Krukenberg's tumour

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ABSTRACT

Background: *Krukenburg's tumour, a metastatic cancer to the ovary can pose difficulties in early diagnosis. The paucity of reports from our environment coupled with the difficulties we encountered makes it imperative that we report this case.*

Methods: *We present a 32 year old lady who presented with mucoid and bloody diarrhoea associated with menstrual irregularity, weight loss and lower abdominal pains 2 years after surgical treatment for gastric cancer. Literature on Krukenburg's tumour was also reviewed.*

Results: *While serum level of CEA was found to be elevated and colonoscopy showed an ulcerated mass obliterating the lumen of the sigmoid colon, abdominal CT scan revealed bilateral adnexal masses. The histology of the colonic lesion showed signet ring carcinoma while the enlarged ovaries turned out to have evidence of metastatic adenocarcinoma.*

Conclusion: *Early diagnosis of KT can be difficult. Periodic surveillance is, therefore, essential especially in those who have had a gastrointestinal malignancy.*

Key words: *Krukenburg's tumour; stomach cancer; ovarian tumours.*

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Introduction

Metastatic tumour to the ovary is common and may be found in about 30% of women dying of cancer.[1] This tumour, which is termed Krukenberg's tumour (KT), is bilateral in 80% of cases, and is almost always secondary to a gastric carcinoma but occasionally arises in the colon, appendix, breast or other sites.[2]

Diagnosis of a digestive primary, frequently precedes the diagnosis of Krukenberg's tumour, but in some cases may be detected at the same time as the gastrointestinal primary.[1] Clinically, they may mimic a primary ovarian malignancy and present with pelvic masses, ascites or vaginal bleeding. Invasion of adjacent organs may however lead to atypical presentation which may present several years after diagnosis of an extra ovarian primary.

In the present report, the patient presented with mucoid and bloody diarrhoea and bilateral adrexal masses, two years after treatment for gastric carcinoma. Details of clinical presentation, investigations, treatment and a review of literature are presented.

Case Report

We present a 32 year old housewife (Para 5 + 0, all alive) who presented with a month's history of bloody and mucoid diarrhoea. There was associated tenesmus, poorly characterised lower abdominal pain and weight loss of 11kg. She had taken various antibiotics and anti-diarrhoeal agents without relief. Her menstrual cycle had been irregular in the last 3 months. Prior to this period she had no gynaecologic symptoms. Review of systems was not contributory.

Two years previously, she had partial gastrectomy with gastrojejunostomy, splenectomy and regional lymphatic clearance because of intramucosal gastric adenocarcinoma. After the surgery, she remained symptom free until the time when the diarrhoea commenced. Her family history was unremarkable.

On examination, she was pale and wasted. Her pulse was 104/minute and BP was 100/60mmHg. Abdominal examination revealed moderate tenderness in the lower regions, no masses were felt. Digital rectal examination was normal. Vaginal examination demonstrated bilateral adnexal fullness and tenderness. Other systemic examinations were unremarkable.

The results of complete blood count showed a PCV of 29%, while other laboratory parameters, including levels of serum electrolytes, and tests of liver and renal functions, were normal except for a low serum potassium level. Carcino Embryonic Antigen (CEA) was found to be elevated, (10.70 ng/ml). The reference value is up to 2.50 ng/ml. Her stool sample did not show any ova or cyst of parasites, culture was also negative. Abdominal ultrasound scan was normal.

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Colonoscopy revealed an ulcerated mass obliterating the lumen of the sigmoid colon, about 10 cm from the anal verge.

Upper gastrointestinal endoscopy revealed evidence of gastro-jejunostomy with oedematous ulcer on the lesser curvature. Computerized axial tomographic (CAT) scan of the abdomen which showed bilateral adnexal masses (13.8 X 10 cm and 9.3 X 8 cm on the left and right respectively). They had a lobulated outline with cystic and solid areas. Other organs were normal in size and appearance.

At this point, the diagnoses of gastric ulcer, colonic cancer with possible ovarian metastases were entertained. She was prepared and had exploratory laparotomy. She had intravenous fluids (IVF) for rehydration and correction of hypokalaemia before going for the surgery.

