CASE REPORT

A colorectal carcinoma imitating a primary ovarian carcinoma in a postpartum woman

Rohit Aiyer, Kieran Sweetman, Peter Larsen-Disney, Andrew Fish

Department of Obstetrics & Gynaecology, Royal Sussex County Hospital, East Sussex, Brighton, UK

Correspondence to

Dr Rohit Aiyer,
rohitaiyer@gmail.com

SUMMARY

This is a case report of a 33-year-old woman who presented 5 days post-partum with abdominal distension, abdominal discomfort, increased bladder pressure and fatigue. These symptoms prompted a pelvic ultrasound and CT scan of the chest, abdomen and pelvis which showed a large 20 cm left-sided adnexal mass. Following this imaging, blood tests revealed elevated tumour markers CA-125 and lactate dehydrogenase, resulting in referral to and surgical intervention by the gynaecology oncology team. Pathology and immunohistochemistry indicated that the tumour was a metastasis from the colon, that prompted for colonoscopy which confirmed that the carcinoma was a metastases from the sigmoid.

BACKGROUND

This case is important because it is a rare clinical presentation of primary sigmoid colon cancer in the early postpartum period, with an ovarian swelling and abdominal distension as a consequence of gross metastatic disease in the ovary and associated ascites. Literature also indicates that metastases to the ovary is usually bilateral, of smaller size and usually in older women (over 50 years of age) when compared to primary ovarian carcinomas. This particular case of ovarian metastases is unilateral, is of relatively larger size (20 cm) and occurred in a 33-year-old woman who was 5 days post partum. It is also important because it gives evidence for the importance of thorough history taking and examination in order to properly act on any suspicion of a malignancy at an early stage.

Consequently, this case illustrates the importance of recognising a rare presentation of ovarian metastases from a primary colorectal cancer.

CASE PRESENTATION

A 33-year-old woman had a spontaneous vaginal delivery of her first child with no complications. During the pregnancy, she described no symptoms or signs suggestive of colorectal or ovarian cancer. Within 5 days of the birth the patient complained of increased abdominal distension, bladder pressure and abdominal discomfort.

The patient was initially reviewed by her general practitioner (GP), who arranged for a pelvic ultrasound which showed a mass in the mid abdomen region measuring 261×202×289 mm. After referral to the local gynaecology team, an abdominal/pelvis CT scan with contrast was organised (figure 1). The CT scan showed a large mass that filled the left side

Figure 1 Abdominal CT scan giving clear evidence of the left-sided ovarian mass 5 days postpartum.

of the abdomen and displaced the small bowel and the mesentery to the right side, as well as ascites filling the left side of the abdomen. In the axial plane, the mass measured approximately 29×23 cm and 20 cm in diameter.

Following the CT scan the case was discussed at the regional cancer multidisciplinary team meeting which is attended by medical oncologists, radiologists, gynaecologist oncologists and pathologists where tumour markers were ordered, the results of which are shown below,

- ▶ CA-125—723 kU/L
- ▶ CEA—19 µg/L
- ▶ α-FP—24 kU/L
- ▶ B-HCG—30 kU/L
- ▶ LDH—1800 kU/L
- ▶ CA-15-3—54 kU/L

The patient was feeling clinically quite unwell at this point, with a large abdomen, fatigue and experienced a lot of discomfort. She was transferred to the gynaecology oncology team after reviewing the investigations, where she initially had paracentesis to relieve the ascites. After further discussion at the multidisciplinary team meeting, it was decided to perform a laparotomy and staging procedure and then proceeded to a left salpingo-oophorectomy and infracolic-omentectomy.

The findings at the operation were of a necrotic tumour arising from the left ovary. There were 6 L of ascites within the peritoneal cavity. There was inflammatory reactive exudate on small bowel

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surfaces and the Pouch of Douglas. The tumour itself was a mixture of cystic and solid elements and looked necrotic. Through an extended midline incision the abdomen and pelvis were explored and the left-sided adnexal mass was resected. The omentum also had macroscopic nodules of tumour and these were also resected. There was evidence of exudate affecting small bowel surfaces and the sigmoid colon, but after careful dissection there was no evidence of residual disease at the end of the operation. Following the surgery, the patient was electively transferred to the high-dependency unit for 24 h following a blood transfusion of 2 units before being moved up to the gynaecology ward where she was discharged home 5 days later.

The pathology reported an ovarian mass that measured 250×200×170 mm and weighed over 4200 g. The tumour contained a large amount of mucinous and necrotic material, with cystic areas separated by thin fibrous and haemorrhagic septae.

The microscopic assessment was of invasive mucinous cystadenocarcinoma (of intestinal-type), showing an abundance of intraglandular mucin, with stromal extravasation and areas of necrosis, replacing the ovary and extensively present at the surface.

