**Presenter:** Koichi Hayano  

**Title of Abstract:** Evaluation of liver tumors by perfusion CT  

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**Modality:** CT  

**Organ System:** GI  

**Purpose:** To evaluate imaging characters of liver tumors and its background by CT perfusion (CTP). To assess the perfusion parameters variability in different tumors in the same patient.  

**Methods Used:** CTP data obtained from 34 patients (20 HCCs and 14 metastases) was processed (CT Perfusion 2). In 10 patients with multiple liver tumors (> 3 tumors), variability in perfusion parameters was assessed. CTP values of liver tumors and background liver were also evaluated.  

**Results of Abstract:** In HCC, tumor blood flow (BF), blood volume (BV) and permeability-surface area product (PS) were significantly higher (P = 0.0003, P = 0.007, P < 0.0001, respectively) and mean transit time (MTT) was significantly lower than metastasis (P = 0.009). HCC also showed significantly higher PS than hypervascular metastasis (P = 0.003). The background liver of HCC showed significantly higher MTT than that of metastasis (P = 0.003). Significant correlations were observed between HCC and its background liver in BF (R = 0.7, P = 0.0006) and BV (R = 0.58, P = 0.006), but no correlation was observed between metastasis and its background liver. In 10 patients with multifocal tumors, the mean coefficient value of each CTP parameter was over 20% (20 – 45 %).  

**Discussion:** Angiogenesis is a critical pathway of tumor growth and progression. CTP is a new technology that allows the measurement of tumor vascular physiology therefore, CTP values may reflect tumor biological characters.  

**Scientific and/or Clinical Significance?** HCC and its background liver showed distinct CTP parameters from metastases including the hypervascular ones. Different tumors in same patient showed variable CTP values therefore, same lesion selection before and after treatment for a reliable assessment of response is necessary, and mean CTP value is a better surrogate of tumor perfusion in patients with multifocal liver tumors.  

**Relationship to existing work** CTP values may reflect tumor angiogenesis, and are useful in the diagnosis of liver tumors.