utilization of MT for ischemic stroke in patients with and without AF.

Data were extracted from the National Inpatient Sample, an all-payer administrative claims–based database, which contains in-hospital data on discharges from approximately 1,000 nonfederal hospitals in 45 states. International Classification of Disease, 9th Revision, Clinical Modification (ICD-9-CM) codes were used to identify patients with acute ischemic stroke (ICD-9-CM 433–437.1) who underwent MT (ICD-9-CM 39.74 and Medicare severity diagnosis-related group code 543). Patients with AF were identified by using ICD-9-CM code 427.3. To balance baseline comorbidities in AF and non-AF groups, a propensity-score model was created and patients with AF were matched to patients without AF by using a caliper distance of 0.1. Primary outcome was in-hospital death; secondary outcomes were hemorrhagic conversion, major complication, surrogates of disability (eg, tracheostomy, gastrostomy, nonhome discharge), hospital charges, and length of stay. Descriptive statistics were presented as frequencies with percentages for categoric variables and as means with standard deviations for continuous variables. Baseline characteristics were compared by χ^2 test and Fisher exact test (in cases of small counts) for categoric variables and independent-samples t test for continuous variables. All statistical analyses were performed with SPSS software (version 24; IBM, Armonk, New York).

Among 933,659 patients admitted with ischemic stroke from January 2006 to December 2014, 4,627 (0.5%) underwent MT. Among these patients, 1,480 (32%) had concomitant AF, and the others were categorized as the non-AF cohort. In the unmatched cohorts, patients with AF were older (age 74 y ± 11 vs 60 y ± 15; $P < .0001$) and had a significantly greater burden of key comorbidities compared with the non-AF group (**Table**). The higher prevalence of comorbid conditions in the AF group is likely related to the association between AF and certain underlying comorbidities (eg, age, hypertension, diabetes, coronary artery disease). After propensity matching, there was no difference in in-hospital mortality following MT in patients with and without AF (20.7% vs 23.9%; $P = .069$). Rates of hemorrhagic stroke conversion, gastrointestinal bleeding, blood transfusion, tracheostomy, gastrostomy, home versus intermediate-care facility discharge, hospital charges, and length of stay were also similar in the two propensity-matched groups (**Table**).

In conclusion, in contemporary US practice, MT for ischemic stroke results in comparable in-hospital morbidity and mortality and cost in patients with and without AF. These data have implications in risk stratification of patients with acute stroke who are eligible for MT.

REFERENCES

1. Benjamin EJ, Blaha MJ, Chiuve SE, et al. Heart disease and stroke statistics–2017 update: a report from the American Heart Association. Circulation 2017; 135:e146–e603.
2. January CT, Wann LS, Alpert JS, et al. 2014 AHA/ACC/HRS guideline for the management of patients with atrial fibrillation: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society. J Am Coll Cardiol 2014; 64: e1–e76.
3. Yue R, Li D, Yu J, et al. Atrial fibrillation is associated with poor outcomes in thrombolyzed patients with acute ischemic stroke: a systematic review and meta-analysis. Medicine (Baltimore) 2016; 95:e3054.
4. Powers WJ, Derdeyn CP, Biller J, et al. 2015 American Heart Association/American Stroke Association focused update of the 2013 guidelines for the early management of patients with acute ischemic stroke regarding endovascular treatment: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke 2015; 46:3020–3035.
5. Giray S, Ozdemir O, Bas DF, Inanc Y, Arlier Z, Kocaturk O. Does stroke etiology play a role in predicting outcome of acute stroke patients who underwent endovascular treatment with stent retrievers? J Neurol Sci 2017; 372:104–109.
6. Yoon W, Kim SK, Park MS, Baek BH, Lee YY. Predictive factors for good outcome and mortality after stent-retriever thrombectomy in patients with acute anterior circulation stroke. J Stroke 2017; 19:97–103.

