primarios, entre otros. Además, la falta de un estándar de tratamiento subraya la complejidad de estas patologías, abogando por un enfoque quirúrgico integral y considerando las opciones de tratamiento farmacológico si existe deseo gestacional.
Palabras clave. Leiomiomatosis, Diagnóstico diferencial, Cirugía

Introduction

Leiomyomas (also called myomas or fibroids) are the most frequent pelvic tumors in women and their prevalence increases during the reproductive age. Occasionally, leiomyomas have an aggressive growth pattern of extrauterine location, being their manifestation significantly rare, with few cases described in the literature. These pathologies with atypical growth include disseminated peritoneal leiomyomatosis, metastasizing leiomyomatosis, intravascular leiomyomatosis, parasitic leiomyomatosis, dissecting leiomyomas and retroperitoneal leiomyomatosis[(1)].

We present an exceptional and unique case in the scientific literature that combines the presentation in the form of disseminated, metastasizing and parasitic peritoneal leiomyomatosis, associated with ascites.

Case report

This is a case of a 40-year-old female patient under follow-up in the gynecology and obstetrics department for a clinical history of extrauterine leiomyomatosis. In 2016, the patient presented with clinical history of pelvic heaviness and sporadic pain, then diagnosing a polylobulated mass of 10 cm in diameter, vascular, myomatous appearance, with implantation base in upper vesical face without contact with the uterus and compatible with parasitic myoma. It was resected in the operating room with intraoperative and definitive pathological anatomy of atypical leiomyoma without signs of malignancy (mild-moderate nuclear atypia, without necrosis and proliferative index (Ki67 less than 5%). In the same surgical procedure, two small uterine subserosal myomas were resected and another one in the right uterine tube with a diameter of 2 cm.

In 2020, and after favorable evolution controls, the patient was admitted to the assisted reproduction program for primary infertility and gestational desire. In September 2021, in vitro fertilization was performed, and pregnancy was achieved. During the gestational ultrasound controls heterogeneous bilateral parauterine solid lesions were observed, without typical myoma morphology, so pelvic MRI was requested in May 2022 (28s+4 of pregnancy). Multiple nodular lesions and contiguous superficial nodules were visualized in the abdominal wall with similar characteristics to the extrauterine intrapelvic lesion of 2016. An anatomopathological study of the abdominal wall lesion was performed, with the result of typical leiomyoma, so the pregnancy was continued with term eutocic delivery.

The patient subsequently attended the emergency department for recurrent episodes of ascites with negative cytology of the fluid, and a CT scan was performed in January 2023, showing growth of the nodules previously classified as leiomyomas, distributed throughout the abdominal cavity. After biopsy and negative result of malignancy, it was decided in a multidisciplinary session to perform excision of the accessible peritoneal implants, hysterectomy and double adnexectomy (induction of surgical menopause), which was performed in February.

Surgery was performed through a median laparotomy approach in collaboration with the general surgery service, who resected a large mass (8-10 cm) in the right iliac fossa-right flank, and other smaller masses of diffuse intraabdominal distribution. In the pelvis, an enlarged polymyomatous uterus was observed, with a dominant myoma in the right parametrium, subserosal about 6 cm in size. Other smaller intramural myomas and 2 subserosal myomas measuring 2 cm were palpated in the anterior uterine fundus. The adnexa were normal in appearance. Varicose veins were also visualized in parametrial and paracervical pelvic vessels. Hysterectomy and double adnexectomy and plane closure were performed.

Subsequently, in a new multidisciplinary session and after learning the result of leiomyomatosis without signs of malignancy, it was decided not to institute hormonal medical treatment and to follow up closely. To date, the patient only presents clinical symptoms associated with surgical menopause, without receiving hormone replacement therapy due to her history.

Figure 1. Parasitic leiomyomatosis. A) Abdominal ultrasound: a heterogeneous mass is visualized (arrow) located in the plane superior to the bladder (star). B) A contrast tomography in sagittal section confirms the presence of the mass (arrow) of supravesical location (star), adjacent to the polymyomatous uterus. C) Sagittal T2-weighted MRI: the mass (arrow) imprints on the uterus, without a clear relationship of dependence with the uterus. In addition, it presents a hypointense and heterogeneous signal, similar to one of the uterine myomas (arrowheads). (D) T1-weighted MRI with fat suppression, after contrast administration: the mass (arrow) shows the same enhancement as the uterus and uterine myoma (arrowheads).

