Management of a pelvic mass

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Abstract

The presence of a pelvic mass is a common clinical problem. A combination of findings from the clinical history, examination and results of various investigations can help to determine the character and origin of the mass, determine risk of malignancy and guide management strategies. This problem-based review presents three case histories that illustrate some of the key principles in the management of a pelvic mass. The cases, which include a leiomyosarcoma, an adnexal mass in pregnancy, and a tubo-ovarian abscess, describe commonly encountered clinical scenarios with an evidence-based approach to subsequent management.

Keywords leiomyosarcoma; ovarian malignancy; pregnancy; surgery; tubo-ovarian abscess; uterine malignancy

Introduction

An adnexal mass is a common clinical problem affecting the ovary, fallopian tube or surrounding connective tissue, and can present in females of all ages. Mostly, they arise from the ovary. An adnexal mass may be symptomatic or discovered incidentally during imaging performed for another indication. The differential diagnosis of an adnexal mass is broad (Table 1). The most serious concern, and consequently the primary aim of investigation, is the identification of malignancy.

Case 1 (sarcoma, fibroid)

A 45-year-old woman was seen in the general gynaecology clinic presenting with menorrhagia and pressure symptoms (distension, urinary frequency and constipation). The symptoms had worsened over the last year. She was otherwise in good health with a BMI of 34. Examination revealed a 16 week size uterus.

She had tried empirical treatment with tranexamic acid, norethisterone and the Mirena IUS, but to no avail. She is keen on surgical treatment, but declined endometrial ablation.

Discussion

The history is highly suggestive of a fibroid uterus. According to the National Institute for Clinical Excellence (NICE) an ultrasound would be recommended as a first-line diagnostic tool for identifying structural abnormalities. In addition, endometrial sampling would be recommended to exclude endometrial cancer or atypical hyperplasia in women aged 45 or above, and in those with persistent intermenstrual bleeding or treatment failure.

Management could involve a trial of further medical treatment such as ulipristal acetate, known as esmya; an orally active selective progesterone receptor modulator. Its license has recently been extended to enable use of the drug long term for fibroids and not just pre-operatively, following the results of the PEARL III study. A GnRH agonist could also be used prior to surgery, if myomectomy was considered or can be used to reduce the size of incision required for hysterectomy. An ablation is unlikely to be successful given the large cavity size. However, the definitive surgical treatment would be a hysterectomy.

Further case history

An ultrasound performed revealed multiple small intramural and serosal fibroids each measuring 2–3 cm in maximal diameter. Ultrasound enables detailed assessment of the uterus and endometrium. The normal endometrial thickness (ET) varies markedly throughout the menstrual cycle (4 mm–16 mm) and therefore measurement of ET is not usually helpful in the management or diagnosis in pre-menopausal women. Ultrasound scan does however help with the diagnosis of endometrial polyps, fibroids, adenomyosis and uterine abnormalities.

A hysteroscopy was performed. This demonstrated a 12 cm uterine cavity, the endometrium appeared thickened and there was evidence of a small submucosal fibroid. Surprisingly, the endometrial biopsy identified a leiomyosarcoma (LMS). A pelvic magnetic resonance imaging (MRI) and CT chest, abdomen and pelvis were performed for staging, and suggested stage 1B disease (Figure 1 and Table 2). The patient was referred to a gynaeoncology centre and discussed at the regional multi-disciplinary team (MDT) meeting and regional sarcoma centre. She was treated with a midline laparotomy, total abdominal hysterectomy, bilateral salpingo-oophorectomy and omentectomy. There was no evidence of extra-uterine spread. Given its early stage lymphadenectomy was not performed. Histological examination confirmed a grade III (high grade) LMS with a tumour mass of 15 cm (stage IB). Further MDT discussion post-operatively at both the cancer centre and regional sarcoma centre concluded that neither adjuvant chemotherapy nor radiotherapy was indicated. This reflects the current lack of improved survival in the relatively limited RCTs with either chemotherapy or radiotherapy. There are ongoing trials looking at more novel regimens, which it is hoped will provide more favourable results. In keeping with many rare tumour types, practice may vary considerably between institutions and individual clinicians. The patient was followed up with 4-monthly chest X-ray and pelvic MRI, and counselled about the high risk of recurrence.

