Case Report

An Unlikely Route: Metastatic Ovarian Malignancy within the Duodenum

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Keywords

Duodenal cancer · Ovarian carcinoma · Metastasis

Abstract

The small bowel is an uncommon site for cancer metastasis. Despite this, cases have reported the duodenum as a metastatic site from local organs. However, duodenal involvement from more distant organs, such as the ovaries, has rarely been reported. Herein, we present a case of a 68-year-old female who developed duodenal metastatic disease from a primary ovarian serous adenocarcinoma. The goal of this report is to encourage clinicians to keep a broad differential in patients complaining of abdominal pain, especially in those with a history of primary ovarian malignancy.

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Introduction

The small bowel, in general, and the duodenum, in particular, represent a rare tumor-bearing organ site of both primary and metastatic disease [1]. While primary lesions from the pancreas, skin, colon, kidneys, and lungs have been reported to invade the duodenum, other more distant, *recherché* sites, have scantily been reported [2–4]. We present a case of a 68-year-old female with a history of ovarian serous adenocarcinoma found to have

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Fig. 1. Duodenal mass observed during surgical-assisted upper endoscopy.

duodenal involvement. According to our knowledge, few cases have been reported in the literature [5]. The goal of this report is to illustrate the need to consider metastases within the small bowel resulting in symptoms in a patient with a history of malignancy, be it from an unlikely origin.

Case Presentation

A 68-year-old Caucasian female with a past medical history significant for ovarian cancer with brain metastases, Roux-en-Y gastric bypass, hypertension, diabetes mellitus, hyperlipidemia, and hypothyroidism presented with abdominal pain of 3 months duration. The patient had undergone an outpatient workup, which revealed elevated aspartate transaminase, alanine transaminase, and alkaline phosphatase of 249, 327, and 1,684 U/L, respectively. Total bilirubin was 4.7 mg/dL, most of it predominantly direct bilirubin at 4.1 mg/dL. An endoscopic retrograde cholangiopancreatography was unsuccessful due to status post-Roux-en-Y anatomy. Surgical consultation was obtained, and an open laparotomy with attempted upper endoscopy via open gastrotomy was performed. This was aborted given poor visualization; however, a mass was observed in the duodenum resulting in biliary obstruction and ulcerative perforation of the gastric remnant (Fig. 1).

The patient underwent an abdominal washout, and a gastrostomy tube was placed for decompression. Biopsies of the duodenal mass revealed a tumor that was cytokeratin-7(+), cytokeratin-20(–), and PAX-8(+), consistent with her diagnosis of ovarian serous adenocarcinoma that had now metastasized to the duodenum (Fig. 2, 3). Eventually, our patient opted for hospice care.

Discussion/Conclusion

Malignancy of the small intestine is uncommon and accounts for approximately 1% of all gastrointestinal cancers [1]. Interestingly, metastatic lesions to the small intestine occur more often than primary malignancies native to this region [6]. Both, however, portend poor prognosis as diagnosis is usually made at later stages, once mass effects arise. Its late diag-

Fig. 2. Hematoxylin and eosin stain with ×200 magnification of duodenal mass.

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Fig. 3. Ovarian mass positive for PAX8(+) staining within the duodenum which is PAX8(–) staining.

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nosis is secondary to nonspecific symptoms and uncommon occurrence and is unlikely to garner medical attention until the tumor size and severity of symptoms have progressed significantly.

As mentioned earlier, ovarian metastasis to the duodenum is rare. Rather than hematogenous spread or via peritoneal seeding, cancers metastasize to the duodenum via para-aortic mesenteric lymph nodes through bowel serosa and into its final location, inside the duodenum [6]. Generally, the incidence of metastases is higher in elderly patients with metastases being most frequent in the periampullary region or the duodenal bulb [7]. On endoscopy, metastatic lesions are generally visualized as submucosal masses with an ulcerated tip, as multiple nodules of varying size, and/or as raised plaques [2, 8].

Serous ovarian carcinoma is an aggressive malignancy, carrying a high likelihood of metastasis. Once metastasis occurs as a stage IV tumor, it is associated with a 5-year survival rate of only 30% [9]. Thus, identifying the primary tumor-bearing organ is of paramount importance. Upon biopsy, the cytokeratin-7(+)/cytokeratin-20(–) character traits on immunohistochemical staining are harbingers that the ovary may be the primary site of malig-

nancy, as gastrointestinal carcinomas tend to stain in the opposite fashion. Once the cytokeratin-7/cytokeratin-20 expression profile is established, complementary organ-specific antibodies can allow for a more precise guidance as to the origin of primary tumor [10]. Notably, of these, the Pax-8(+), ER(+), WT1(+), TTF1(–), TTF3(–), GATA3(–) pattern is most consistent with serous ovarian carcinoma [10, 11].

Treatment for serous ovarian carcinoma, once disease is detected late and spread, is limited [12]. Traditionally, a combination of cytoreductive surgery and chemotherapy is implemented. Alternatively, agents such as taxane, platinum, and/or bevacizumab are first used to debulk the tumor, which can then be resected surgically [12]. In reality, many patients such as the one in our case, elect for palliative and/or hospice care due to poor quality of life and prognosis.

In conclusion, clinicians must broaden their differential in patients presenting with abdominal pain with a history of ovarian serous adenocarcinoma. As illustrated in our case, distant tumor-bearing organs may be the culprit for spread into the small bowel. Although an unlikely route, the ovaries can, in fact, invade the duodenum and metastasize, despite the rarity of such a disease course. Finally, conducting a wide immunohistochemical stain workup can help narrow down the primary malignant site responsible.

Statement of Ethics

Written informed consent was obtained to publish this case as well as include any images for publication. Ethical considerations were taken into account according to the principles that comply with the guidelines for human studies. In addition, the research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. No funding, sponsors, institutional affiliations, potential conflicts of interest, incentives for subjects and information exist within.

Disclosure Statement

The authors have no conflicts of interest to declare.

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Author Contributions

S.W., S.S., and S.K. assisted with manuscript preparation and editing. S.S., R.I., and M.V. drafted and critically revised the manuscript. O.T.M.C. and M.A.O. provided histopathology data, endoscopy images, and edited the manuscript. S.W. and S.K. are the article guarantors. All authors give final approval for submission.

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