Title

Homomorphic Adenocarcinoma Metastases to the Liver: A Report of 2 Cases

Authors

Weissman, Simcha
Mehta, Tej I
Zhornitskiy, Alex
et al.

Publication Date

2020-09-01

DOI

10.12659/ajcr.922932

Peer reviewed

American Journal of Case Reports

e-ISSN 1941-5923
© Am J Case Rep, 2020; 21: e922932
DOI: 10.12659/AJCR.922932

Received: 2020.01.17
Accepted: 2020.06.24
Available online: 2020.08.20
Published: 2020.09.30

Homomorphic Adenocarcinoma Metastases to the Liver: A Report of 2 Cases

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABDEFG 1 Simcha Weissman
EF 2 Tej I. Mehta
DE 3 Alex Zhornitskiy
EF 3 Rani Berry
DE 1 Melanie Burgos
BD 4 Payman Fathizadeh
ABDEF 5 James H. Tabibian

1 Department of Medicine, Hackensack University-Palisades Medical Center, North Bergen, NJ, U.S.A.
2 Department of Medicine, University of South Dakota Sanford School of Medicine, Sioux Falls, SD, U.S.A.
3 Department of Internal Medicine, University of California Los Angeles (UCLA) Medical Center, Los Angeles, CA, U.S.A.
4 Department of Pathology and Laboratory Medicine, Olive View-University of California Los Angeles (UCLA) Medical Center, Sylmar, CA, U.S.A.
5 Division of Gastroenterology, Department of Medicine, Olive View-University of California Los Angeles (UCLA) Medical Center, Sylmar, CA, U.S.A.

Corresponding Author: James H. Tabibian, e-mail: jtabibian@dhs.lacounty.gov
Conflict of interest: None declared

Case series
Patients: Male, 51-year-old • Male, 46-year-old
Final Diagnosis: Metastatic hepatic malignancy
Symptoms: Weight loss
Medication: —
Clinical Procedure: Endoscopy
Specialty: Gastroenterology and Hepatology

Objective: Rare disease

Background: Distinguishing between primary and metastatic malignancy can be challenging despite advances in diagnostic imaging, tissue sampling techniques, and immunohistochemistry.

Case Reports: Herein, we describe 2 cases of obscure liver lesions which were ultimately determined to be malignant and from metastatic disease. In both cases, the liver metastases were uniquely "homomorphic," i.e., radiographically resembling the primary tumor source (in the first case a dilated tubular appearance akin to the hepatopancreatic ampulla and in the second case a haustrated bowel appearance akin to the colon).

Conclusions: These cases illustrate the recently reported concept of tumor homomorphism as a potential diagnostic pearl to facilitate timely diagnosis of malignant-appearing liver lesions of obscure etiology and source and thereby guide management accordingly.

MeSH Keywords: Ampulla of Vater • Endoscopy, Digestive System • Liver Neoplasms • Neoplasm Metastasis

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/922932

1004 — 6 4

Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]

Background

Differentiating between the primary and metastatic source and/or site of a malignancy can be challenging despite advances in imaging, tissue sampling techniques, histopathology, and immunohistochemistry [1]. This can be particularly true in gastrointestinal and hepatobiliary malignancies due to various anatomical factors [2]. Nonetheless, identifying the underlying primary disease is crucial for guiding appropriate therapeutic or palliative treatment [2]. Herein, we describe 2 cases in which liver lesions of unclear etiology were acutely encountered. In both cases, the lesions were ultimately determined to be from metastatic adenocarcinoma (ampullary in the first and colonic in the second) and were curiously "homomorphic" in appearance, i.e., their radiographic appearance resembled a dilated tubular structure akin to the ampulla and a haustrated bowel akin to the colon, respectively. "Homomorphism" is a relatively new and perhaps novel term within the literature, and the finding of tumor homomorphism can be considered as a diagnostic pearl in determining an otherwise unsuspected or uncertain primary source of metastatic disease [1,2].