Omental Infarction after Transarterial Chemoembolization due to Nontarget Embolization of an Extrahepatic Branch from the Right Hepatic Artery

From: Roberto Rômulo de Medeiros Souza, MD
Igor Murad Faria, MD
José Hugo Mendes Luz, MD
Department of Interventional Radiology, Radiology Division
Instituto Nacional de Câncer–INCA
Praça Cruz Vermelha 23
Centro, Rio de Janeiro CEP 20230-130, Brazil

Editor:

Nontarget embolization is a recognized complication in transarterial therapy directed to the liver. The present report describes a case of omental infarction after transarterial chemoembolization. The institutional review board does not require approval of case reports.

A 62-year-old woman with an anal canal neuroendocrine tumor was referred to the interventional radiology department because of uncontrolled carcinoid syndrome (diarrhea and flushing). The patient underwent total primary tumor resection 2 years ago. A computed tomography (CT) scan revealed 3 lesions involving liver segments II, IVA, and VIII. No extrahepatic metastases were identified. The tumor board determined the patient was not eligible for surgery owing to liver metastasis distribution and bilobar compromise or thermal ablation owing to the risk of incomplete treatment (the segment VIII lesion measured 4.0 cm and was adjacent to the middle hepatic vein). Transarterial chemoembolization was chosen for symptom palliation; 2 sessions were planned, one for each lobe.

None of the authors have identified a conflict of interest.

http://dx.doi.org/10.1016/j.jvir.2017.03.005

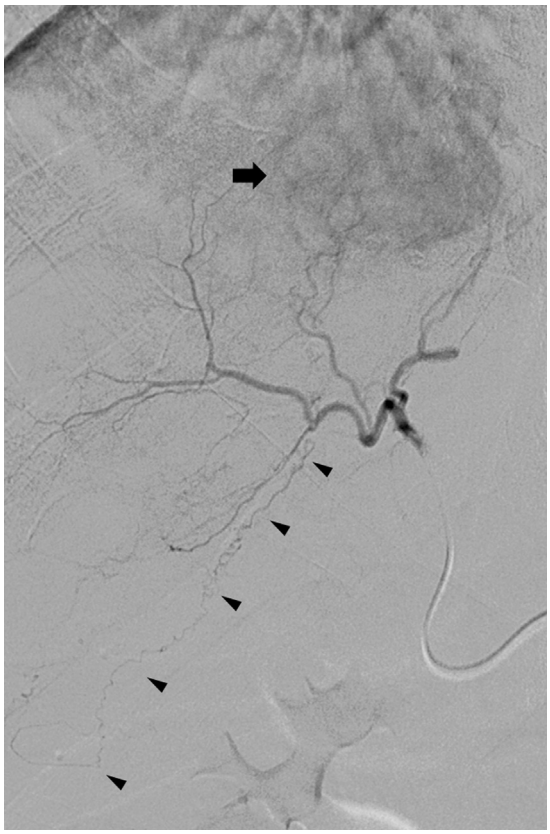

Figure 1. Superselective angiography demonstrates segment VIII hypervascular tumor blush (arrow) and the anomalous artery arising from the right hepatic artery (arrowheads).

During the first session, right hepatic digital subtraction angiography showed segment VIII tumor vascular blush (Fig 1). Superselective transarterial chemoembolization with iodized oil mixed with 50 mg doxorubicin followed by embolization with 250-μm Embozene microspheres (CeloNova Biosciences, Inc, San Antonio, Texas) was performed to treat the right lobe lesion. Cone-beam CT was not performed. The patient remained asymptomatic during the whole procedure and afterward. She was discharged from the hospital the next day with an analgesic prescription.

The patient presented to the emergency department 2 weeks later with persistent right upper quadrant abdominal pain and localized tenderness. Nonenhanced CT demonstrated a well-defined oval, heterogeneous, fat-density lesion measuring 5.6 cm along the right omental margin compatible with omental infarction (Fig 2a–c) that was not present on baseline CT scan. A conservative approach with oral analgesics gradually diminished symptoms over a 30-day period.

