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Haemoperitoneum secondary to rupture of a superficial vein on a subserosal uterine fibroid: a case report

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Uterine leiomyomata are the most common pelvic tumours in women. Haemoperitoneum caused by bleeding from uterine leiomyomata is extremely rare and requires prompt diagnosis and surgical management. We report a case of massive haemoperitoneum in a 47-year-old woman who presented with abdominal pain and shock in the accident and emergency department. Contrast computed tomography showed a large (14 cm) subserosal fibroid, but there was no obvious cause for the haemoperitoneum. Emergency laparotomy was performed; the bleeding was due to spontaneous rupture of a superficial vein on the large fibroid and thus total hysterectomy was performed. Despite its rarity, bleeding from fibroid vessels should be included in the differential diagnosis for women presenting with a large fibroid and haemoperitoneum without obvious cause.

Introduction

Uterine leiomyomata, commonly known as fibroids, are benign smooth muscle neoplasms of the uterus. They are commonly found in women of reproductive age, and the incidence varies among different studies and ethnicities[1]. The life-time incidence of uterine fibroids in women can be as high as 70%[2]. Up to 70% of uterine fibroids are asymptomatic, but symptomatic fibroids can manifest with bulk or pressure symptoms, abnormal uterine bleeding, dysmenorrhea, bladder or bowel symptoms, and can be associated with infertility[1]. Haemoperitoneum associated with uterine fibroid is extremely rare and difficult to diagnose preoperatively[3,4]. We report a case of haemoperitoneum secondary to venous bleeding from superficial blood vessels overlying a large subserosal fibroid.

Case presentation

In November 2022, a 47-year-old Indonesian woman, parity 2, presented to the accident and emergency department with sudden onset of severe abdominal pain. She had no history of trauma, exercise, or coitus prior to the onset of the abdominal pain. The pain was initially on the right side and then progressed to generalised abdominal pain. She had been sexually inactive for 2 years, and her last menstrual period was around 2 weeks before admission. She had regular monthly menstrual cycles with normal menstrual flow lasting around 5 days. Since the previous 6 to 8 months, she had gradual abdominal distension and attributed it to gain in body weight. Upon admission, her blood pressure was 69/44 mmHg and her heart rate was >100 beats per minute. She was afebrile with a respiratory rate of 16 per minute. Physical examination revealed generalised tenderness over the abdomen with guarding and a 22-week gravid size firm pelvic mass. The urine pregnancy test was negative. Her haemoglobin level was 10.5 g/dL on admission. After fluid resuscitation, her blood pressure was 122/60 mmHg and her heart rate was 89 beats per minute. Contrast computed tomography (CT) of the abdomen and pelvis performed in the accident and emergency department showed haemoperitoneum with a 14-cm fibroid closely abutting the anterior wall of uterus, and a 1.6 cm left corpus luteal cyst. The patient was then transferred to the gynaecological ward for further investigation.

Pelvic ultrasound confirmed a large anterior subserosal fibroid measuring around 14 cm with moderate amount of free fluid in bilateral paracolic gutters, and the 1.6 cm left corpus luteal cyst. The provisional diagnosis was a ruptured corpus luteal cyst. As the patient complained of persistent abdominal pain and her haemoglobin level dropped to 8.9 g/dL 2 hours after admission, an exploratory laparotomy was performed and haemoperitoneum of 1650 mL blood was found. The left corpus luteal cyst showed no signs of rupture or bleeding, and the right ovary was normal. The uterus was enlarged with a 14-cm

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subserosal fibroid in the anterior fundal uterine wall. Both the anterior and posterior surface of the fibroid was covered by multiple large tortuous vessels (Figure 1). There was a small break point on one of the veins over the surface of the fibroid suspected to be the source of acute bleeding (Figure 2). Other causes of haemoperitoneum were ruled out by surgeons intraoperatively. Total abdominal hysterectomy and bilateral salpingectomy was performed

