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Right sided mucinous adenocarcinoma of the colon with a large Krukenberg Tumor, mimicking a large primary ovarian mucinous adenocarcinoma

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Abstract

Krukenberg tumors account for a small percentage of ovarian carcinoma. A 78 year old female presented with a large mucinous Krukenberg tumor. We describe the difficulty in determining the primary site of carcinoma, and the implications as it relates to treatment as well as prognosis.

Keywords

Krukenberg Tumor; colon cancer; ovarian cancer

Introduction

Krukenberg Tumors are a rare but well known source of ovarian malignancy, which are from a primary gastrointestinal carcinoma. The diagnosis of Krukenberg tumors are made pathologically in most cases; however, determination between Krukenberg tumors and primary ovarian carcinomas with synchronous gastrointestinal tumors is difficult. The treatment of these rare clinical scenarios are largely dependent on pathologic determination of the primary neoplasm, as they can be mistaken as primary ovarian carcinomas.

Case Presentation

A 78 year old female presented to her surgeons office with worsening abdominal pain, ascites, and abdominal distention. She has a past medical history of deep vein thrombosis of her lower extremity, hypertension, coronary artery disease, and gastro-esophageal reflux disease.

Her initial workup included a CT scan demonstrating a large pelvic mass on the right as well as a colonoscopy, which showed a synchronous lesion pathologically diagnosed as adenocarcinoma of the cecum. The decision was made to palliate her symptoms of abdominal pain with surgical debulking of her pelvic mass, and concomitant resection of her colonic neoplasm. Due to her history of a recent right lower extremity deep venous thrombosis, she was on therapeutic anticoagulation preoperatively. Her warfarin was stopped pre-operatively, and an inferior vena cava filter was placed immediately prior to her laparotomy.

She presented electively for right hemicolectomy, hysterectomy, omentectomy, bilateral

salpingo-oopherectomy. Pre-operatively, she had ureteral catheters placed. Intraoperatively, she was found to have peritoneal implants as well as implants on the falciform ligament, which were removed as well as 1.6 liters of ascites, which were drained and sent for cytology. Final pathology from the cytology specimen revealed atypical epithelial cells suspicious for malignancy, and the pathology from the falciform ligament and omentum was noted to be mucinous adenocarcinoma as well with similar histomorphology. Frozen sectioning of the ovarian tumor was suggestive of a large primary ovarian mucinous adenocarcinoma. The right ovarian tumor was 21 x 21 x 6 cm and weighed 1680 grams as seen in figure 1 and figure 2. The right ovarian tumor was noted to be cystic and filled with a mucoid fluid, but was noted to have a non-involved hilum, a smooth surface, and no papillary projections were noted. The left ovary was noted to be was noted to be grossly adhered to the peritoneum within the operative theater and, she was found to have intestinal type mucinous adenocarcinoma invading the serosa and sub serosal tissues, which was consistent with tumor implant. The colon mass was identified and noted to be invasive through the serosa of the cecum, and a standard right hemi-colectomy was performed with primary anastomosis after the omental and peritoneal implants were removed as well as the total abdominal hysterectomy and bilateral salpingo-oopherectomy.

However, upon final pathologic diagnosis, the histology of the colonic adenocarcinoma was identical to that of the ovarian adenocarcinoma, which was found to be mucinous adenocarcinoma of the intestinal type. Immunohistochemical staining revealed the carcinoma to be cytokeratin (CK) 7 negative, and CK 20 positive. In addition, the carcinoma was found to be originating from a villous adenoma in the cecum. With this information, the original diagnosis of primary ovarian carcinoma and synchronous cecal carcinoma was revised to a primary cecal carcinoma with ovarian metastasis. Her surgery was uncomplicated; however, post-operatively her course was complicated by an ileus. She was subsequently discharged once her ileus resolved. Unfortunately, she expired approximately 2 months following her palliative surgery, before any adjuvant therapy was started.

Discussion

Krukenberg tumors are one of the most common types of ovarian metastasis accounting for approximately 80%. Approximately, 50% of these tumors mimicking ovarian primaries were histologically identified as adenocarcinoma [1]. In the presented case, there was difficulty in establishing a primary source for the carcinoma. This could have represented a synchronous colon cancer with a primary ovarian carcinoma as well as a Krukenberg tumor. The primary was only identified upon final pathologic diagnosis where invasive carcinoma was identified within the colonic adenoma.

The difficulty in establishing the primary is not inconsequential. The treatment for primary ovarian carcinoma as well as primary colon carcinoma is vastly different in regards to both surgical resection as well as chemotherapeutics, so establishing the correct diagnosis is imperative. Prognosis is dependent upon the primary as well as colonic primary with ovarian metastasis is poorer than that of an ovarian primary [2]. What makes our case particularly unique is the diagnostic difficulty in determining the primary site of neoplasia.

Immunohistochemical staining, usingCK7 and CK20, is helpful in determining the primary source of carcinoma as CK 7 is frequently positive in ovarian cancer, and the most helpful in making a distinction between ovarian and colonic carcinoma. CK20 is frequently negative in ovarian carcinomas and positive

in colon cancer [3]. This was not performed in our case as the foci of invasive adenocarcinoma was found within the colonic adenoma.