Liver metastases of neuroendocrine tumor are typically hypervascular and can be treated by transarterial therapies (1). Transarterial chemoembolization and transarterial embolization are used to treat neuroendocrine tumor liver metastases, including symptom control and tumor progression (2). Omental infarct is a rare cause of acute abdomen resulting from vascular compromise of the omentum. Patients often present with abdominal pain, but the diagnosis is based on cross-sectional imaging findings, which may include a heterogeneous fat-density lesion centered in the omentum. This

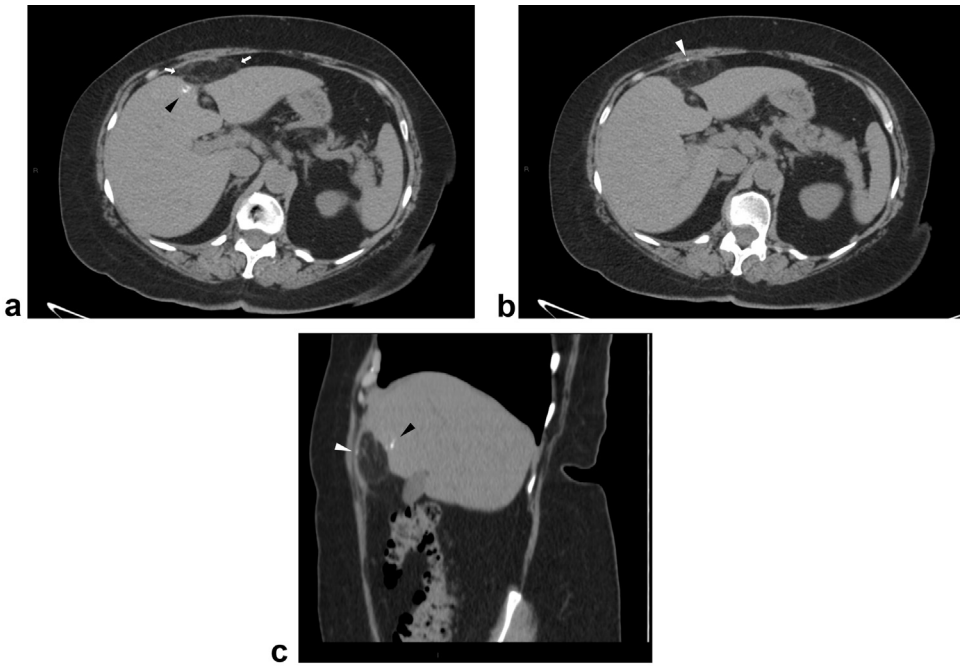

Figure 2. Nonenhanced axial **(a, b)** CT images with sagittal reconstruction **(c)** show an oval heterogeneous fat-containing lesion in the greater omental fat (arrows, **a**) and distribution of iodized oil in the periphery of the liver (black arrowhead in **a** and **c**) and in the suspected anomalous branch responsible for the omental infarct (white arrowhead in **b** and **c**).

condition is often self-limited and can be managed conservatively (3). The greater omentum is typically supplied by the right and left gastroepiploic arteries. Previous studies using nuclear medicine (4) reported omental perfusion by an extrahepatic branch arising from the right hepatic artery identified during planning before embolization, thus showing the possibility of an anomalous hepatic branch irrigating the omentum.

In the present case, retrospective digital subtraction angiography analysis revealed the presence of an anomalous small branch arising from the right hepatic artery irrigating a nonliver territory (**Fig 1**) and posteriorly the omental infarct seen on CT. The prevention of nontarget embolization is critical in transarterial chemoembolization and transarterial embolization but may be even more critical in radioembolization, where such complications can be associated with significant morbidity. This case emphasizes the importance of recognizing extrahepatic branches of the hepatic artery during transarterial therapies to avoid nontarget embolization.

ACKNOWLEDGMENTS

The authors thank Henrique Salas Martin, MD, and Hugo Rodrigues Gouveia, MD, for their valuable advice and comments on this manuscript.

