

Poorly Differentiated Cecal Adenocarcinoma Presenting as Metastatic Disease to the Bone

by J.K. Deutsch, N. Suda, P. Balachandran

Skeletal metastases from cecal adenocarcinoma are rare. Bone metastases as the first presenting sign for adenocarcinoma of the colon have been rarely described in the literature and usually indicate advanced disease with a poor prognosis. This case describes a patient who was diagnosed with multiple skeletal metastatic lesions before detection of his primary tumor.

CASE

A 51 year-old African American male with a history of sciatica presented to the orthopedic clinic with progressively worsening posterior right hip and groin pain for three months. The pain worsened with weight-bearing activities, was alleviated by rest, but often woke him at night. He reported an unintentional weight loss of eight pounds over the same time, however he denied any gastrointestinal symptoms. On exam, there was minimal tenderness to palpation superior to the right greater trochanter. A plain radiograph of the pelvis discovered a right femoral neck fracture and follow-up computed tomography (CT) of the right lower extremity and hip revealed pathologic fracture of the right femoral neck with an associated lytic expansile lesion. The patient was scheduled for magnetic resonance imaging (MRI) of the right femur to be followed by orthopedic surgical intervention. He was also scheduled for a metastatic workup, including bone scan and CT of the chest, abdomen, and pelvis, in addition to routine labs and tumor markers.

The patient's laboratory workup revealed a normocytic anemia, elevated erythrocyte sedimentation



Figure 1. Whole body bone scan (posterior) showing an abnormal focus in the right femoral neck, a focal abnormality in the lateral margin of the right humeral neck and an indeterminate focus in the posterior lower left rib

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rate (ESR) and C-reactive protein (CRP) and a mildly elevated alkaline phosphatase; there was no M spike in his serum protein electrophoresis (SPEP) and carcinoembryonic antigen (CEA) and prostatic specific antigen (PSA) were within normal limits. The pathology from a bone biopsy preceding orthopedic surgical intervention revealed a metastatic poorly differentiated adenocarcinoma. The patient's bone scan (Figure 1) revealed an abnormal focus in the right femoral neck corresponding to the previously identified lesion on CT and a focal abnormality in the lateral margin of the right humeral neck. Further imaging with plain films and positron emission testing (PET/CT) noted increased uptake in several thoracic and lumbar vertebrae, several anterolateral ribs, the left anterior iliac crest and the left superior pubic ramus as well as uptake in the ascending colon, presumed to be the primary lesion.

The patient was seen in gastroenterology clinic for a colonoscopy. He denied any personal or family history of colon or breast cancer and denied ever having a colonoscopy. The patient underwent a diagnostic endoscopy and colonoscopy with gastric and cecal tubulovillous mass biopsy (Figure 2). He was found to have chronic gastric inflammation with *H. Pylori* and a poorly differentiated cecal adenocarcinoma with focal signet ring cell features (Figure 3).

The patient underwent radiation of the right hip and left rib lesions. He was seen by a surgical oncology team for right hemicolectomy, which revealed an 8x6.5 cm poorly differentiated adenocarcinoma invading into the submucosa, with involvement of 5 out of 13 regional lymph nodes. He will be followed for adjuvant chemotherapy.

DISCUSSION

While colorectal cancer remains the third most common cancer among adult men in the United States and the fourth most common cause of death from cancer,¹ skeletal metastases as a primary presentation of colorectal cancer is extremely rare. In two case series analyzing the site of primary cancer in skeletal metastases of unknown origin,^{2,3} only 2 out of 104 patients (1.9%) with identified primary lesions had carcinoma of the colon while 48 (46%) had primary carcinoma of the lung. Both of these case series recommend a diagnostic workup including a thorough history and physical exam focused on the thyroid, breast and prostate. Routine laboratory analysis including complete blood cell count and blood chemistry that included electrolytes,