Case Reports

Case 1

A 51-year-old man who initially presented to an outside Emergency Department with dyspnea and right upper-quadrant abdominal pain was found to have a large (6-cm) liver mass on abdominal ultrasound. Liver biopsy showed features of metastatic signet-ring cell carcinoma of unknown primary source despite additional imaging of the chest and pelvis. The patient was given 1 cycle of chemotherapy during that hospitalization (on the premise of it being a malignancy of unknown primary) and was referred to our medical center for further evaluation and treatment. Interval computed tomography (CT) of the abdomen showed a large, cystic/capacious lesion in the liver, anatomically resembling an ampulla, as well as distal bile duct thickening and periampullary fullness with associated duodenal stenosis (Figure 1). Due to worsening jaundice and bile duct dilation, he was referred for palliative biliary decompression. As the source of the primary malignancy remained unclear, he was sent for an endoscopy. Upon endoscopy, a friable, malignant appearing, obstructive mass was seen in the region of the major duodenal papilla (Figure 2). The mass was biopsied, and a Hanaro (Olympus America, Center Valley, PA) 22×90 mm duodenal self-expanding metallic stent (SEMS) was placed (this was the first FDA-approved application of this stent in the United States) (Figure 3). Biopsies of the papillary mass showed tumor cells with signet-ring features and a mucinous background (Figure 4), while consistent with signet-ring adenocarcinoma, a finding that likely would not have been made (at least in the time frame that it was) had the diagnostic clue of the "homomorphic" appearance of the liver lesion on CT (a finding that was not identified in the radiology report) not been recognized by the clinical team.

Case 2

A 46-year-old man presented to our Emergency Department for the evaluation of nausea, vomiting, constipation, and 5 months

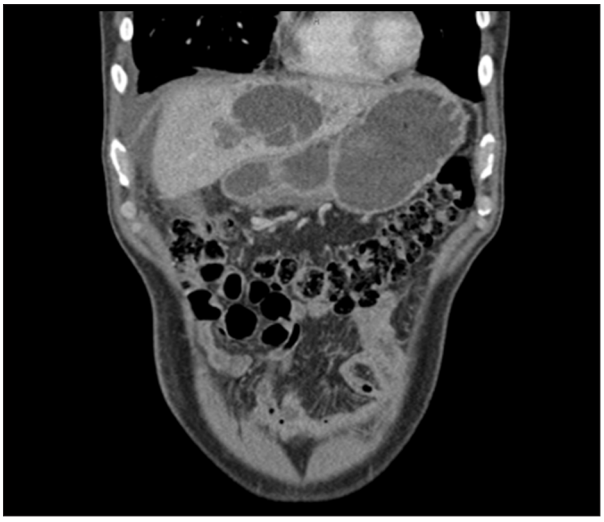

Figure 1. Computed tomography (coronal projection) depicting a 6-cm, ampulla-like, cystic-appearing hypodense left hepatic lobe lesion with bile duct and periampullary thickening resulting in mass effect and consequent duodenal stenosis.

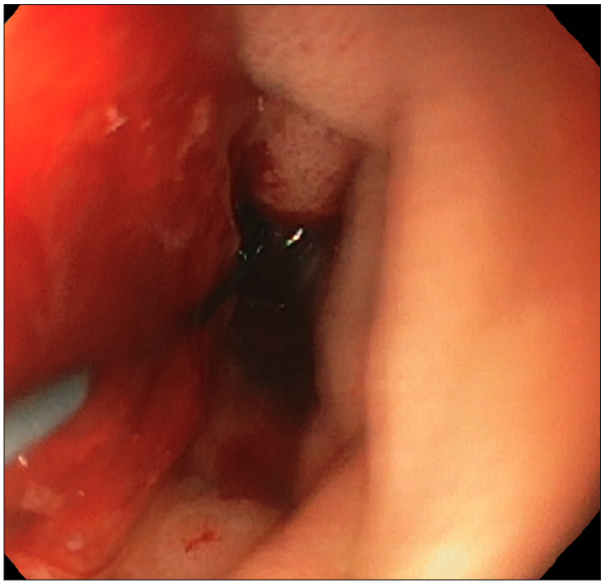

Figure 2. Esophagogastroduodenoscopy revealing a large, friable, and obstructing ulcerated mass lesion involving the major duodenal papilla.

Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]

Figure 3. Computed tomography 3-D reconstruction demonstrating successful placement of a duodenal stent with a percutaneous transhepatic pigtail biliary drain coiled within it.

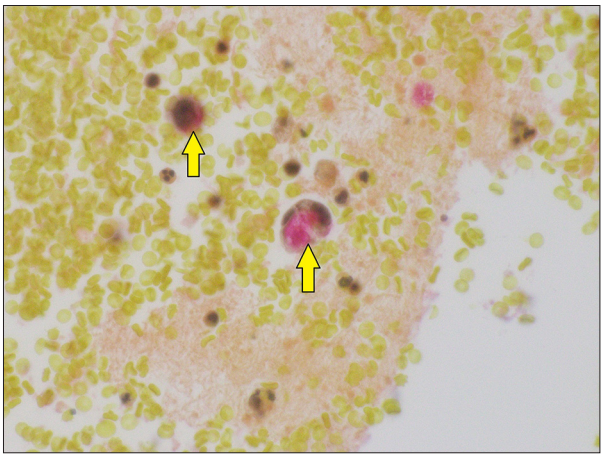

Figure 4. Malignant cells contained intracellular mucin on mucicarmine special stain (arrow) and were also immunoreactive to BerEP4 (not shown in the image), overall consistent with adenocarcinoma with signet ring features.

