

ADNI Biostatistics Core
Conference call, 3 May 2005

Present on call: Laurel Beckett, Danielle Harvey, John Kornak.

Absent on call: Mike Weiner, everyone else.

Danielle reviewed the report on analysis of the preparatory phase data. Note that the proportion of males is higher among the AD participants. We don't know whether the hippocampal volume was controlled for intracranial volume; the numbers we got look more like raw data (700 to 2000 or something). Danielle will check with Norbert's group and report units also.

The report is organized by aim.

The first aim looks at MPR vs. SPGR.

Part 2a: In general SPGR gives slightly higher hippocampal volume than MPR on same subjects, especially in normals. But ability to distinguish between normal and AD is comparable, no significant differences. The p value is 0.89 and the box plots look comparable so we do not suspect this of being an uninformative null. The scatter plot looks very close to line $y=x$. Danielle will check up the one control with a tiny hippocampus.

Part 2b: We have 36 paired differences (controls, session 1 to session 2). Picture is for everything; separate analyses have been done for 1.5 tesla and show similar pattern. Quartiles are narrower but MPR has some outliers. We don't know how much this is a cause for concern; the numbers are small but this suggests at least a need for some caution and trying to understand if this is a common feature. Danielle will check to see if outliers had both MPAGE and SPGR; this plot includes all people who had any of the three approaches done, and some people show up only in one or two boxes.

Gray-white contrast: We are not completely sure how these were generated. Are they supposed to be zero? Nothing is ever negative in this. Danielle has asked for clarification. We don't understand why the difference between time 1 and time 2 is always positive. SPGR gives smaller values but we are not sure why or whether this is a good thing. Signal to noise: only MPR vs SPGR, which gave significantly higher values. We don't know if that is better!

Aim 3 looks at MPR vs T1.

Aside from 4 outliers, everything looks really good for MPR, and T1 has a significantly wider spread. Sample size is just 10 per group. No difference in ability to discriminate AD and MPR. Qian did a scatter plot but it isn't shown. Danielle is redoing.

The longitudinal comparison for the BSI shows larger variation for the T1 sequence. We looked at absolute value (since everything appeared to be distributed about zero difference.) This is true overall and for 1.5 T and Danielle is checking 3 T. We didn't find differences for gray-white contrast. Numbers were substantial – $n=43$.

Thus our final interpretation has to wait for some clarification of the signal to noise and the gray-white contrast.

Overall we think there is little difference in the ability to detect differences between AD and control subjects, but potentially an impact from variation.

Danielle will finalize this draft and send it out, also the power point. John and Laurel will review.