During the operation, she was found to have a recto-sigmoid mass obstructing the lumen, and enlarged irregular ovaries. The recto-sigmoid mass was resected, had excisional biopsies of both ovaries and biopsy was taken at the site of previous gastrojejunostomy. She had a palliative colostomy and was planned for a second stage surgery. The histopathologic report of the biopsy specimen is as follows:

1. Recto-sigmoid mass, low anterior resection with donuts: Signet ring carcinoma infiltrating the mucosa, muscle layer and serosa. There is a positive lymph node metastasis (14/20) with capsular invasion and perinodal infiltrates. Modified Duke's stage C2. Surgical margins are free.

2. Gastrojejunostomy site: Diffuse signet ring carcinoma of the stomach infiltrating the submucosa, muscle layer, serosa and the perigastric fat and adherent to the outer wall of the transverse colon. There is positive lymph node metastasis (8/13). The surgical margins are free.

3. Right and left ovarian masses: Metastatic adenocarcinoma (Krukenberg's Tumor), Figs 1 and 2.

   The final diagnosis therefore was KT. She received post operative care with antibiotics, analgesics, IVF and blood transfusion. She was planned to have chemotherapy, but before she could be fit for it, she died. She did not also survive to have the second stage surgery.

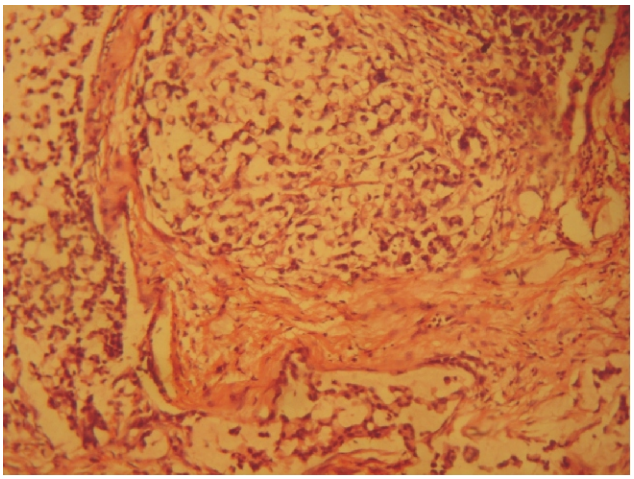

Fig 1. Metastatic mucinous adenocarcinoma to ovary. H&E X 100

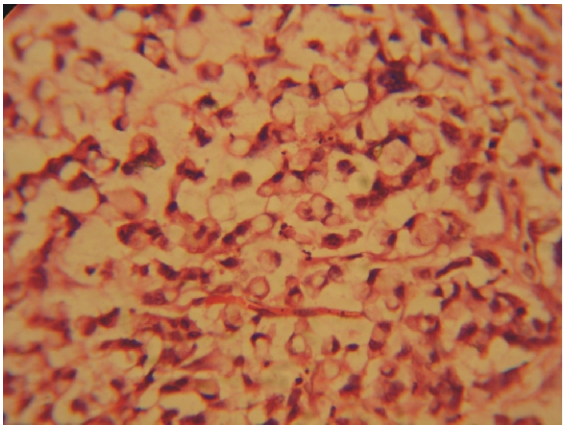

Fig 2. High magnification demonstrating signet-ring cells with cytoplasmic vacuoles and peripherally displaced nuclei. H&E X 400.

Discussion

At the point of the patient's presentation, an impression of infective diarrhoea was made because of the presence of lower abdominal pain, mucoid and bloody stools as well as its high prevalence in this region. Elevated carcinoembryonic antigen (CEA) in the presence of a persistent bloody diarrhea and a colorectal mass (the colonscopic finding)as well as the endoscopic finding of stomach ulcer, suggest an on going malignancy which could be colo-rectal cancer or a recurred stomach cancer. However, carbohydrate antigen 125 (CA-125), an antigen present on 80 percent of non mucinous ovarian carcinomas and superior to CEA could not be done due to non availability of facilities for such tests.

