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Preoperative diagnosis of adenomyosis, leiomyoma and intricate situations

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Abstract

Although other benign conditions have a high prevalence in the reproductive age in women, leiomyoma and adenomyosis are the major clinical challenges in gynecology. Often, under diagnosed adenomyosis commonly coexists with uterine fibroids. This retrospective study aimed to identify the clinical characteristics and also to assess the effectiveness of transvaginal ultrasound and magnetic resonance imaging in the diagnosis of leiomyoma, adenomyosis or in the co-existence of the two entities, thus to establish the optimal treatment.
Keywords: *adenomyosis, leiomyoma, transvaginal ultrasound, MRI*

Introduction

Although benign myometrial lesions have a high prevalence in reproductive age women, leiomyomas and adenomyosis are the major clinical challenges in gynecology.

Adenomyosis is a condition characterized by the presence of endometrial tissue in the myometrium[(1)]. Endometrial tissue can be located such as a focal nodular circumscribed collection, focal adenomyosis or it can be situated diffuse in the myometrium-diffuse adenomyosis. On the other part, leiomyomas are benign tumors of the smooth muscle, with the origin in the myometrium.

Frequently, adenomyosis and leiomyoma coexist. The incidence of adenomyosis reported in the hysterectomy fragments of patients with fibroids ranging between 15 and 57%[(2,3,4,5,6,7)].

Leiomyomas produce a variety of symptoms such as menorrhagia, metrorrhagia, dysmenorrhea, chronic pelvic discomfort or chronic pelvic pain. Similarly, the adenomyosis symptoms are commonly reported as abnormal uterine bleeding, chronic pelvic pain and dysmenorrhea.

The frequent association between both diseases and the similar clinical symptoms case an often difficult accurate clinical diagnosis, adenomyosis being frequently underdiagnosed[(8)].

In adenomyosis, due to the subtleties ultrasound aspects, the sonographer experience influences the diagnosis more than in other pelvic pathologies. 3D ultrasound reveals more clearly the morphology of lesion and the use of uterine Doppler allows the differentiation of adenomyosis and leiomyomas, also highlighting the coexistence of these entities. When the diagnostic accuracy is limited, magnetic resonance is useful[(9)].

Although the "gold standard" in the diagnosis of adenomyosis remains traditionally the histopathology, new studies are developing in order to determine both clinical and imaging profile, to identify the association of adenomyosis and leiomyoma[(10,11)].

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Methods

The retrospective study, made over a period of three years (2013-2015) aimed to identify the clinical characteristics and to evaluate the effectiveness of the transvaginal ultrasound and magnetic resonance imaging (MRI) in the diagnosis of the uterine leiomyomas, adenomyosis and the co-existence of these two entities, the accurate diagnosis that is allowing the establishment of the therapeutic options.

132 patients, aged 30 to 55 years were included in this study,who presented in the obstetrics and gynecology office for regular annual control or complaining of pain and abnormal vaginal bleeding.

The patients were clinically examined. The imagistic examination was performed with a Voluson 730 ultrasound.

Results

For the diagnosis of leiomyoma, the morphological criteria monitored by ultrasound were: increased volume of the uterus, the modification of the uterine outline, a structure with well-defined edges and variable echogenicity or posterior attenuation of the ultrasonic beam. It was also performed Doppler ultrasound, visualizing the vascularization of the leiomyomas at the periphery, with pulsatility index lower than 1.2 and with a resistance index lower than 0.7.

For the diagnosis of the adenomyosis, the ultrasound data were variable: the diffuse thickening of the uterine walls, the stripe dextensive projections from the endometrium to the myometrium, multiple small intramyometrial cysts, hypoechogenic and heterogeneous areas with poorly defined boundaries in the myometrium. (Figures 1 and 2). The Doppler examination shows a well vascularized center with radial vessels to the periphery, with a pulsatility index higher than 1.2 and a resistance index higher than 0.7.

When ultrasound and clinical examination were inconclusive, particularly in cases of adenomyosis associated with leiomyomas, magnetic resonance was used.

Of the 132 patients, 41 were diagnosed with leiomyoma, 19 with adenomyosis and 72 presented an association of adenomyosis-leiomyoma.

The main symptoms of patients are shown in Table 1. Regarding meno-metrorrhagia, the difference between the three groups of patients is insignificant. It can be seen, however, a higher incidence of chronic pelvic pain, of the dysmenorrhea and of the dyspareunia in the case of patients with adenomyosis, associated or not with leiomyoma.

Gynecological clinical examination was normal in a few cases. Most patients had an increased volume of the uterus with an irregular outline for leiomyomas and regular for adenomyosis, more frequently sensitive to mobilization for adenomyosis, co-existent or not with leiomyomas.

