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Authors:
Sze Ching Hong, Chong Kiat Khoo

KK Women’s and Children’s Hospital, Division of Obstetrics and Gynaecology, Minimally Invasive Surgery Unit

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Corresponding author details:
Name: Sze Ching Hong
E-mail: hong.sze.ching@singhealth.com.sg
Mailing address: 100 Bukit Timah Road, Singapore 229899
Telephone: (65) 6225 5554
Fax: (65) 6298 6343

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An update on Adenomyosis uteri

Abstract:

Adenomyosis is a gynaecological condition commonly encountered in clinical practice. It is defined as the presence of endometrium within the myometrium. The prevalence of this condition in asymptomatic women is unclear, and a large proportion of these women may have associated pathology such as leiomyomas, endometriosis, endometrial polyps and hyperplasia. Most of the time, diagnosis is made on histological examination of specimen following hysterectomy or adenomyomectomy. We will look at the role of various imaging modalities, such as pelvic ultrasound and magnetic resonance imaging, and their value in improving the accuracy of preoperative diagnosis. Various medical and surgical therapies will also be discussed. Careful counseling on the available treatment options form an important component of clinical care. Hysterectomy is the definitive treatment for women who no longer desires fertility.

Keywords:

Adenomyosis, hysterectomy, magnetic resonance imaging, leiomyomas, endometriosis, endometrial hyperplasia

Introduction:

Adenomyosis is a gynaecological condition commonly encountered in our clinical practice. It is defined as the presence of endometrial glands and stroma deep within the myometrium associated with myometrial hypertrophy and hyperplasia. General consensus is that adenomyosis occurs when there is a disruption of the normal boundary between the endometrial basal layer and the myometrium. As a result, the endometrial glands invade the myometrium, resulting in ectopic intramyometrial glands which cause adjacent myometrial hypertrophy and hyperplasia. Adenomyosis can be diffuse, where islands of adenomyosis may be found throughout the myometrium, or it can be localized in the form of adenomyomas.

Epidemiology

The exact prevalence of this condition in asymptomatic women is unclear, and the reported prevalence in surgical series varies widely due to the differences in histological diagnostic criteria used and number of tissue sections analysed. Estimated prevalence of histologically confirmed adenomyosis in surgical series ranges from 5-70%. A large proportion of these women may have associated pathology such as leiomyomas (80%), endometriosis (6.3-24%), endometrial polyps (2.3-14.7%), endometrial hyperplasia (3.5-13.6%) and adenocarcinoma (2.2-5.3%). Adenomyosis is most common in women between the ages of 35-50 years, and many cases occur in multiparous women.

Pathogenesis

The exact cause and pathogenesis of adenomyosis has not been well established. One theory states that adenomyosis originates from the basalis (deeper layer) of the endometrium, which would grow between the smooth muscle bundles in the myometrium due to the action of specific enzymes. This
repeated process of regeneration and re-epithelisation leads to a loss of the interface between the endometrium and myometrium and there is myometrial hypertrophy around the foci of endometrium. The reason for this is unclear but it may be the invaginating endometrium pushing aside the smooth muscle bundles or the body’s response to control this invagination. Other factors also contribute to the pathogenesis, namely hormonal, genetic and immunological. Hyperestrogenism at the local level in addition to circulating estrogens may be another contributing factor. Adenomyosis grows and regress in an estrogen-dependent fashion due to the presence of estrogen receptors in adenomyotic tissues.

Symptomology

Some patients may be asymptomatic, where it is an incidental finding on examination, imaging studies or histopathology specimens after hysterectomies. Others can have menorrhagia (40-50%) or metrorrhagia (10-12%), dysmenorrhea (30%), dyspareunia, chronic pelvic pain or abdominal bloating. The frequency and severity of symptoms correlate to the extent and depth of adenomyosis. Physical examination may reveal a tender enlarged uterus.

Work-up

At present there is no single diagnostic test which is both sensitive or specific for adenomyosis. There is a lack of a reliable and diagnostic test for this condition at present, even though diagnosis is important in order to decide on the appropriate mode of management for the patient, and would greatly impact on patient counseling.

Pelvic ultrasound

Transvaginal ultrasound (TVS) is superior to transabdominal ultrasound in evaluating for features of adenomyosis uteri. Sonographic appearances include uterine enlargement, asymmetric enlargement of the anterior or posterior myometrial wall, lack of contour abnormality or mass effects, heterogeneous, poorly circumscribed areas within the myometrium, hypererechoic islands or nodules, finger-like projections or linear striations, indistinct endometrial stripe and anechoic lacunae or cysts of varying sizes. The accuracy of TVS reported in Studies on the accuracy indices of sensitivity and specificity ranges between 53–89% and 50–99%. There are some reports on the use of three-dimensional TVS and 3D power Doppler studies in adenomyosis, looking at vessel distribution and branching, and differences in perfusion patterns in affected areas.