Intraoperatively, some gross characteristics that may be beneficial to identifying a primary, and guiding a correct surgical treatment have been identified. Factors that are commonly seen with ovarian metastasis, grossly, are bilateral lesions and ovarian hilar involvement. Factors seen with ovarian primaries include a size >10cm and a smooth ovarian surface [4]. Our case describes a tumor was noted to have bilateral lesions, which is consistent with metastatic neoplasms, but did not have any ovarian hilar involvement, and was noted to be 20cm with a smooth surface, which would all be consistent with primary ovarian carcinoma. Lee et al. [4] further described gross factors, which did not differentiate between ovarian primary and metastasis included focal areas of grossly appearing colonic carcinoma, cystic lesions, cyst contents, gross hemorrhage, papillary projections, and necrotic areas.

Clearly, further research is necessary to determine the amount of patients with ovarian cancer, who have synchronous colonic neoplasms. This case is meant to detail the current difficulties with diagnosis of Krukenberg tumors as well as the necessity of providing an adequate surgical resection. It is necessary that pathologic identification is achieved so that patients with ovarian carcinoma and patients with Krukenberg tumors obtain optimal treatment and staging.

Figures

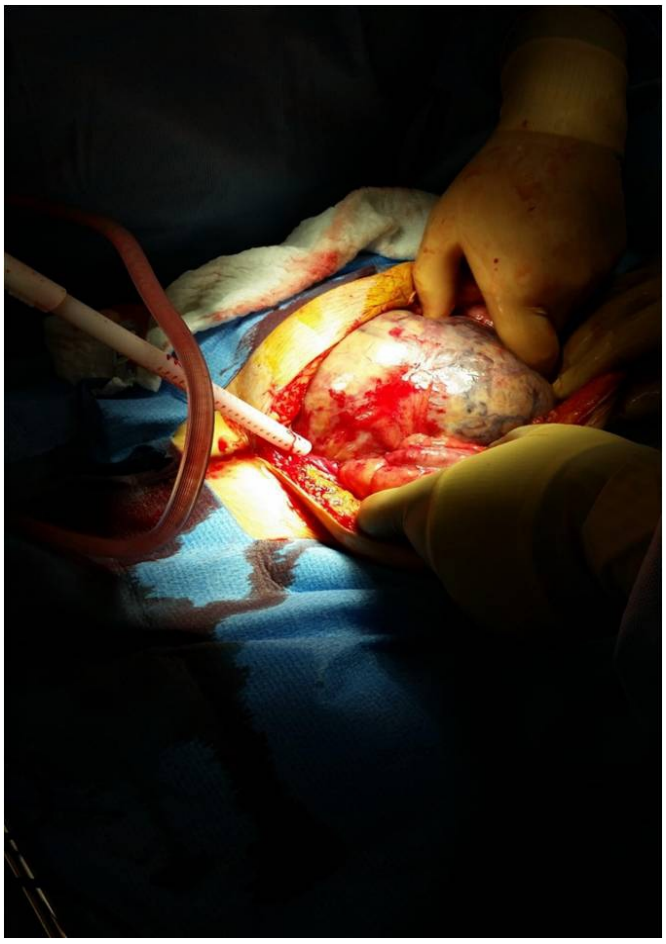

Figure 1: Right Ovarian Krukenberg Tumor, seen intra-operatively.

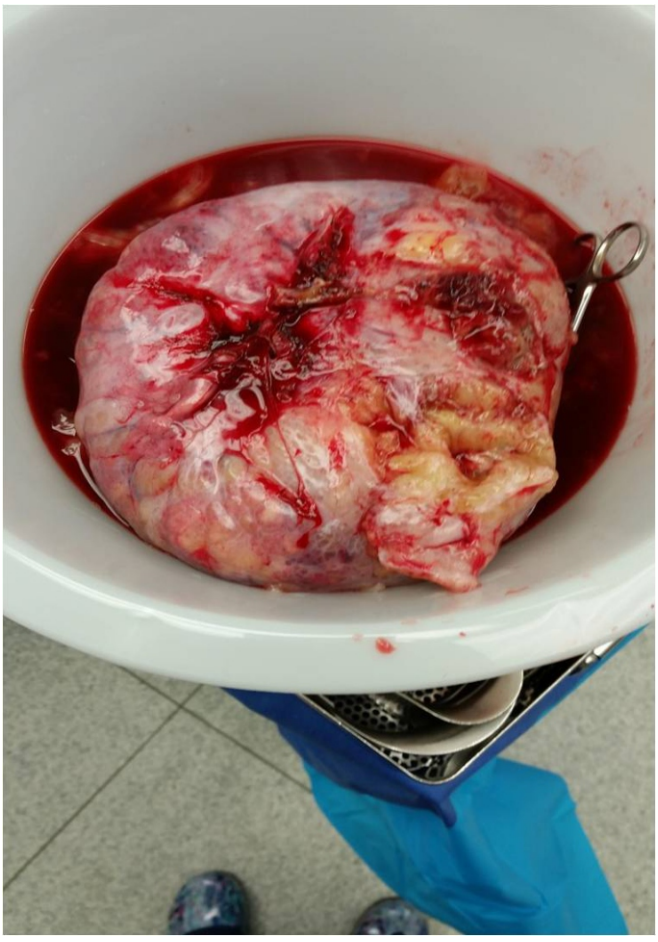

Figure 2: Right ovarian Krukenberg tumor, measuring 21cmx 21cm x6cm weighing 1680 grams

Acknowledgments

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