The final diagnosiswas established with imagistic tool. Of the132 patients, 18 required the MRI investigation due to the uncertain ultrasound diagnostic.

In all the 18 cases the MRI established the diagnosis of co-existence leiomyoma-adenomyosis. 63 patients followed surgical treatment. Histologically, for 58 patients (92%) it was confirmed the established clinical and imagistic diagnosis.

Discussion

Adenomyosis and leiomyomas are benign uterine pathologies that represent a major clinical challenge. In the case of leiomyoma if doubts arise regarding the clinical diagnostic, the ultrasound elements facilitate the diagnosis.

The difficulty of the clinical diagnosis of adenomyosis also appears due to the lack of pathognomonic signs. In adenomyosis, the dominant symptomis pain, whereas in the case of leiomyoma, the studies indicate a rate of 20-25% of patients with chronic pelvic pain[11]. The preoperative clinical rate of the diagnosis in adenomyosisis reduces, ranging from 2.6% to 26%[12].

Figure 1. Globular uterus, heterogeneous thickened endometrium-myometrium junction, area of focal or diffuse anechoiclakes

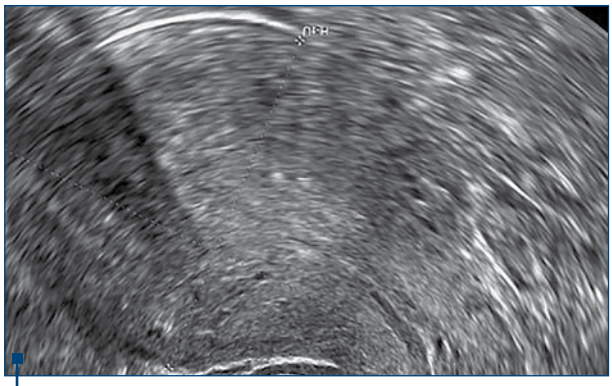

Figure 2. Adenomyosis associated with leiomyomas

The transvaginal ultrasound and the MRI are the main tools for preoperative diagnosis of adenomyosis, both having a similar sensitivity, the higher specificity however exists in the case of MRI[13].

Leiomyomas are benign tumors of the uterine smooth muscles, well demarcated from the surrounding myometrial tissue by a pseudo capsule that can easily be removed surgically. These benign hormone-dependent lesions are responsive both at estrogens as well as progesterone, they often grow in size during pregnancy

Table 1 Clinical symptoms of patients

Symptoms	Leiomyoma (n=41)	Adenomyosis (n=19)	Associate (n=72)
Meno-metrrhoragie	32 (78.0%)	15 (78.9%)	64 (88.8%)
Chronic pelvic pain	12 (29.2%)	10 (52.6%)	37 (51.3%)
Dysmenorrhea	17 (41.4%)	12 (63.5%)	47 (65.2%)
Dyspareunia	6 (14.6%)	4 (21.0%)	15 (20.8%)

and they are often reduced after the menopause. The early menarche and obesity are predisposing factors for the development of leiomyoma following to increased exposure to estrogens in these conditions. It was noted that throughout the morphological criteria, "the peripheral vascularization" shows the highest prevalence, while the necrotic fibroids will show the absence of the flow[8].

Adenomyosis is a poorly differentiated lesion, the myometrium, the endometrial glands and the stroma being diffusely interposed. The typical clinical symptom of adenomyosis is the excessive uterine bleeding accompanied dysmenorrhea which can aggravate the symptoms. Adenomyosis can be accompanied by leiomyoma, endometriosis or endometrial polyps. The highest prevalence occurs in the case of women aged 30-50 years, and half of them remain asymptomatically. Complete surgical excisionis difficult and most often impossible, the hysterectomy remaining the definitive treatment[14].

The costs of the MRI examination or the long period of acquisition represents factors that restrain the use as a screening examinationin practice. Hence, the transvaginal ultrasound, especially the 3D one, can be used as aneffective screening tool.

In addition, the use of Doppler ultrasound provides the additional parametersto differentiate and to diagnose the leiomyoma from the adenomyosis. The correct preoperative diagnosis leads to an adequate therapeutic method.

Conclusions

The clinical symptoms and signs of the leiomyomas and the adenomyosis mostly overlap, which makes that an accurate establishment of theclinical diagnosis to be difficult in many cases. The study performed confirms that the transvaginal ultrasound (especially 3D) - as a first-line examination is an important tool. The MRI performance is superior to the ultrasound in the diagnosis of the co-existance of the leiomyomas with the adenomyosis. These non-invasive imagistic methods seem to bethe most valuable tools of diagnosis ofthis pathology in clinical practice, allowing to choose the best treatment. ■

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