Conclusions: This model demonstrates that most patients with HCC should be considered for same-day discharge after a TACE, irrespective of liver function, tumor burden or patient characteristics. However, chronic pain and past history of protracted pain are reliable predictors of recovery and should be taken into discharge planning.

Abstract No. 510

Extrahepatic collateral supply of hepatocellular carcinoma by the omental artery: detection with automatic software

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Purpose: Extrahepatic collateral (EHC) supply to hepatocellular carcinomas (HCC) by the omental artery can be difficult to detect during transarterial chemoembolization. Herein we evaluate the accuracy of automatic vessel detection software for identifying EHC supply by the omental artery in patients undergoing cone-beam CT (CBCT)-assisted transarterial chemoembolization for HCC.

Materials: Twelve patients with confirmed EHC supply to HCC by the omental artery and 18 patients without EHC supply (n = 33 HCCs) were subject to an automatic vessel detection software. Contrast-enhanced CBCTs and digital subtraction angiograms, acquired from the common hepatic artery, were available for all patients. Confusion matrices of true positives, true negatives, false positives, and false negatives were constructed to assess software detection of EHC arteries.

Results: Mean HCC diameter was 4.1 cm (5.1 cm EHC, 3.4 cm non-EHC HCCs). Of the total 62 arteries supplying 34 HCCs (12 omental, 50 intrahepatic arteries), 59 were detected by the software.

Conclusions: Extrahepatic collateral (EHC) supply to hepatocellular carcinomas (HCC) by the omental artery can be difficult to detect during transarterial chemoembolization. Herein we evaluate the accuracy of automatic vessel detection software for identifying EHC supply by the omental artery in patients undergoing cone-beam CT (CBCT)-assisted transarterial chemoembolization for HCC.

Abstract No. 511

The comprehensive analysis of efficacy and safety of CalliSpheres® drug-eluting beads transarterial chemoembolization in 367 patients with liver cancer: a multiple-center, prospective cohort study (CTILC study)

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Purpose: To evaluate the feasibility and accuracy of utilizing intra-arterial computed tomography (IACT)–based enhancement mapping for response assessment of hepatocellular carcinoma to transarterial chemoembolization: a preliminary analysis

B. Odisio1, E. Lin2, G. Chintalapani2, A. Mahvash1, E. Kloot2; 1MD Anderson Cancer Center, Houston, TX; 2The University of Texas MD Anderson Cancer Center, Sugar Land, TX; 3Siemens Healthcare, Houston, TX; 4Siemens Healthcare, Forchheim, TX

Purpose: To evaluate the feasibility and accuracy of utilizing intra-arterial computed tomography (IACT)–based enhancement mapping for response assessment of hepatocellular carcinoma to transarterial chemoembolization: a preliminary analysis

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Patients (n = 367)</th>
<th>Nodules (n = 667)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR (n%)</td>
<td>73(19.9)</td>
<td>191(28.6)</td>
</tr>
<tr>
<td>PR (n%)</td>
<td>219(59.7)</td>
<td>330(49.5)</td>
</tr>
<tr>
<td>ORR (n%)</td>
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<td>521(78.1)</td>
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<tr>
<td>SD (n%)</td>
<td>53(14.4)</td>
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<tr>
<td>PD (n%)</td>
<td>22(6.0)</td>
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</tbody>
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Intraarterial computed tomography–enhancement mapping for response assessment of hepatocellular carcinoma to transarterial chemoembolization: a preliminary analysis

B. Odisio1, E. Lin2, G. Chintalapani2, A. Mahvash1, E. Kloot2; 1MD Anderson Cancer Center, Houston, TX; 2The University of Texas MD Anderson Cancer Center, Sugar Land, TX; 3Siemens Healthcare, Houston, TX; 4Siemens Healthcare, Forchheim, TX

Purpose: To evaluate the feasibility and accuracy of utilizing intra-arterial computed tomography (IACT)–based enhancement mapping for response assessment of hepatocellular carcinoma to transarterial chemoembolization: a preliminary analysis

Table 1. Clinical Response of Patients and Nodules

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mapping (EM) in predicting response of hepatocellular carcinoma (HCC) to transarterial chemoembolization (TACE).

**Materials:** This single-institution retrospective study included 16 patients (mean age, 66 years, range, 50-77). IACT protocol consisted of two sets of CT scans (non-contrast and intra-arterial contrast-enhanced acquisitions) performed before and after chemoembolic delivery on a hybrid Anglo-CT System. After procedure completion, IACT data were processed offline with dedicated EM software (Hepacare, Siemens Healthineers, Germany) which utilizes high-resolution deformable registration and subtraction for residual arterial tumor enhancement assessment. Analysis was done on the full resolution data with an isotropic voxel size of 0.6 mm³. Areas of residual enhancement above the post-chemoembolization background noise level were considered as residual disease. Quantification of these areas within the treated HCC was used to assess individual tumor response according to mRECIST. Study objectives were technical feasibility and accuracy of EM in predicting HCC response by mRECIST on the first routine cross-sectional contrast-enhanced CT or MR imaging (FUI-1) after TACE.