From a pathological point of view, the mass was initially diagnosed as a large left-sided unilateral primary ovarian mucinous cystadenocarcinoma. However, the immunohistochemistry report showed that the tumour cells were positive for CD20, CDX2 and CEA and to be negative for CK7, indicating the tumour to be a metastasis from the colon. The patient was informed of the results, and care was then transferred to the gastroenterology and oncology team. A colonoscopy was performed which showed the presence of a malignant mass in the sigmoid colon at 35 cm from the anus (figure 2). These results confirmed that the primary tumour was a sigmoid colon cancer which metastasised to the left ovary.

INVESTIGATIONS

- ▶ Pelvic ultrasound
- ▶ CT of the chest/abdomen/pelvis
- ▶ Pathology of specimens
- ▶ Immunohistochemistry
- ▶ Colonoscopy

DIFFERENTIAL DIAGNOSIS

- ▶ Primary ovarian carcinoma
- ▶ Primary gastric carcinoma
- ▶ Peritoneal carcinoma

Figure 2 Colonoscopy image showing sigmoid tumour 35 cm from anus.

TREATMENT

Laparotomy left salpingo-oophorectomy and infracolic omentectomy.

OUTCOME AND FOLLOW-UP

After the colonoscopy results, the patient was followed up with medical oncology and is currently having cycles of irinotecan and modified de gramont chemotherapy for the sigmoid tumour. Tumour markers, CEA and CA-125 postoperatively and during the second cycle of chemotherapy were 3.4 and 5.2, respectively. As of submission of this publication, the patient has had four cycles of chemotherapy and will soon be starting her fifth cycle. It was decided by the multidisciplinary team that the patient is not an appropriate candidate for further surgical intervention.

DISCUSSION

Colorectal cancer in pregnancy is very rare and the incidence is reported in 0.002% of all pregnancies.¹ There is evidence that ovarian metastases occur in 3–8% of women with primary colon cancer, with their prevalence at the time of diagnosis being 1.1%.²

The incidence of primary mucinous adenocarcinoma is low and is characterised by a large unilateral ovarian mass with a smooth external surface.³ Metastatic mucinous adenocarcinoma is more likely to be bilateral and shows a multinodular external surface. The most important and helpful finding to differentiate metastatic cancers from primary cancers is knowledge of the clinical history of a primary malignancy.³

Age is a factor in ovarian cancer metastases. One study in the *American Journal of Surgical Pathology* reviewed 35 cases of metastatic pancreaticobiliary tract adenocarcinomas that metastasised to the ovaries. The mean patient age was 58 years (median 59 years; range 33–78 years).⁴ Another study also investigated ovarian tumours, primary and metastases. The average age of patients with primary ovarian cancer was 54.50 ± 12.5 years (range 16–79 years), while those with metastatic cancer were comparatively older, 59.17 ± 8.97 (range 37–75 years).⁵ Furthermore, another study looked at the ages of ovarian tumours metastasising specifically from colorectal cancer (6 cases) had an average age of 64 years.⁶

Size of the tumour is another important characteristic of ovarian tumours, with metastatic mucinous adenocarcinomas usually being of smaller size compared to primary tumours. A study in the *Journal of Korean Medical Sciences* reviewed 91 metastatic and 19 primary mucinous adenocarcinomas. The primary mucinous adenocarcinomas had a mean size of 18.2 cm (range 11–30) and metastatic mucinous adenocarcinomas had a much smaller mean size of 10.3 cm (range 1.8–22).³

There is literature evidence of the rarity of an initial manifestation of a metastatic ovarian cancer in a primary colorectal cancer. One study in the *American Journal of Clinical Pathology* reviewed 23 ovarian cancer metastases from a primary large bowel carcinoma. In 16 of the 23 cases, the ovarian tumour and the large bowel carcinoma were discovered synchronously, 5 cases of ovarian metastases were metachronous and there was only 1 case where ovarian metastasis represented the first manifestation of the disease, like this particular case report.⁶ In the previously mentioned study in the *American Journal of Clinical Pathology*, only 2 of the 35 cases of the metastatic cases manifested initially as an ovarian tumour, again illustrating the rarity of this case presentation.⁷

In pregnant women, the reported frequency of adnexal masses is 1 in 81 to 1 in 2500 live-births. Statistically, only 2–5% of ovarian adnexal neoplasms removed during pregnancy are considered malignant, with ovarian carcinoma occurring in about 1 in 21 500 pregnancies.⁷ It should also be noted that ovarian cancer is the second (after cervical cancer) most frequent gynecological cancer complicating pregnancy. Despite the overall incidence of ovarian cancer being very low, pelvic ultrasound scanning in pregnancy has led to more frequent findings of adnexal masses, making diagnosis and management more of an issue in recent years.⁸

One study analysed 23 patients over a 15-year period that had metastatic ovarian cancer from a primary colon cancer. Symptomatically, the study showed that 14 (61%) of patients initially presented with pain, 4 (17%) presented with rectal bleeding and 5 (22%) presented with uterine bleeding. This retrospective study also reviewed the survival of these patients, as only 1 survived 5 years, with the median survival time being 17.8 months and the range being 1–86 months.⁹

A study published in gynaecology oncology earlier also looked into metastatic ovarian tumours that originated from distant organs had a poorer prognosis than patients with ovarian tumours treated later (1.60 vs 3.17 years). Evidently, patients with distant metastases clearly have a lower survival rate to patients without distant metastases.¹⁰