of progressive generalized abdominal pain, accompanied by a 20-pound weight loss. On physical examination, his abdomen was distended, diffusely tender without rebound, and with a suggestion of hepatomegaly. A computed tomography (CT) scan of the abdomen and pelvis was significant for annular thickening of the rectosigmoid junction and numerous hypodense liver lesions of unclear etiology, seemingly replacing the majority of the hepatic parenchyma, worrisome for multifocal primary liver cancer versus diffuse hepatic metastases (Figure 5). Results of laboratory investigations showed leukocytosis (16 000/mm^3), anemia (11.5 g/dL), normal platelet count, international normalized ratio of 1.5, total bilirubin of 20.1 mg/dL, and alkaline phosphatase of 494 IU/L. Percutaneous liver biopsy revealed infiltrative malignant glands positive for CK20 and CDX2 and

Figure 5. Computed tomography (coronal projection) scan of the abdomen and pelvis demonstrating liver metastases radiographically resembling a sigmoid colon, illustrating the concept of homomorphism.

negative for CK7, consistent with intestinal-type adenocarcinoma, suggestive of colorectal primary. Notably, the large intestine was not examined previously due to physical constraints at that time. On further review of CT images, the liver lesions were reminiscent of the colon, i.e., with capacious-appearing morphology and haustra-like septations (Figure 6). Therefore, based on these findings (the haustrated bowel-like appearance on CT), the patient was promptly referred for colonoscopy. This revealed a firm, malignant-appearing mass lesion at the rectosigmoid junction; the mass could not be traversed with the colonoscope or diagnostic gastroscope. Based on the overall findings, a 25×90 mm WallFlex (Boston Scientific, Natick, MA) SEMS was placed across the stricture for palliation of the obstruction. The patient was discharged the following day with outpatient oncology follow-up to arrange palliative therapy.

Discussion

The liver is a common site of tumor metastasis, which in some cases can be of unclear primary source. Indeed, more than half

Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]

Figure 6. Computed tomography (axial projection) further illustrating sigmoid colon-like liver metastases.

of all metastatic adenocarcinomas are of unknown origin at the time of initial clinical evaluation [3]. While numerous diagnostic modalities exist that can help detect the primary malignancy, they are usually costly and relatively time-consuming, and may be inconclusive [3]. Consequently, the search for an unknown primary tumor is a common clinical problem [4]. One diagnostic approach is via additional tissue staining, e.g., using CK-20 and CK-7, which can help elucidate a certain subset of primary tumors [4]. However, even with this, a primary tumor source can be elusive. Hence, as recently reported [1,2] and as illustrated herein, the presence of tumor homomorphism may allow a clinician to visually link a metastatic lesion to its primary source, thereby providing a unique diagnostic clue.

Despite the fact that only 3 other cases of "homomorphic" metastases have been reported, we believe this finding is generally overlooked/unrecognized, and thus may in fact be more common, although its pathobiology and prognostic significance remain largely unknown [1,2]. As seen in our series of cases, tumor homomorphism, when recognized, may help expedite targeted diagnostic testing and subsequently provide more timely and cost-effective care.

Conclusions

This case series shows the importance of considering the concept of radiographic homomorphism in correlating a metastatic tumor with its potential primary source. Tumor homomorphism can aid in facilitating earlier real-time diagnosis, which can have both economic and prognostic implications.

Conflicts of interest

None.

References:

1. Weissman S, Mehta TI, Zhornitskiy A et al: "Homomorphic" tumor metastases as an endodiagnostic clue: A case series of renal-cell carcinoma metastatic to the stomach. Gastrointest Tumors, 2019; 6: 147–52
2. Weissman S, Mehta TI, Berry R, Tabibian JH: A path less traveled: Metastatic esophageal carcinoma from a primary ovarian malignancy. J Gastrointest Cancer, 2019; 51(1): 329–31
3. Hainsworth JD, Greco FA: Treatment of patients with cancer of unknown primary site. N Engl J Med, 1993; 329: 257–63
4. Tot T: Adenocarcinomas metastatic to the liver: The value of cytokeratins 20 and 7 in the search for unknown primary tumors. Cancer, 1999; 85(1): 171–77

Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]