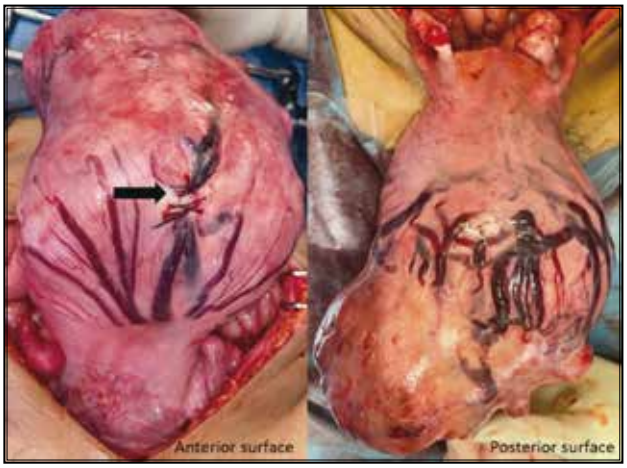

Figure 1. The anterior and posterior surface of the subserosal fibroid is covered by multiple large tortuous vessels. Haemostatic stitches (arrow) are applied on bleeding vessels during manipulation of the fibroid.

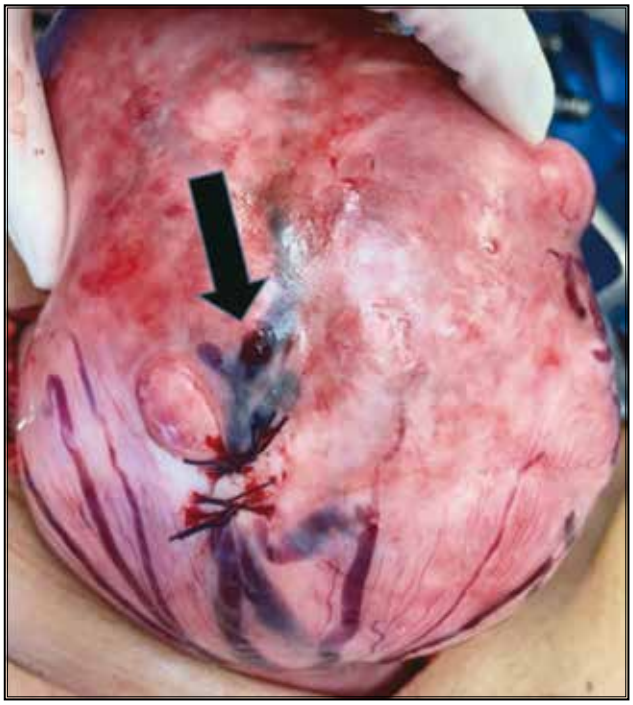

Figure 2. The source of acute bleeding is suspected to be the small break point (arrow) on a vein over the surface of the fibroid.

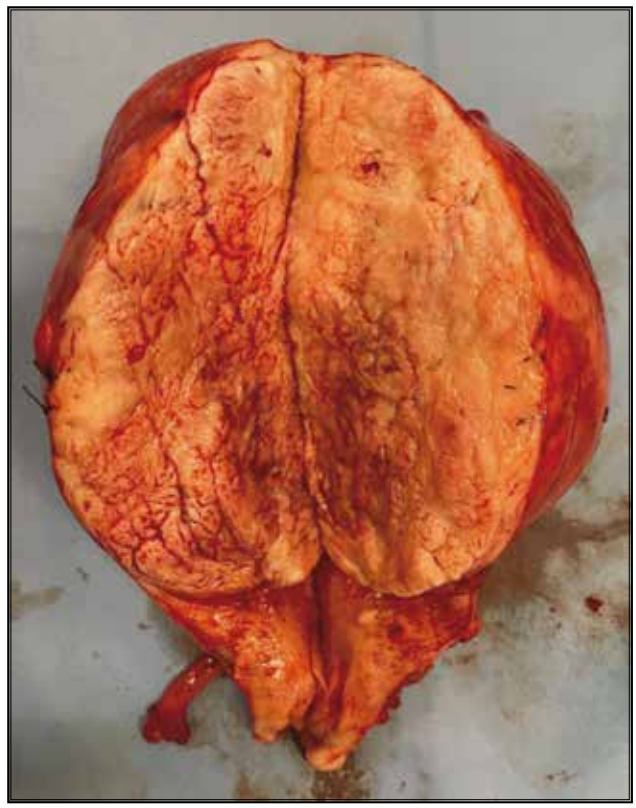

Figure 3. The uterus is cut open after hysterectomy showing the 14-cm fundal subserosal fibroid.

(Figure 3). The total amount of blood loss was 2100 mL and one unit of packed cell was transfused intraoperatively. The postoperative course was uneventful. Histopathology examination of the uterus and appendages confirmed the presence of a large benign uterine leiomyoma.