From a histopathology point of view, there are studies that looked into distinguishing between primary ovary carcinoma from ovary cancer that has metastasised from the colon. Metastatic tumours primarily contain prominent garland and cribriform structures with intraluminal dirty necrosis along with aggregates of glands. However, primary ovarian cancers did not always have dirty necrosis, and usually presented as quite focal and of mild extent.⁷

Radiologically, CT findings are useful for the differentiation of ovarian metastasis from stomach cancer and from colon cancer. Observing mass characteristics, laterality, enhancement pattern of the solid portion and size are valuable parameters for differentiating ovarian metastasis from stomach cancer and from colon cancer. One study specifically showed that 69.2% of ovarian metastatic lesions from stomach cancer were mainly solid or solid in appearance on CT scans, whereas only 9.7% of ovarian metastatic lesions from colon cancer displayed this type of appearance.¹¹

It should be noted that Krukenberg tumours is a term used to describe all metastatic tumours of the ovary or to describe metastatic tumours from the gastrointestinal tract. The tumours are composed of signet ring cells embedded within a hypercellular ovarian stroma that mimics sarcoma and often obscures the signet ring cells.¹¹ Ovarian tumours with signet-ring-containing mucins include primary mucinous carcinomas and mucinous carcinoid tumours.¹² Statistically, Krukenberg tumour is uncommon, representing 1% to 2% of all ovarian tumours. Stomach is the primary site in most Krukenberg tumour cases (70%). After the stomach, cancers of the colon, appendix and breast are the next most common primary sites.¹³

In summary, our patient not only had a rare clinical presentation of a primary colorectal cancer, as it manifested initially as an ovarian cancer, but the ovarian tumour metastases also very uncommonly occurred in a young woman, unilaterally and was of a relatively large size at 20 cm.

Learning points

- ▶ While rare, presentation of primary colorectal cancer can present clinically like a primary ovarian cancer.
- ▶ Ovarian metastases is normally bilateral.
- ▶ Ovarian tumour metastases are usually of small size relatively.
- ▶ Metastatic ovarian cancer tends to occur in older aged women.
- ▶ Thorough history taking and physical examination to rule out a clinical mass is critical, particularly in a pregnant lady.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Chang Y, Ishida T, Nakai Y, *et al.* A case report of sigmoid colon cancer. *Kawasaki Med J* 2010;36:209–12.
- 2 Ongom P, Odida M, Lukande R, *et al.* Metastatic colorectal carcinoma mimicking primary ovarian carcinoma presenting as 'giant' ovarian tumors in an individual with probable Lynch syndrome: a case report. *J Med Case Rep* 2013;7:158.
- 3 Jung E, Bae J, Lee A, *et al.* Mucinous adenocarcinoma involving the ovary: comparative evaluation of the classification algorithms using tumor size and laterality. *J Korean Med Sci* 2010;25:220–5.
- 4 Meriden Z, Yemelyanova A, Vang R, *et al.* Ovarian metastases of pancreaticobiliary tract adenocarcinomas: analysis of 35 cases, with emphasis on the ability of metastases to simulate primary ovarian mucinous tumors. *Am J Surg Pathol* 2011;35:276–88.
- 5 Stanojevic Z, Djordjevic B, Dunjic O. Metastatic tumors of the ovary: the rate of incidence and the most frequent sites of primary tumors. *Acta Medica Medianae* 2007;46:5–9.
- 6 Yamanisha Y, Koshiyama M, Ohnaka M, *et al.* Pathways of metastases from primary organs to the ovaries. *Obstet Gynecol Int* 2011;2011:1–6.
- 7 Dionigi A, Facco C, Tibiletti M, *et al.* Ovarian metastases from colorectal carcinoma clinicopathologic profile, immunophenotype, and karyotype analysis. *Am J Clin Pathol* 2000;114:111–22.
- 8 Barut A, Arkan I, Harma M, *et al.* Ovarian cancer during pregnancy. *J Pak Med Assoc* 2011;8:8.
- 9 Behtash N, Zarchi M, Gilani M, *et al.* *BMC Pregnancy Childbirth* 2008;8:3.
- 10 Miller B, Pittman B, Wan J, *et al.* Colon cancer with metastasis to the ovary at time of initial diagnosis. *Gynaecol Oncol* 1997;66:368–71.
- 11 Choi HJ, Lee JH, Kang S, *et al.* Contrast-enhanced CT for differentiation of ovarian metastasis from gastrointestinal tract cancer: stomach cancer versus colon cancer. *Am J Roentgenol* 2006;187:741–5.
- 12 Fazzari C, Fedele F, Pizzi G, *et al.* Krukenberg tumour of the ovary: a case report with light microscopy, immunohistochemistry and Electron Microscopy Study. *Anticancer Res* 2008;28:1417–20.
- 13 Osama M, Al-Agha, Anthony D. Nicastri. An in-depth look at Krukenberg tumor: an overview. *Arch Pathol Lab Med* 2006;130:1725–30.

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