CASE REPORT

Rare gynaecological emergency: massive intraperitoneal haemorrhage from spontaneous rupture of a superficial vessel on a large leiomyoma

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SUMMARY

Uterine leiomyomas rarely present as gynaecological emergencies. We report a case of a 29-year-old nulliparous woman, with a negative pregnancy test, who presented with collapse and an admission haemoglobin count of 68 g/L. Urgent CT of the abdomen revealed a 14×19×10 cm uterine fibroid and intraperitoneal free fluid. Emergency laparotomy confirmed massive intraperitoneal haemorrhage from a large serosal vessel on top of a 19 cm subserosal fibroid. A myomectomy was performed, preserving this patient's fertility. Histopathology confirmed a benign leiomyoma with hydropic changes.

DIFFERENTIAL DIAGNOSIS

The differential diagnoses to consider in a non-pregnant woman with haemodynamic instability, and presenting with abdominal pain and vaginal bleeding, are:

- ▶ Ruptured corpus luteum;
- ▶ Ruptured haemorrhagic cyst;
- ▶ Bleeding into an adnexal cyst;
- ▶ Adnexal torsion;
- ▶ Ovarian tumours.

Intraperitoneal haemorrhage from a leiomyoma is rare; but it has been reported as a complication of fibroids. It should be considered in the differential diagnosis, particularly in a patient with a known fibroid uterus.¹

BACKGROUND

The most common diagnosis for haemoperitoneum in a woman of reproductive age is ruptured ectopic pregnancy. The diagnosis is more difficult with a negative pregnancy test. We report a case of a rare gynaecological cause of hypovolaemic shock, caused by massive intraperitoneal haemorrhage secondary to a ruptured serosal vessel of a large uterine leiomyoma.

CASE PRESENTATION

A 29-year-old nulliparous Afro-Caribbean woman, with a body mass index of 39, presented to the emergency department in hypovolaemic shock. Following resuscitation, she gave a history of abdominal pain on a background of 8 weeks of continuous vaginal bleeding. Her urinary pregnancy test was negative. Clinical examination revealed a tender, peritonitic abdomen and a bulky uterus. The patient had a 3-year history of primary infertility, for which ultrasound imaging had been performed 18 months prior to presentation. This had shown a bulky uterus with an anteroposterior diameter of 5.3 cm, and a large fibroid adjacent to the uterus, measuring 6.7×5.3 cm.

INVESTIGATIONS

The patient's admission haemoglobin was 68 g/L. An urgent CT of the abdomen/pelvis revealed a 14.6×19×10.8 cm well-circumscribed pelvic mass of mixed attenuation, which was not separate from the uterus. The appearance was suggestive of a large uterine fibroid. Free fluid was also noted in the abdomen. No other abnormality was identified.

TREATMENT

Emergency laparotomy revealed an approximately 2 L haemoperitoneum, secondary to a spontaneously ruptured large vessel, running on top of a 19 cm subserosal uterine fibroid. The vessel was clamped to arrest the bleeding. As the leiomyoma had a relatively narrow pedicle, a myomectomy was performed, thus allowing conservation of the uterus in this nulliparous patient. The patient required a transfusion of 4 units of packed red cells. She made an uneventful postoperative recovery.

OUTCOME AND FOLLOW-UP

Histological examination of the fibroid mass confirmed hydropic changes of a benign leiomyoma with no malignant features. Cytology of the peritoneal washings did not identify malignant cells. The patient was reviewed in the outpatient gynaecology clinic 4 weeks after discharge. She was recovering well and the midline laparotomy wound had healed. She was thus discharged back to primary care.

DISCUSSION

Uterine leiomyomas are the most common benign tumours in women.² True incidence is difficult to determine as most studies are based on women who are symptomatic and, subsequently, seek medical attention.³ In one study, incidence of up to 80% was reported, based on ultrasound screening of a randomly selected sample, with a higher incidence in Afro-Caribbean compared to Caucasian women.⁴

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Risk factors for fibroids include Asian and Afro-Caribbean ethnicity, nulliparity, obesity and a positive family history of fibroids.^{2,5} Small fibroids are often asymptomatic and diagnosed incidentally on ultrasound.⁵ When symptomatic, they can cause heavy menstrual bleeding or pressure symptoms.⁵ Our patient was a nulliparous, obese, Afro-Caribbean woman of childbearing age, whose fibroid was found incidentally during investigations for primary infertility. At that time she was asymptomatic for fibroids.