**Results:** EM was successfully performed in 14 (87.5%) patients (2 patients: suboptimal contrast-enhanced IACT due to catheter dislodgment). Mean time from TACE to FUI-1 was 9.5 weeks. Among the 14 patients successfully analyzed with EM, 21 HCCs were treated with TACE (mean diameter, 2.5 cm [range 1-6.3]; mean number of HCCs per patient, 1.5 [range 1-3]). Tumor response prediction based on EM showed complete response in 19 (86%) and partial response in 3 (14%) of HCCs, respectively. Response assessment by FUI-1 fully agreed with EM response assessment for all 21 HCCs treated with TACE.

**Conclusions:** Dedicated EM using the proposed IACT imaging protocol was feasible and highly accurate in predicting response after TACE. Further studies are warranted to validate and investigate the role of this method for intraprocedural immediate response assessment and subsequent decision making.

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**Abstract No. 513**

**Hepatocellular carcinoma treated with conventional versus drug-eluting bead transarterial chemoembolization: clinical and pathologic outcomes following bridge to transplant**

A. Moreland¹, C. Georgiades¹, R. Liddell¹, K. Hong¹; ¹Johns Hopkins Hospital, Baltimore, MD

**Purpose:** Locoregional therapy serves an important role in bridging to liver transplantation for patients with unresectable HCC. However, there is limited literature on comparative efficacy of locoregional treatment options in the post-transplant period. The present study examines our institutional experience with cTACE versus DEB-TACE in patients bridged to transplant, with explant gross and microscopic pathologic correlation.

**Materials:** An IRB-exempt, retrospective review of an institutional database was conducted for all patients with HCC treated with cTACE or DEB-TACE alone from December 2010 through January 2016 who were successfully bridged to liver transplant. Patient demographics, tumor characteristics, MELD scores, explant pathology, and post-transplant clinical course were recorded.

**Results:** 92 total patients were treated during the study period (n = 52 with cTACE, n = 40 with DEB-TACE). Median MELD score at the time of first procedure was 10 vs 9, respectively (p = 0.13). Median number of tumors per patient at time of first procedure was n = 1 in each group (p = 0.96), while median maximum pretreatment tumor diameter was 2.4 cm among cTACE and 2.6 cm among DEB-TACE patients (p = 0.14). Median duration of follow-up was 24 versus 46 months from the first procedure, and 16 versus 38 months from transplant (cTACE vs DEB-TACE groups, respectively). Median number of residual/recurrent tumors at time of explant was n = 1 in both groups (p = 0.39), while median maximum percent tumor necrosis on explant histology was 90% in both groups (p = 0.79). Post transplant recurrent disease was detected on follow-up imaging in 6% (n = 3) of cTACE patients and 10% (n = 4) of DEB-TACE patients (RR = 0.58; p = 0.44). HCC-specific and overall survival from time of first procedure were not significantly different between groups (DSS: HR 0.19, p = 0.13; OS: HR 1.2, p = 0.77).

**Conclusions:** Evaluation of post-transplant outcomes among patients with HCC treated with stand-alone cTACE versus DEB-TACE revealed no difference in post-transplant explant pathologic or clinical primary outcomes between groups. Therefore, periprocedural factors appear to be more important than long-term post-transplant outcomes in choice of treatment modality.

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**Abstract No. 514**

**Injectable thermo-sensitive hydrogels as chemoembolic drug delivery agents for interventional applications**

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**Purpose:** Controversy exist when discussing disease control of hepatocellular carcinoma in regards to bland embolization versus drug loaded microspheres. While the reasons for the absence of convincing data supporting the use of embolic microspheres in combination with chemoembolization are multiple, the importance of achieving complete vascular occlusion and sustained drug release are clear. Therefore, the development of biodegradable injectable drug loaded materials that can “cast” the tumor capillary bed would be advantageous. Chitosan is an FDA approved biocompatible and biodegradable polysaccharide derived from the crustacean exoskeleton. It can be used as a delivery vehicle for small molecules.

**Materials:** Chitosan was dissolved in 0.25% acetic acid solution (1.44%w/v) under magnetic stirring for approximately 12 hours at room temperature. The solution was sterilized by autoclaving at 121ºC for 30 min. Chitosan (5 mL) was mixed with 200µL of ammonium hydrogen phosphate (AHP) solution (60% aqueous solution) via two syringe vigorous mixing method. The pH of the mixture was in the range of 7-7.2. Doxorubicin (5 mg/ml) was loaded into chitosan solution during magnetic stirring for release studies. The drug released from the hydrogel was determined by measuring the concentrations of the doxorubicin after set time.