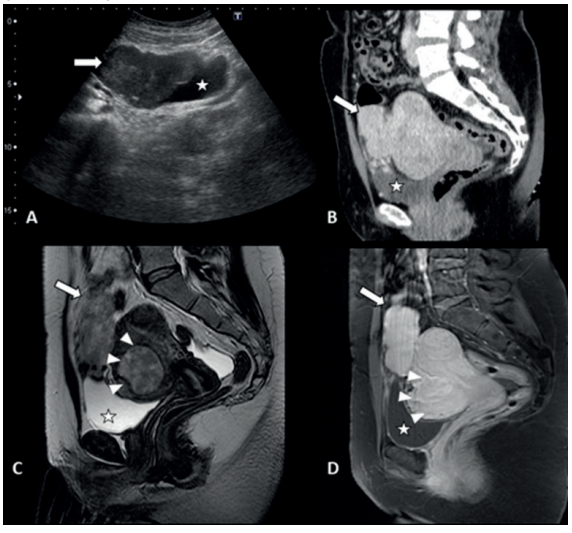


Figure 2. Metastatizing leiomyomatosis. A and B) Abdominal ultrasound: two heterogeneous masses (red and blue arrow) are visualized on both sides of the pregnant uterus (rhombus). C and D) T2-weighted MRI, axial and coronal slices: the presence of a mass in the right parauterine region is confirmed (red arrow), and another mass in the left abdominal wall (blue arrow), delimited by the external oblique fascia (arrowheads).

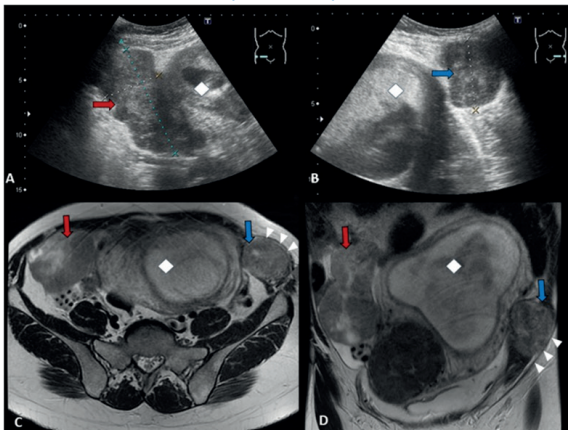
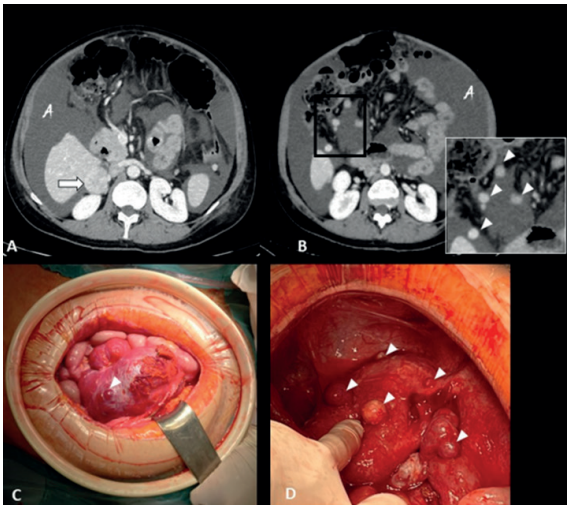


Figure 3. Disseminated metastasizing and peritoneal leiomyomatosis. A) Contrast-enhanced tomography in axial view: there is evidence of a metastatic mass in the right adrenal gland (arrow), with homogeneous enhancement. Ascites is also visualized (letter 'A'). B) Contrast-enhanced CT in axial view: mesogastric sections show small implants in the peritoneal cavity (arrowheads). C and D) Surgical images: the presence of peritoneal implants during the surgical procedure is confirmed (arrowheads).



Discussion

Parasitic leiomyomatosis is defined by the appearance of myomas whose vascularization is independent of the uterine artery, and which are located in structures adjacent to the uterus, in our case on the upper side of the bladder. These lesions can exert a mass effect compressing pelvic structures such as the urethra, the bladder neck or the ureter, causing clinical obstructive urinary tract, and although in our case the urinary symptoms were not significant, the sensation of "heaviness" was, as the patient initially reported. These data led to its discovery, after radiological tests and confirmation by surgery and study of the surgical specimen[1].

