

QIBA Quantitative CT Committee

Monday, December 14, 2009

11 AM CDT

Call Summary

In attendance

Andrew Buckler, MS (co-chair)
P. David Mozley, MD (co-chair)
Lawrence Schwartz, MD (co-chair)
Harris Ahmad, MD
Maria Athellogou, MD
Patricia E. Cole, PhD, MD
Charles Fenimore, PhD
David Gustafson, PhD
Philip F. Judy, PhD
Grace Kim, PhD
James Mulshine, MD

Kevin O'Donnell
Nicholas Petrick, PhD
Anthony Reeves, PhD
Yuanxin Rong, MD, MPH
Daniel Sullivan, MD
Hiro Yoshida, PhD

RSNA

Fiona Miller
Susan Anderson, MLS
Joe Koudelik

Group 1A analysis (Drs Petrick and Kim)

- Dr Petrick presented analysis of data:
 - separated by data types: 10mm spheres, 0.8 and 5mm slice thickness, densities and two reading sessions
 - plotted with mean, bias, coefficient of variation (CV) and standard deviation
 - data based on physical measurements, not measurements from images
- The group discussed the best scaling to look at these numbers
 - 1D measure is easiest and most repeatable; lowest CV indicating lowest variance
 - 2D mean is physically-measured longest measure on phantom itself
 - Difficult with spiculated nodules
 - ANOVA analysis conducted to look at significant effect
- Distribution:
 - Spheres and lobulated nodules tend to have a single peak; ovoid and spiculated nodules tend to have 2 peaks
- Dr Petrick shared a table in which 2D was removed and 1D was converted to volume
- 1D measurements associated with higher bias for all non-spherical shapes
- Ovoid and spiculated tumors have orientation but have not systematically probed orientation
- Significant effects show variance across reader sessions, lesion shape and measurement technique
- When the methodology is documented, it will be easier to determine whether the actual numbers are lining up with variability and sensitivity of volume measure
- Discussion of whether the results are transferable to vCT as a class
 - Profile sets Claims for class performance:
 - Class has to be more sensitive than RECIST
 - Individuals within class need appropriate numbers to characterize performance of class
- Interest in having others try with other algorithms/machines to see if this characterizes class
 - Dr Schwartz volunteered to try with other algorithm/machine and compare with MSK data
- In summation, important to determine:
 - whether methodology is in alignment and comparable to numbers in Profile Claim (18%)

- whether we are seeing expected results for this 1A exercise
- whether other algorithms will show different results
- Consider compiling list of questions to answer, e.g. is volume more sensitive than RECIST in spiculated or lobulated shapes?
- Determining the right measure or combination of measures depends on whether considering just variability or other questions; how best to compare 1D, 2D and volume?
- Dr Kim interested in looking at correlation of shape and slice thickness
- Dr Petrick to look at summary statistic for easier comparison

Next Steps

Dr Petrick:

- will distribute data and preliminary methodology write-up to group;
- will continue with analysis and methodology write-up;
- will look at contours

Drs Petrick and Kim will determine summary statistic for easier comparison

Dr Kim interested in looking at correlation of shape and slice thickness

Dr Schwartz to run with different algorithm/machine on same 1A data