The CT description of the pelvic masses mentioned above, is suggestive of ovarian tumor[3]. Primary ovarian tumor or better still, metastatic lesion from other sites

should have been considered since the patient was reported to have had cancer of the stomach 2 years back. This is due to the relationship between the 2 conditions[2]. Tumors of the Fallopian tube can mimic ovarian tumors on imaging[4] and so, should have also been considered as well. Both ovarian and Fallopian tube cancers are said to be symptomless but recent studies[5] have demonstrated that there could be symptoms such as pelvic pain which this patient had. The involvement of both adnexal regions is in keeping with a KT, as involvement of both ovaries is the usual finding [2].

If the CT had been done earlier, it would have been easier to make early diagnosis of KT presenting as a complication of the gastric malignancy diagnosed 2 years previously.

In a study of 452 females with colon cancer, 9 cases of ovarian metastasis were found, and authors concluded that early diagnosis of KT was difficult[6].

The enlarged ovaries that were seen at laparotomy, turned out to have histological features of adenorcarcinoma. The primary site was thought to be either the colon/rectum or the stomach. In a study of 34 patients with KT, it was found out that 14 (41%), had a previous surgery for cancer[7]. Eleven of the patients had surgery because of breast cancer, 5 had gastric resection due to stomach cancer and 1 had recto-sigmoid resection. The study shows a strong relationship between stomach cancer and ovarian cancer. Some other workers found that two third of 120 patients with KT had stomach cancer while the rest had cancers of the colon, breast, small intestine, rectum, gallbladder and urinary bladder [8].

While KT has been shown to have identifiable primary sites by many studies, another report showed that 50% had no identifiable primary site [9]. As pointed earlier in this report, there are 2 possible primary sites in this case: the stomach or the rectum. The absence of facilities for immuno-histochemistry however, limits our diagnostic ability. Such facilities would have been used to determine the origin of the cancer cells that were seen not only in the ovary but also those seen in the transverse colon, and the rectum.

The standard treatment of stomach cancer is surgical resection. Regional lymph node dissection is highly recommended especially in cases where they are involved. Adjuvant therapy with either chemotherapy, radiotherapy or even both is also getting more acceptances because of possibilities of local relapse or distant spread. The most widely used chemotherapeutic agents are 5-flourouracil, mitomycin C, and doxorubicin. With regards to radiotherapy, intraoperative doses can be given and this allows delivery of high doses.

Because this patient had no evidence of extension to near-by structures or even the regional lymph nodes, the surgical option (without chemotherapeutic agents) was used. She also did not receive radiotherapy due to non availability. These factors probably led to the recurrence with distant metastasis and hence, KT. In some instances, prophylactic oopherectomy is done following gastrectomy in order to prevent KT [9].

The management of KT involves oopherectomy, pelvic exenteration and chemotherapy.

This index case had oopherectomy and after histological diagnosis, she was planned to have chemotherapy. She survived for 2 weeks post operatively but was too ill to have the chemotherapeutic agents.

KT carries a poor prognosis. The mean survival time after operation was found to be 20.8 months ranging from 3 - 96 months [6]. In another study [7], the mean survival time was 4.7 months. The prognosis in the study mentioned above was found to be best for breast cancer and worse for stomach cancer. Our patient had stomach cancer and she survived for 2 weeks after the surgery for KT.

Conclusion

Krukenberg's tumor poses diagnostic difficulties especially in our environment with poor resources and limited facilities. It also carries a poor prognosis because it is a metastasis of another cancer which usually occurs when the disease is advanced. KT arises usually from the gastrointestinal tract, and there could be other sites of metastatic lesions apart from the ovaries as it occurred in this case in which the transverse colon, the sigmoid and the rectum were involved. Lack of application of chemotherapy and/or radiotherapy with or without prophylactic oopherectomy after the operation for the stomach cancer may have contributed to the development of KT in this case. Although the effectiveness of CEA surveillance, routine pelvic examination/pelvic and vaginal ultrasound has not been established in screening for ovarian cancer, these might have been useful in this case since the patient had a gastric cancer which could metastasize to the pelvis.

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