

AbstractID: 10368 Title: The effects of temporal sub-sampling on estimates of CT perfusion parameters in abdominal tissues

**Purpose:** To assess the effects of temporal sampling interval (SI) on estimates of blood flow (BF) and blood volume (BV) parameters derived from CT perfusion (CTP) in abdominal tissues. **Method and Materials:** CTP data was acquired in ten patients with liver tumors on a 64 row CT (8x5mm thickness, 30s end-inspiration breathhold cine acquisition, 50cc intravenous contrast). For each dataset, the original series (0.5s SI) was reformatted to SIs of 1.0, 2.0 and 3.0s. BF and BV parametric maps for the original and three reformatted series' were computed using commercially available CT perfusion software (CT Perfusion 4, General Electric Healthcare). For each dataset, tumor, normal liver, spleen and kidney regions of interest (ROI's) were defined on a slice-by-slice basis on the original 0.5s SI series. For each ROI and each reformatted series, BF and BV values were recorded and plotted against 0.5s SI values for that ROI. Linear regression slope coefficients and  $R^2$  values were used to compute the correlation and fit. **Results:** In total, 228 ROI were analyzed (108 tumor; 46 normal liver; 53 spleen; 21 kidney). BF showed relatively stable behavior as SI was increased from 0.5s to 3s, with slope coefficients close to unity, in the range 0.974 to 1.022, and with  $R^2$  values in the range 0.982 to 0.997. BV showed similar behavior with slope coefficients in the range 0.973 to 1.013, and  $R^2$  values in the range 0.972 to 0.976. **Conclusion:** SI as large as 3s permits relatively accurate estimates of BV and BF in abdominal tissue compared to those obtained with 0.5s intervals. By increasing the SI in such studies, the dose delivered in a liver CTP protocol can be reduced. **Conflict of Interest:** Research sponsored by GE Healthcare.