Discussion

Uterine sarcomas are a rare group of soft tissue tumours, originating from mesenchymal cells and include myometrium or endometrial connective tissue elements. They comprise less than 1% of gynaecological malignancies and between 3 and 7% of uterine malignancies. When compared to the other uterine

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Differential diagnosis of a pelvic mass

Organ	Causes
Ovary	Functional/physiological cysts
	Benign tumours/cysts
	Borderline/malignant tumours
	Endometrioma
	Ovarian hyperstimulation syndrome
	Metastatic ovarian tumours (e.g. breast, colon)
Uterus	Pregnancy
	Fibroids (e.g. pedunculated, broad ligament)
Fallopian tube	Hydrosalpinx
	Tubo-ovarian abscess
	Ectopic pregnancy
	Fimbrial cyst
	Fallopian tube carcinoma
Bowel	Appendix abscess
	Diverticular disease
	Colorectal carcinoma
	Constipation
Miscellaneous	Urinary retention
	Pelvic kidney
	Retroperitoneal neoplasms
	Lymphoma
	Omental cyst

Table 1

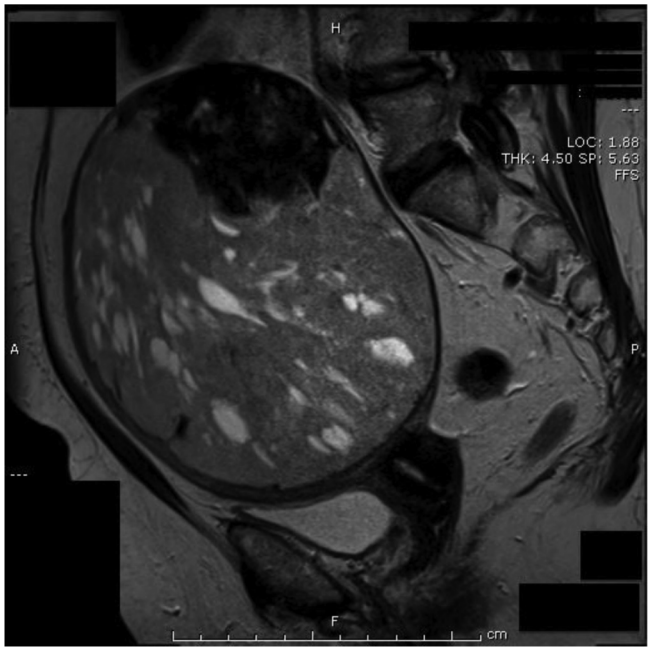

Figure 1 Pelvic MRI of uterine leiomyosarcoma. The endometrium is obscured by the large mass, with evidence of cystic degeneration and bleeding within the lesion.

cancers, sarcomas are more aggressive and carry a far worse prognosis, even when correcting for stage.

They are classified according to their distinct tissue types and presumed origin:

- Leiomyosarcomas (55%)
- Endometrial stromal sarcomas (20%)
- Undifferentiated sarcomas (15%)
- Others, including fibrosarcoma (10%)

Carcinosarcomas are the most common form of uterine sarcoma, they are often referred to as malignant mixed mesodermal (or mullerian) tumours (MMMT). However, it has recently been re-categorized as a high-grade endometrial cancer instead of a sarcoma.

There are no symptoms specific to LMS, however most women present with abnormal vaginal bleeding. As reported by this patient, associated complaints include pressure symptoms (bladder and bowel changes), abdominal distention, or noticeable lump arising from the pelvis. Presentation is very similar to leiomyomas (fibroids). Historically, rapidly enlarging fibroids were thought to be a strong predictor of sarcoma, however this is not supported by current literature. However, fibroid growth is dependent on oestrogen, so uterine or fibroid enlargement in post-menopausal women should warrant concern. The reported age range at LMS diagnosis varies between 22 and 89 years, with a median of between 45 and 64 years. Risk factors include: nulliparity, obesity, increasing age, tamoxifen use, and a history of pelvic radiation. There is an association with oestrogen excess, although this appears to be a weaker link compared with endometrial carcinoma.

Unfortunately LMS is often diagnosed post-operatively. In a study of 106 women with LMS, 35% were diagnosed following myomectomy or hysterectomy for a presumed diagnosis of benign leiomyomas. Fibroids don't appear to develop into LMS, but can co-exist within a fibroid. The current NICE guidelines for heavy menstrual bleeding recommend non-surgical management of fibroids as first line (including the Mirena intrauterine system, progestogens, GnRH analogues and uterine artery embolization). Increasing adoption of conservative techniques in fibroid management may lead to a delayed diagnosis of LMS, which, in turn, may affect long-term prognosis.

The use of morcellation to facilitate laparoscopic myomectomies and hysterectomies has resulted in significantly worse prognosis in those diagnosed with occult uterine sarcoma. Histological diagnosis is less accurate at morcellation and histological staging impossible. More significantly, there are major concerns regarding the seeding of cancer throughout the peritoneal cavity. In a paper by Liu et al., three retrospective cohort studies were reviewed that looked at the frequency of disseminated disease after morcellation for occult sarcoma. Of the 31 patients who underwent re-exploratory surgery shortly after receiving a presumed diagnosis of stage 1 sarcoma, 9 patients had disseminated disease. To mitigate this concern, two novel strategies have been developed to prevent tissue spillage and thus potential seeding of occult cancer with morcellation. The first is extracorporeal morcellation of the specimen within an endoscopic bag introduced either trans-vaginally or abdominally. The second is a contained power morcellator which has until recently only been used in vitro studies.

Currently, histological examination remains the only way to confirm the diagnosis of uterine sarcomas. As in this case,