Intraperitoneal haemorrhage associated with a bleeding vessel from a subserosal leiomyoma is a rare and life-threatening complication of uterine fibroids, with <30 cases being reported between 1950 and 2013.⁶ Many of these cases report bleeding secondary to trauma or torsion of the fibroid. Spontaneous rupture of a superficial vessel is extremely rare.^{7,8} In these instances, bleeding is more commonly venous in origin, causing hypovolaemic shock, similar to our case.¹ Spontaneous rupture of a superficial artery overlying a fibroid is even more uncommon.¹ Several theories have been presented for the pathophysiology of spontaneous rupture of these vessels. Horowitz *et al*⁹ suggest that fibroids larger than 10 cm can overstretch the superficial vessels, resulting in their rupture. It has also been suggested that, when leiomyomas grow, they split the feeding vessels between the uterine masses, thus precipitating rupture.⁹ In our case it is worth noting the rapid growth of our patient's fibroid over 18 months. From the initial ultrasound, to investigate her infertility, to the CT scan at the time of presentation with hypovolaemic shock, the fibroid had more than doubled in size. It has also been postulated that increased intra-abdominal pressure can cause passive venous congestion and subsequent rupture of superficial vessels overlying the fibroid.^{1,6} Such causes include menstruation, pregnancy, straining during defaecation, strenuous exercise, weight-bearing activity, abdominal massage and violent coitus.^{6,10} In our patient, no such triggering features were identified, suggesting that the rupture was a rare spontaneous event.

As leiomyomas enlarge and outgrow their blood supply, they undergo degenerative changes, of which there are several forms.^{11,12} These include hyaline, cystic, myxoid and red degeneration.¹¹ Histopathological examination in this case confirmed a benign leiomyoma with hydropic changes. Hydropic degeneration is uncommon. It involves fluid accumulation in the connective tissue of the fibroid, causing oedema.^{13,14} We hypothesise that fluid accumulation associated with hydropic degeneration caused the fibroid to grow rapidly, stretching the overlying superficial vessels and predisposing to rupture.

Similar to this case, most cases described in the literature were managed with emergency laparotomy and myomectomy, allowing conservation of the uterus. However, there is a risk of life-saving hysterectomy. Akahira *et al*¹⁵ reported a case of a 44-year-old multiparous woman, with haemoperitoneum due to a ruptured artery on a uterine leiomyoma, who underwent total abdominal hysterectomy. When the patient is nulliparous, there is additional pressure to conserve the uterus. Fontarensky *et al*⁶ recently reported two cases in which women with hypovolaemic shock, secondary to intraperitoneal haemorrhage from uterine leiomyomas, underwent emergency uterine artery embolisation (UAE) for stabilisation prior to scheduled surgery for definitive management. Where available, such minimally invasive management to stabilise the patient could facilitate a safer myomectomy and thus preserve the uterus in a woman of childbearing age.

However, information on the long-term effect of UAE on pregnancy is currently limited.⁵ This form of management is also dependent on availability of expertise and resources.

Learning points

- ▶ Intraperitoneal haemorrhage from spontaneous rupture of a superficial vessel on a leiomyoma is a rare, life-threatening complication of uterine fibroids.
- ▶ Differential diagnoses for hypovolaemic shock in a woman of childbearing age with abdominal pain, vaginal bleeding and a negative pregnancy test include ruptured corpus luteum, ruptured haemorrhagic cyst, adnexal torsion and ovarian tumours.
- ▶ Emergency laparotomy is generally required in cases of intraperitoneal haemorrhage secondary to leiomyomas. However, there is the potential of uterine artery embolisation to stabilise the patient prior to surgery.

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Competing interests None declared.

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