AbstractID: 8568 Title: Normal Organ Volume Assessment (NOVA)

Purpose:
Abdominal CT scans are performed with increasing frequency with the advent of multi-slice CT systems. We are studying the potential of quantitative organ volume assessment, and what role this may have in improving diagnostic accuracy.
Methods:
Of 207 abdominal CT studies initially evaluated, after eliminating patients which were thought to have abnormal organ volumes due to their disease status, 149 patients were selected for inclusion in this IRB-approved study. CT studies were downloaded from our institutional PACS, and custom software was used to hand-outline the organ boundaries for the kidneys (LK and RK), adrenals (LA and RA), spleen (SP), pancreas (PC), and liver (LV). The outlines combined with known pixel dimensions and CT slice thicknesses allowed the computation of organ volumes. Organ volumes were corrected for height and weight to a standardized body habitus.
Results:
Mean organ volumes were computed on 711 individual organs, and ranged from ~4.6 ml for the adrenals to 1411 ml for the liver (female volumes mentioned). Normal organ volume distributions were consistent with the Gaussian distribution for all organs except the adrenals ($p<0.05$, Kolmogorov-Smirnov test), and from the parametric fit results, tables defining the normal range of each organ volume were produced.
Conclusions:
Computer aided diagnosis algorithms for abdominal organ segmentation will allow a medley of diagnostic features, but the simplest parameter available, once the organ boundary has been determined, is organ volume. The data produced in this study will help to define normative values for each of the abdominal organs.