Hysterosalpingography

Hysterosalpingography has a low sensitivity and specificity for the diagnosis of adenomyosis. Features include multiple small spicules extending from endometrium into the myometrium and local accumulation of contrast in the myometrium giving a honeycomb appearance.

Magnetic resonance imaging

Magnetic resonance imaging (MRI) features of adenomyosis include a focal or diffuse thickened junctional zone due to uncoordinated proliferation of the inner myometrial cells causing junctional zone hyperplasia. Areas of low signal intensities representing smooth muscle hyperplasia and foci of increased high signal intensity in the junctional zone representing heterotopic endometrial tissue can be seen on MRI.

MRI as an imaging modality for adenomyosis has been compared to transvaginal ultrasound. Some studies found that both modalities have similar sensitivities and specificities, while others showed that
MRI was a good complement to ultrasound when ultrasound is indefinite or in difficult cases with presence of other abnormalities (such as leiomyomas and endometriosis). In such situations, MRI may add more information and increase the diagnostic accuracy.¹¹

Treatment options

Increasingly the diagnosis of adenomyosis is being made before surgery due to the improvement in imaging modalities and this gives women with this condition the option of medical therapy. However because of the diagnostic challenges of adenomyosis, there are not many large or well-designed trials that look at the treatment of this disease itself. Many treatment options are aimed at symptomatic relief, with hysterectomy being the main treatment option for those who have completed family.

Medical

Non-hormonal treatments are targeted at symptomatic relief. Non-steroidal anti-inflammatory drugs such as mefenamic acid is effective for relief of symptoms such as dysmenorrhea and heavy menstrual bleeding. Tranexamic acid, which is an anti-fibrinolytic is used in cases of menorrhagia.

Hormonal treatment is aimed at inhibiting gonadotrophin release from the pituitary, estrogen surge mid-cycle and cyclical changes of ovarian steroids. However the effects of these treatments are variable and tend to wear off after discontinuation of treatment leading to symptom recurrence. Progestogens, levonorgesteral intrauterine system (LNG-IUS), oral contraceptive pills, gonadotrophin-releasing hormone analogues (GnRHa) and danazol-loaded intrauterine devices (IUDs) are the different types of hormonal treatment available.

Progestogens and oral contraceptive pills have limited effectiveness as adenomyosis is largely an estrogen-mediated disease, but may be effective in symptomatic relief of menorrhagia and dysmenorrhea.

LNG-IUD use in women with adenomyosis results in less menstrual blood loss, reduction in uterine size and improvement in dysmenorrhea.¹² The main disadvantage of this treatment is the irregular menstrual bleeding in the first few months of treatment.

GnRHa induces medical menopause and leads to atrophy of adenomyotic nodules resulting in reduction of uterine size and symptomatic relief. Its use is limited to short-term (3-6 months) because of its menopausal and skeletal side effects. Once the treatment is discontinued, the condition recurs.

Oral danazol is no longer commonly used because of its side effects. Danazol-loaded IUDs have been shown in some studies to improve symptoms such as dysmenorrhea and hypermenorrhea. Serum danazol levels were undetectable and the patients did not experience the systemic side effects associated with oral danazol.¹³,¹⁴

Surgical

Hysterectomy has been the definitive treatment for adenomyosis as well as for definite diagnosis until recently.¹⁵ However this option is only for patients who have completed their family.¹⁶ Excision of affected myometrium can be performed in patients where the extent of disease is well-defined. This is a viable option in patients who still desire fertility. However in cases where large or multiple areas of the uterus is affected, there is a risk of future obstetric complications such as uterine rupture, and risk of adhesion formation. Endomyometrial ablation or resection is an option for patients with superficial disease, but deep seated disease is associated with a risk of failure of treatment. Desire for future
fertility is a contraindication. Uterine artery embolization is an option in patients with concurrent fibroids for which it is an accepted treatment. Laparoscopic uterine artery ligation has not been well-studied and available studies has not shown it to be effective.  

Conclusion

Adenomyosis is a common condition encountered by gynaecologists. Its symptomology is poorly defined and severity of symptoms sometimes correlates poorly with severity of disease. The aetiology of the disease is unclear and there are. Advancement in imaging modalities such as MRI can help to establish the diagnosis of adenomyosis more accurately and this will lead to better patient counseling before surgery and more directed treatment. Hormonal treatment can relief symptoms and reduce the progression of the disease, but is limited by the side effects. Long-term studies regarding the effectiveness of hormonal treatment as well as long-term outcomes such as fertility and pregnancy is awaited, Hysterectomy and LNG-IUS is still the cornerstone of treatment.

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