

Appendiceal Adenocarcinoma Presenting as a Pelvic Mass with Liver Metastasis: A Case Report

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ABSTRACT

Background: Appendiceal adenocarcinoma is a rare malignancy, accounting for less than 1% of all gastrointestinal neoplasms. Due to its nonspecific clinical presentation, diagnosis is frequently delayed and often occurs incidentally or at advanced stages. Metastatic disease may be present at the time of diagnosis, posing significant diagnostic and therapeutic challenges.

Case Report: A 36-year-old woman with no significant medical history presented with a 2-month history of right upper quadrant abdominal pain associated with diarrhea, nausea, vomiting, and an unintentional 9-kg weight loss. Laboratory evaluation revealed anemia, leukocytosis, thrombocytosis, hypoalbuminemia, elevated inflammatory markers, and abnormal liver function tests. Fecal occult blood testing was positive. Computed tomography demonstrated a 7 × 5 cm pelvic mass and a 3 cm hepatic lesion suspicious for metastatic disease. Image-guided liver biopsy revealed metastatic high-grade intestinal-type adenocarcinoma with extensive necrosis. Tumor marker analysis showed elevated CA 19-9 (1,200 U/mL) and CA-125 (38.4 U/mL). Following multidisciplinary evaluation, the patient underwent central venous catheter placement and initiation of neoadjuvant chemotherapy. Further diagnostic workup identified appendiceal adenocarcinoma as the primary tumor.

Conclusion: Appendiceal adenocarcinoma is an uncommon gastrointestinal malignancy that may present with vague abdominal symptoms and metastatic disease. This case highlights the importance of thorough diagnostic evaluation, including imaging and histopathological confirmation, in patients with unexplained abdominal symptoms and weight loss. Early multidisciplinary management is essential to optimize treatment planning and patient outcomes.

KEYWORDS: Appendiceal Adenocarcinoma; Appendiceal Neoplasm; Liver Metastasis; Gastrointestinal Cancer; Case Report.

ARTICLE DETAILS

Published On:
15 July 2026

Available on:
<https://ijmscrs.com>

I. INTRODUCTION

Appendiceal neoplasms are extremely rare and challenging to diagnose (8). They account for approximately 0.3–0.5% of all gastrointestinal neoplasms worldwide. These tumors are commonly identified as incidental findings, with a mean age at diagnosis of approximately 50 years (2).

Epithelial appendiceal cancers are less common and arise from the glandular cells lining the lumen of the appendix (4). According to the 2019 World Health Organization (WHO) classification, appendiceal neoplasms are categorized into four groups based on their microscopic cellular

characteristics and the presence or absence of appendiceal wall invasion: low-grade appendiceal mucinous neoplasms, high-grade appendiceal mucinous neoplasms, adenocarcinoma, and goblet cell carcinoma (2,4).

Appendiceal adenocarcinoma is a malignant invasive neoplasm that is further classified into three histological subtypes: non-mucinous adenocarcinoma, mucinous adenocarcinoma, and signet ring cell adenocarcinoma (4).

These tumors may extend beyond the appendiceal wall into the abdominal cavity, resulting in mucin accumulation, known as pseudomyxoma peritonei (PMP) (6), and peritoneal

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carcinomatosis. The risk of lymphatic invasion is approximately 30%, while the risk of distant metastasis may reach 40%.

Mucinous adenocarcinomas with extra-appendiceal spread may present as pseudomyxoma peritonei (PMP) with mucinous ascites, jelly-nodular carcinomatosis without ascites, or nodular/desmoplastic peritoneal carcinomatosis without gelatinous masses or nodules (7).

Several screening methods are available for colorectal cancer detection. The guaiac-based fecal occult blood test (gFOBT) has a sensitivity of 50–75% and a specificity of 96–99% and is recommended annually. The fecal immunochemical test (FIT) has a sensitivity of 74–81% and a specificity of 95–96% and is also recommended annually. Flexible sigmoidoscopy has a sensitivity of approximately 95% and a specificity of 87% and is recommended every 5 years, or every 10 years when combined with annual FIT testing. Colonoscopy has a sensitivity of approximately 95% and a specificity of 86–89% and is recommended every 10 years following a normal examination. Computed tomography colonography has a sensitivity ranging from 67–94% and a specificity of 86–98% and is recommended every 5 years (1).

Treatment depends on the stage of disease and the specific histological subtype (9). Staging is based on the American Joint Committee on Cancer (AJCC) TNM classification system.

For in situ tumors or T1 grade 1–2 lesions without lymphovascular invasion and with negative surgical margins, appendectomy alone may be sufficient (5). In contrast, T1 grade 3 tumors with lymphovascular invasion and/or positive margins require right hemicolectomy. Patients with T2, T3, or T4 disease should undergo right hemicolectomy with resection of at least 12 regional lymph nodes (5).

Patients with stage II, III, or IV disease should additionally receive adjuvant chemotherapy.

In cases of peritoneal dissemination, cytoreductive surgery combined with hyperthermic intraperitoneal chemotherapy (HIPEC) is considered the standard treatment approach (10).

II. CASE REPORT

A 36-year-old woman with a past surgical history significant only for a cesarean section in 2021 presented to the emergency department with a two-month history of intermittent colicky right upper quadrant abdominal pain of variable intensity, associated with diarrhea, nausea, vomiting, and an unintentional weight loss of 9 kg. She denied any identifiable aggravating or relieving factors.