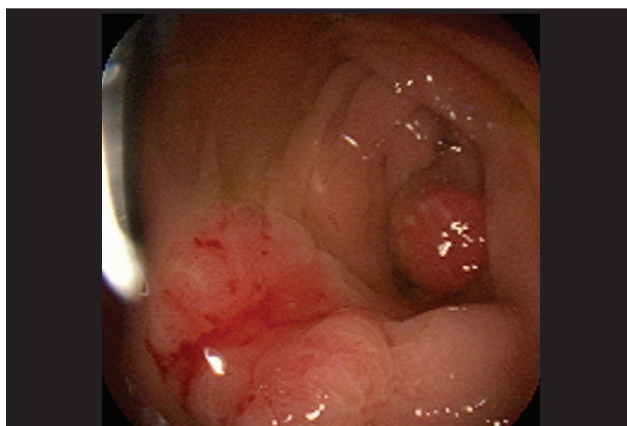


Figure 2. Colonoscopy showing large cecal tubulovillous mass

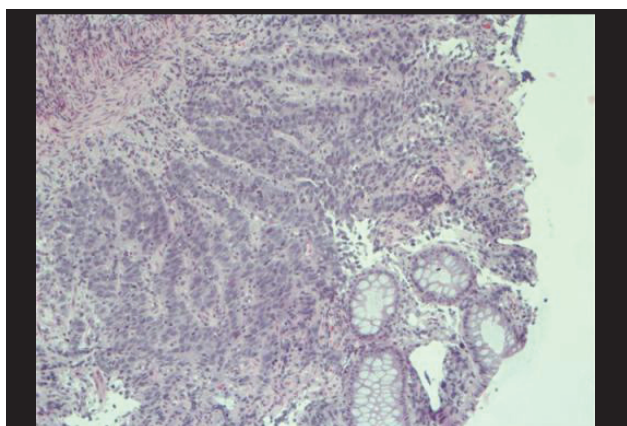


Figure 3. Cecal tubulovillous mass pathology, indicating a poorly differentiated adenocarcinoma with focal signet ring cell features

liver enzymes, alkaline phosphatase and urinalysis, as well as ESR and SPEP were recommended. Serum tumor markers, namely CEA, cancer antigen 19-9 (CA19-9), CA125, alphafetoprotein (AFP) and PSA should be determined. Radiographic imaging should include a plain radiograph of the chest and affected bone in addition to a whole body scan and thoracic and abdominal CT imaging. It is not recommended to routinely perform a CT scan of the pelvis or an examination of the gastrointestinal tract because these seldom revealed the primary lesion.²

The incidence of bone metastasis from colorectal cancer ranges from 5.5-23.7%.^{4,5} Hepatic and pulmonary metastases are considerably more common in association with colorectal cancers, usually due to lymphatic spread of the disease into the venous system.^{4,5} While many studies have reported bone metastasis in advanced disease or at the time of autopsy, these cases are often associated with hepatic and pulmonary metastases.^{4,5,6,7}

A CASE REPORT

Katoh reports that the incidence of colorectal cancer metastasis to bone is increased in signet-ring cell carcinomas versus other histological types.⁵ Katoh also reported that all patients with bone metastasis at autopsy had accompanying liver metastasis, and 21 of the 28 patients with bone metastasis had accompanying lung metastasis.⁵ Additionally, there is a temporal pattern of organ involvement that exists among patients with colorectal cancer always involving the liver and lung before bone and never spread primarily to bone.⁴ Kanthan has described 60 cases of colonic adenocarcinoma with skeletal metastases only. Of these cases, rectal cancers were the most common primary sites with metastatic lesions most often seen in the vertebral column, pelvic bones, ribs, scapula, femur, fibula, humerus and skull.⁷

The mechanism of metastasis to bone in colorectal cancer is poorly understood. Many of the routes of spread implicate either liver or lung, or both, before malignant cells may reach bone. These are associated with lymphatic and nodal spread draining into the venous system. Only one route, via hematogenous spread, directly through the vertebral vein system may implicate bone metastasis without liver or lung⁵ as in this case.

This particular case is unique because our patient presented with skeletal metastases without evidence of

hepatic or pulmonary involvement in a primary poorly differentiated cecal adenocarcinoma with focal signet ring cell features. While this entity has been described in the literature, this particular presentation remains exceedingly rare and should be noted for the thorough diagnostic workup despite literature recommendations against a gastrointestinal source of primary malignancy in skeletal metastases. ■

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