On the other hand, metastasizing leiomyomatosis is an entity of which only 150 cases have been published in the scientific literature and is characterized by the appearance of multiple leiomyomas in locations distant from the uterus, most frequently affecting the lungs. Involvement of the heart, brain, lymph nodes, bone and skin is less common. One of the peculiarities of this case is that no other leiomyomas were located beyond those in the subcutaneous tissue/skin of the abdominal wall, an already rare site according to the literature. Furthermore, we believe that neither of the two most commonly accepted theories agrees with our case, since the hypothesis of hematogenous dissemination would not explain the absence of other distant leiomyomas, and the theory of metaplastic transformation would not explain the presence of these in small numbers in the abdominal wall[1].

On the other hand, disseminated peritoneal leiomyomatosis is a benign pathology characterized by the growth of multiple nodules of smooth muscle tissue in the abdominal peritoneum (from a few millimeters to 5 to 10 cm)[1,2]. It was first described by Wilson and Peale in 1952 and was later recognized as a distinct entity by Taubert et al. in 1965[2]. As with metastasizing leiomyomatosis, the etiology and pathophysiology of this disease are not clear, and there are three theories: hormonal, genetic and iatrogenic. In our particular case, the hormonal theory would be the one that would best explain the evolution of this patient and the appearance of this entity after the hormonal overstimulation that led first to IVF and later to pregnancy. Likewise, there are several cases in the literature that reinforce the hormonal position[3]. Despite the surgical history, we do not believe that the iatrogenic theory explains our case.

The diagnosis of these pathologies is complex and often requires biopsy or study of the surgical specimen since there is no pathognomonic presentation in the radiological image. The main differential diagnosis is that of metastasis of an occult malignant primary tumor, either in

the case of metastasizing leiomyomatosis or disseminated peritoneal leiomyomatosis. In the latter disease, the differential diagnosis is even broader, including primary peritoneal mesothelioma, lymphomas, tuberculosis and dermoid tumors[1-3].

Currently, malignant transformation remains doubtful, with isolated cases in the literature, with ascites and a history of nuclear atypia in our patient being a warning sign. Transformation is characterized by cytologic nuclear atypia, tumor necrosis, infiltrative growth and increased mitotic activity[3,4]. Moreover, there is no standard treatment regimen for disseminated or metastasizing peritoneal leiomyomatosis. Some authors recommend initial surgery with peritoneal debulking and hysterectomy/ovariectomy, while others believe that extensive surgery should only be considered in cases of organ compression, preceded by neoadjuvant hormonal therapy[5]. In this sense, spontaneous regression of peritoneal nodules after delivery has been observed in some isolated cases. However, the particular clinical condition of our patient did not allow this approach, since after delivery there were multiple episodes of ascites with worsening of the clinical condition.

As for medical treatment, the role of gonadotropin-releasing hormone agonists that would theoretically reduce the size of the nodules is unclear since a case has been reported that described paradoxical stimulation of these tumors after treatment[3,6]. For its part, tamoxifen has been shown to be effective in vitro, but its role remains uncertain in vivo, while raloxifene was documented as a successful treatment when administered alone in postmenopausal women or in association with an aromatase inhibitor, with mixed results in premenopausal women[6]. Systemic chemotherapy with doxorubicin and dacarbazine could be considered as a treatment option for unresectable or metastatic disease.

Regarding surgical treatment, laparoscopic approaches have transformed the management of leiomyomas, allowing less invasive procedures and faster recovery. However, in atypical cases and with such widespread and voluminous disease, such as the one presented, a more precise diagnosis is required, and often definitive pathological studies by analysis of surgical specimens[7-10]. In our patient we believe that the surgical approach (hysterectomy and double adnexectomy together with resection of as many intraabdominal fibroids as possible) was the safest, both in the short and long term, since the patient had no major gestational desire and surgical menopause should improve symptoms and reduce disease progression.

Finally, it should be mentioned that advances in artificial intelligence offer new perspectives in diagnostic imaging and interpretation of clinical data, which could improve the identification and characterization of complex cases of leiomyomas. In this context, the combination of laparoscopic approaches and artificial intelligence technologies represents a promising direction for the management of leiomyomas, especially in complex cases such as the one presented.

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