Three days prior to admission, she experienced worsening abdominal pain, reaching 10/10 on the Numeric Rating Scale (NRS), associated with physical exertion and positional changes, with radiation to the ipsilateral shoulder. She reported partial symptom relief with ketorolac 30 mg daily. However, the pain recurred on the day of admission. No additional symptoms were reported.

On physical examination, the patient was neurologically intact and had no respiratory or cardiopulmonary abnormalities. She appeared uncomfortable, with pain facies and mucocutaneous pallor. Abdominal examination revealed a flat, soft, and non-distended abdomen with normal bowel sounds. There was tenderness to deep palpation in the right upper quadrant and superficial tenderness in the right iliac fossa. Generalized tympany was noted on percussion, without signs of peritoneal irritation. The extremities showed no edema, and capillary refill time was less than 2 seconds. Her weight was 50 kg, height was 150 cm, and body mass index (BMI) was 22.2 kg/m².

Laboratory evaluation demonstrated hemoglobin of 10.4 g/dL, leukocytosis ($17.1 \times 10^3/\mu\text{L}$) with neutrophilia (76%; absolute neutrophil count $13.0 \times 10^3/\mu\text{L}$), thrombocytosis ($878 \times 10^3/\mu\text{L}$), hypoalbuminemia (2.2 g/dL), elevated aspartate aminotransferase (AST) of 80 U/L, alkaline phosphatase of 545 U/L, lactate dehydrogenase (LDH) of 1,290 U/L, gamma-glutamyl transferase (GGT) of 298 U/L, C-reactive protein (CRP) of 105.6 mg/L, and erythrocyte sedimentation rate (ESR) of 51 mm/h. A gastrointestinal pathogen panel was positive for *Clostridioides difficile* toxin A/B, and fecal occult blood testing was positive.

Contrast-enhanced computed tomography revealed a 7 × 5 cm pelvic mass and a hypodense hepatic lesion measuring approximately 3 cm in diameter.

The patient was admitted for further evaluation. An image-guided liver biopsy was performed by interventional radiology. Gross examination demonstrated a wedge-shaped liver specimen measuring 3.5 × 1.2 × 1 cm with an irregular surface, displaying alternating light and dark brown nodular areas of soft consistency. Histopathological analysis revealed metastatic high-grade intestinal-type adenocarcinoma with extensive necrosis.

Tumor marker evaluation showed a CA-125 level of 38.4 U/mL and a markedly elevated CA 19-9 level of 1,200 U/mL. Following multidisciplinary team discussion, a central venous catheter was placed, and neoadjuvant chemotherapy was initiated.

III. RESULTS

A 36-year-old woman presented with a 2-month history of right upper quadrant abdominal pain associated with diarrhea, nausea, vomiting, and an unintentional 9-kg weight loss. Physical examination revealed tenderness in the right upper quadrant and right iliac fossa without signs of peritoneal irritation.

Laboratory studies showed anemia (hemoglobin 10.4 g/dL), leukocytosis with neutrophilia, thrombocytosis, hypoalbuminemia, elevated liver enzymes, and increased inflammatory markers. Stool testing was positive for occult blood and *Clostridioides difficile* toxin A/B.

Computed tomography demonstrated a 7 × 5 cm pelvic mass and a 3 cm hypodense hepatic lesion. Image-guided liver biopsy revealed metastatic high-grade intestinal-type

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adenocarcinoma with extensive necrosis. Tumor markers showed elevated CA 19-9 (1,200 U/mL) and CA-125 (38.4 U/mL).

IV. DISCUSSION

Intestinal-type adenocarcinomas commonly originate from the gastrointestinal tract and frequently metastasize to the liver through portal venous drainage. However, their initial presentation may be nonspecific, often delaying diagnosis. In the present case, the patient presented with chronic abdominal pain, gastrointestinal symptoms, and significant weight loss, findings that warranted further investigation for an underlying malignant process.

The laboratory abnormalities, including anemia, thrombocytosis, hypoalbuminemia, elevated inflammatory markers, and cholestatic liver enzyme elevation, were suggestive of advanced disease. Additionally, the positive fecal occult blood test raised suspicion for a gastrointestinal primary tumor. Cross-sectional imaging identified both a pelvic mass and a hepatic lesion, highlighting the importance of imaging studies in the evaluation of patients with unexplained constitutional and abdominal symptoms.

Histopathological examination of the liver lesion established the diagnosis of metastatic high-grade intestinal-type adenocarcinoma. Liver biopsy remains a valuable diagnostic tool in cases of metastatic disease of unknown primary origin, as it provides essential information for diagnosis and treatment planning. The markedly elevated CA 19-9 level further supported the suspicion of a gastrointestinal malignancy, although tumor markers alone lack sufficient specificity for definitive diagnosis.

This case illustrates the diagnostic challenges posed by advanced gastrointestinal adenocarcinoma presenting with nonspecific symptoms and emphasizes the importance of a multidisciplinary approach. Early recognition, prompt tissue diagnosis, and coordinated oncologic management are crucial to optimize treatment strategies and improve patient outcomes.

V. CONCLUSION

This case highlights the importance of maintaining a high index of suspicion for underlying malignancy in patients presenting with persistent abdominal pain, constitutional symptoms, and unexplained weight loss. The combination of imaging findings, tumor marker elevation, and histopathological confirmation through liver biopsy enabled the diagnosis of metastatic high-grade intestinal-type adenocarcinoma.

A multidisciplinary approach was essential for establishing the diagnosis and initiating oncologic treatment. Early recognition and timely evaluation of atypical clinical presentations may facilitate prompt management and potentially improve patient outcomes.

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