REFERENCES

1. Fiore F, Del Prete M, Franco R, et al. Transarterial embolization (TAE) is equally effective and slightly safer than transarterial chemoembolization (TACE) to manage liver metastases in neuroendocrine tumors. Endocrine 2014; 47:177–182.
2. Brown DB, Nikolic B, Covey AM, et al. Quality improvement guidelines for transhepatic arterial chemoembolization, embolization, and chemotherapeutic infusion for hepatic malignancy. J Vasc Interv Radiol 2012; 23: 287–294.
3. Singh AK, Gervais DA, Lee P, et al. Omental infarct: CT imaging features. Abdom Imaging 2006; 31:549–554.
4. Nguyen BD, Yang M, Roarke MC. 99mTc-macroaggregated albumin SPECT/CT perfusion imaging of omental extrahepatic vascularization. Clin Nucl Med 2016; 41:e56–57.

Retrograde Endovascular Stenting of Preocclusive Celiac Artery Stenosis with Loop Technique Associated with Pancreaticoduodenal Artery Aneurysm Embolization

From: Roberto Gandini, PhD
Sergio Abrignani, MD
Orsola Perrone, MD
Dario Luca Lauretti, MD
Stefano Merolla, MD
Jacopo Scaggiante, MD
Erald Vasili, MD
Roberto Floris, PhD
Roberto Cioni, MD
Department of Diagnostic Imaging, Molecular Imaging, Interventional Radiology and Radiotherapy (R.G., S.A., S.M., J.S., E.V., R.F.)
Tor Vergata University Hospital
Viale Oxford 81
Rome 00133, Italy; and
Department of Diagnostic and Interventional Radiology (O.P., D.L.L., R.C.)
Pisa University Hospital
Pisa, Italy

None of the authors have identified a conflict of interest.

http://dx.doi.org/10.1016/j.jvir.2017.06.035

Editor:

Median arcuate ligament syndrome (MALS), a rare cause of celiac artery (CA) stenosis that usually manifests with abdominal pain, vomiting, weight loss, and abdominal bruit (1), can be associated with pancreaticoduodenal artery (PDA) arch aneurysms (2,3). It is hypothesized that these aneurysms develop as a result of increased blood flow and pressure through the PDA arch (2).

Written informed consent and local institutional review board approval were obtained for this report. A 64-year-old woman, previously surgically treated for MALS associated with 2 PDA aneurysms, presented at 10 month after surgery with a new aneurysm of the inferior PDA. Computed tomography (CT) angiography demonstrated a preocclusive stenosis of the ostium of the CA, partially covered by an aortic calcified plaque (**Fig 1**). Risks and benefits of the endovascular approach were discussed with the patient.

Before the procedure, the patient received 3 days of double antiplatelet therapy (aspirin 100 mg and clopidogrel 75 mg/d). Bilateral common femoral artery access was obtained with 2 6-F, 45-cm-long sheaths, the right one (Destination; Terumo Corp, Tokyo, Japan) with the hockey stick tip placed at the origin of the superior mesenteric artery (SMA) and the left one (Flexor; Cook, Inc, Bloomington, Indiana) with the straight tip placed in the abdominal aorta. Both sheaths were connected with a continuous heparin flush (0.9 IU/mL). Through the right side, a 0.021-inch, 150-cm microcatheter (PROWLER Plus; Codman Neuro, Raynham, Massachusetts) was advanced coaxially over a 0.014-inch, 300-cm guide wire (Transend; Stryker Neurovascular, Fremont, California) through the tortuous PDA arch up to the CA ostium and then to the abdominal aorta. The guide wire was switched to a 0.014-inch, 300-cm, extra-support guide wire (ChoICE PT; Boston Scientific, Marlborough, Massachusetts). The guide wire tip was snared and withdrawn from the left side through a 20-mm, 6-F snare kit (Bard Medical Division, Covington, Georgia) (**Fig 2**). A 6-F, 55-cm hockey stick guiding catheter (VISTA BRITE TIP; Cordis, Milpitas, California) was advanced from the left side close by the ostium of the CA. After performing a predilation with a monorail 4 × 30 mm balloon (Ultra-soft; Boston Scientific), a 6 × 18 mm balloon-expandable stent (RX Herculink Elite; Abbott Vascular, Menlo Park,