Discussion

In our patent, surgical cause for haemoperitoneum such as perforated peptic ulcer was ruled out by contrast CT of the abdomen performed in the accident and emergency department. The most common gynaecological causes for haemoperitoneum include ruptured ectopic pregnancy or ruptured corpus luteal cysts[5]. Ruptured ectopic pregnancy was also ruled out, as the patient was sexually inactive for >2 years and her pregnancy test result was negative. The most likely cause was ruptured corpus luteal cyst. However, intra-operatively, there was no evidence of bleeding from the left corpus luteal cyst, and the contralateral right ovary was normal with no evidence of ovarian cysts. The only positive finding was a very small venous rupture on one of the superficial blood vessels on the subserosal surface of the uterine fibroid.

Haemoperitoneum resulting from uterine fibroids

is extremely rare. Around 100 cases of haemoperitoneum caused by fibroids have been reported in the literature. Most were due to rupture of a degenerated fibroid or torsion of the fibroid leading to haemoperitoneum. Around 30 cases were resulted from rupture of a superficial vessel on the fibroid[6]. Haemoperitoneum caused by rupture of superficial vessels of fibroid can be spontaneous or traumatic and can occur secondary to rupture of a subserosal vein or superficial dilated vein and rarely as a result of rupture of an arterial aneurysm or arterial vessel arising from the uterine arteries[7]. Although most cases are due to venous rather than arterial rupture, a small venous rupture can still result in a tremendous amount of intra-abdominal bleeding as in our patient[6,8,9].

The size of fibroids complicated with haemoperitoneum varies from 4 cm to 16.3 cm[4]. Fibroids >10 cm are at higher risks for surface vein rupture[6]. Our patient had a large subserosal fibroid measuring 14 cm. The mechanism that precipitates the rupture of the vessels is unclear. In around half of patients, contributing causes leading to increased abdominal pressure and venous congestion include intense physical activity, trauma, defecation, violent coitus, pregnancy, and uterine contractions during menstruation[3,4]. Our patient denied any physical trauma, exercise, or coitus before onset of symptoms, nor was she menstruating at that time. We hypothesise that the rapid increase in size of the fibroid overgrew the extent of surface vascularisation and led to rupture of some surface vasculature[3]. This is supported by gradual abdominal distension in previous 6 to 8 months.

Preoperative diagnosis of rupture of the superficial vessels on the fibroids is difficult. Most cases are unexplained haemoperitoneum and necessitate exploratory laparotomy. In only one case, the diagnosis can be made preoperatively after visualisation of extravasation from dilated vessels on the fibroid in contrast CT scan of the abdomen[4]. In our patient, only portal venous phase images were taken and hence extravasation could not be identified. Arterial phase CT is not routinely performed even in trauma patients, unless the attending physician specifically orders it to investigate extravasation from bleeding vessels, as arterial phase requires higher radiation doses and slightly more time to perform[10]. Therefore, dual-phase CT (combined arterial and portal venous CT) should be ordered for patients with a large uterine fibroid presenting with unexplained haemoperitoneum when patients are haemodynamically stable to undergo CT of the abdomen and pelvis.

High suspicion of bleeding from uterine fibroids is crucial in making diagnosis preoperatively so that preoperative counselling for possible surgical procedures can be provided. Myomectomy is the preferred management for young patients with future fertility wish, whereas hysterectomy is the preferred management for post-menopausal women. However, myomectomy may not be feasible and depends on the number and site of the fibroids. Hysterectomy may be required if haemostasis is not achieved. Bleeding from fibroid vessels should be suspected in women presenting with a large fibroid and haemoperitoneum without other obvious cause. Dual-phase CT (rather than routine portal venous phase CT) should be performed. Possible surgical procedures including myomectomy and hysterectomy should be counselled to patients before operation.

Contributors

All authors designed the study, acquired the data, analysed the data, drafted the manuscript, and critically revised the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

As an editor of the journal, CW Kong was not involved in the peer review process of this article. All other authors have disclosed no conflicts of interest.

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Data availability

All data generated or analysed during the present study are available from the corresponding author on reasonable request.

Ethics approval

The patient was treated in accordance with the tenets of the Declaration of Helsinki. The patient provided written informed consent for all treatments and procedures and for publication.

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