Published in final edited form as:

Am Med Stud Res J. 2017 ; 4(1): 57–61. doi:10.15422/amsrj.2017.03.009.

Primary colon adenocarcinoma with metastatic disease to the rectum followed by the left axilla

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Abstract

Introduction—Adenocarcinoma of the colon can metastasize to multiple organs but very rarely metastasizes to the axilla.

Case—We present a case of a 56-year-old male with metastatic colon adenocarcinoma that metastasized to the rectum and then the axilla. Three years after initial diagnosis and treatment of right colon mucinous adenocarcinoma a metastatic mass was found in the rectum. The mass was successfully resected, but within a year of finding the rectal mass, metastatic disease to the axilla was discovered.

Conclusion—This case provides valuable teaching points about routes of metastasis and the importance of continued clinical follow-up in patients diagnosed with adenocarcinoma of the colon.

Keywords

Colon adenocarcinoma; rectal adenocarcinoma; axillary metastasis; dot-blot detection; lymphatic flow

Introduction

Rarely, the detection of the axilla mass is the first indication of an underlying primary tumor in the colon with the majority (~60%) of patients presenting with a mass in the upper abdominal region.¹ Typical target tissues for colon cancer metastasis include the liver, abdominal lymph nodes, and the lungs.² When distant metastasis of adenocarcinoma is observed it is associated with poor clinical outcome (11% survival at 5 years). Only one other case report has noted solitary metastasis to the axilla following right hemicolectomy of the distal ascending colon.³ In a related case, a patient had been diagnosed with breast cancer and gastric cancer prior to the metastasis of colon adenocarcinoma to axillary lymph nodes.⁴ If metastasis has already occurred for previously diagnosed malignancies, the

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Institutional Review Board Statement: Our Institutional Review Board approved the review of the patients' charts in this study and waived the need for consent.

Conflicts of Interest: No conflicts to disclose.

likelihood of colon adenocarcinoma metastasis is much higher. In our case, the patient had metastasis from the ascending colon to the rectum before it spread to the axilla.

If the patient is female, metastasis to the breast is more common than to the axilla after the adenocarcinoma has spread to a nearby organ.⁵ Tumor cell distribution from metastasis in mesenteric lymph nodes is primarily in the marginal sinus, but this pattern is rarely seen in axillary lymph nodes.⁶ Due to differences in lymphatic flow, it is not overly surprising that colon adenocarcinoma rarely metastasizes to the axilla. We emphasize the important features of this case that may have contributed to metastasis to the axilla. Once adenocarcinoma has been found in the axilla, prognosis is poor (11% survival at 5 years).⁷ We present a case of a 56-year-old male with a primary right colon adenocarcinoma in 2010 and metastatic rectal adenocarcinoma in 2013, who went on to develop metastatic disease to the axilla in 2014. We discuss the likely routes of cancer metastasis and the liberal use of imaging and dot-blot in rapid diagnosis.

Case Report

A 56-year-old white male presented with an obstructive abdominal process in early spring of 2010. Computed Topography (CT) scan showed narrowing at the distal ascending colon with significant mass effect. The patient underwent laparoscopic hand assisted right hemicolectomy. Staging revealed T3N2a moderately differentiated mixed mucinous adenocarcinoma with 5/20 lymph nodes positive. He completed six months of adjuvant FOLFOX (folinic acid, fluorouracil, oxaliplatin) chemotherapy and was lost to follow up for three years.

Patient then presented as an outpatient with hematochezia in early spring of 2013. Flexible sigmoidoscopy revealed a mid-rectal mass 12 centimeters (cm) from the anal verge extending from the second to third rectal valve with biopsy confirming a metastatic rectal adenocarcinoma likely disseminated from the primary mucinous adenocarcinoma of the colon (Figure 1). A PET/CT revealed a hypermetabolic rectal mass and lymphadenopathy of the iliac chain. Prior to operation, MRI was performed revealing the tumor to be free of the prostate, bladder, and not involving the sacrum. He underwent neoadjuvant chemoradiation with capecitabine and was scheduled for an operation in fall of 2013.

At the time of operation, the patient was found to have a perforated rectal tumor that was adherent to the base of the bladder and prostate with a second perforated area posteriorly that was adherent to the sacrum. Pelvic exenteration was performed with en block removal of bladder and prostate as well as resection of distal presacral fascia. A permanent colostomy and ileal conduit were created. The pathology revealed metastatic adenocarcinoma to the rectum with invasion into the bladder and bilateral seminal vesicles. Necrotic tissue with hemorrhage and inflammation was noted. There was a residual microscopic focus of tumor. The tumor size was not measured. The nearest margin was a radial margin of 2 cm and the proximal margin was 15 cm. The distal margin was 3.5 cm; however, the tumor was perforated. Thirteen lymph nodes were negative for metastatic tumor. Lymphovascular space invasion was not seen and perineural invasion was present. The pathologic tumor-stage was IIC (T4b, N0, M0).

The patient did not want to have any intravenous chemotherapy, but agreed to start adjuvant oral capecitabine chemotherapy starting in early spring of 2014. PET/CT scan in late spring of 2014 showed a 3 × 4 cm rectal mass with a standardized uptake value (SUV) of 17 and possible progression into the left sacrum with maximum SUV of 5.9. Additionally, a calcified mass within the muscle layers in the left posterior axilla measured 2.3cm with an SUV of 11.1 indicating active tumor (Figure 2). The axillary mass was excised in summer of 2014 with pathology of poorly differentiated adenocarcinoma consistent with the colon primary (Figure 3). The tumor cells were negative for CK7, CK20, CDX-2, p63, and S-100. The patient was informed of the necessity to change to IV chemotherapy to control his disease. He decided against a combination FOLFIRI (folic acid, fluorouracil, irinotecan) chemotherapy regimen but he agreed on the addition of bevacizumab to his capecitabine tablets. A CEA performed in late summer 2014 was 1.5 (<3 ng/ml is normal). The patient received care at an outside facility closer to home, but succumbed to metastatic disease in spring 2015.

Discussion

The micrometastasis from colon to the rectum and then to the surrounding lymph nodes occurred despite radiation therapy. Lymphatic drainage is the most likely route of dissemination for adenocarcinomas.⁸ The original adenocarcinoma spread from the ascending colon to the rectum likely seeding metastatic cells in the internal iliac lymph nodes. The lymphatic spread likely continued further to the paraaortic nodes. Intercommunicating lymphatic flow and backflow of lymph from the paraaortic node to the thoracic duct may be the most direct route by which the cancer spread to the axilla.³ Although hematogenous spread is less likely, it cannot be completely ruled out. Venous plexus drainage could be a route of possible dissemination.

In some instances, lymphatic and venous metastases are concurrent.⁹ Infection facilitates hematogenous spread of adenocarcinoma.¹⁰ Infection often occurs in the subacute period surrounding the initial surgical treatment. Most often the spread occurs to adjacent organs such as the liver or small bowel.¹¹ Aggressive local hematogenous spread (84%) is much more common than distant metastasis (19%).^{12,13} When distant metastasis does occur, it is often diagnosed several years after the initial time of treatment for the primary tumor.¹⁴ In our case, the patient was lost to follow-up for three years before returning for evaluation of hematochezia. It was another year before the axillary mass was found.

In order to avoid missing distant metastasis, liberal use of PET/CT scans should be considered for colon and rectal adenocarcinoma. Imaging can be used for detection, diagnosis, and to guide treatment choice such as chemotherapy and/or radiation for advanced colorectal cancers. The recently developed semi-dry dot-blot may also prove promising in detecting lymphatic spread following hemicolectomy for adenocarcinomas.¹⁵ Briefly, dissected nodes can be sectioned and washed with anti-pancytokeratin antibody. The binding affinity can be detected with dot-blot technology and has been shown to have excellent sensitivity (100%), specificity (98%), and accuracy (98.3%) following lymph node dissection.¹⁵

Conclusions

Although distant metastasis of colon adenocarcinoma to the axilla is rare, the life threatening indication (11% survival at 5 years) warrants careful evaluation of lymphatic dissemination with all available diagnostic tools in order to catch early metastasis. Once distant metastasis has occurred prognosis is poor.

Clinical Practice Points

An axillary mass can be a metastasis from a colon adenocarcinoma. The axillary mass can develop several years after successful hemicolectomy. The occurrence is rare but liberal use of PET/CT scans and the semi-dry dot-blot should be used to diagnose metastasis early. The likely route of dissemination is via the lymphatics. The dot-blot technique can detect lymphatic spread of adenocarcinoma cells. Early detection allows the oncologist to tailor the chemotherapy and radiation treatment approach. Once metastasis has reached the axilla, prognosis is poor.

Acknowledgments

Brandon Lucke-Wold received support from the American Foundation of Pharmaceutical Education, American Medical Association Foundation, and Neurosurgery Research and Education Foundation. The WVU CTSI Program supported research reported in this publication through NIGMS of the National Institutes of Health under award number U54GM104942. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Financial Support: The authors did not receive payment or any benefits from commercial entities.

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Figure 1.
Flexible sigmoidoscopy imaging of rectal mass.

Figure 2.
PET/CT scan showing hypermetabolic activity in rectum, retroperitoneal lymph nodes and left axilla.

Figure 3.

A–B) histologic hematoxylin and eosin images of the left axilla tumor showing trabeculae of bone with sheets of infiltrating carcinoma and associated fibrosis within the axillary node. C–D) At 40× magnification enlarged dark cells are visualized with frequent mitosis and glandular formation consistent with poorly differentiated adenocarcinoma.