Supplementary Online Content

Kesler SR, Blayney DW. Neurotoxic effects of anthracycline- vs nonanthracycline–based chemotherapy on cognition in breast cancer survivors. Published online December 3, 2015. *JAMA Oncol*. doi:10.1001/jamaoncol.2015.4333

eMethods. Technical details regarding neuroimaging acquisition and preprocessing.

eReferences

eFigure. Pairwise comparisons for Hopkins Verbal Learning Test Revised (HVLT-R)

This supplementary material has been provided by the authors to give readers additional information about their work.

.

eMethods. Technical details regarding neuroimaging acquisition and preprocessing

Resting state fMRI data were acquired while participants rested in the scanner with their eyes closed. We used a T2*-weighted gradient echo spiral pulse sequence [1] with the following parameters: relaxation time = 2000 msec, echo time = 30 msec, flip angle = 89° and 1 interleave, field of view = 200, matrix = 64x64, in-plane resolution = 3.125. Number of volumes collected was 216, scan time = 7:12. An automated high-order shimming method was used to reduce field inhomogeneity. We also acquired a high-resolution, 3D inversion-recovery prepared fast spoiled gradient echo T1-weighted anatomical scan with the following parameters: TR = minimum, TE = minimum, flip = 11 degrees, inversion time = 300 msec, bandwidth = +/-31.25 kHz, field of view = 24cm, phase field of view = 0.75, slice thickness = 1.5mm, 125 slices, 256x256 at 1 excitation, scan time = 4:26. Task-based fMRI, diffusion tensor imaging and/or MR spectroscopy were also acquired for some participants during the MRI session (total scan time = 60 minutes or less). These data are not reported here. However, the resting state scan was acquired prior to any other scans to reduce the effects of specific cognitive processes on the resting state networks [2].

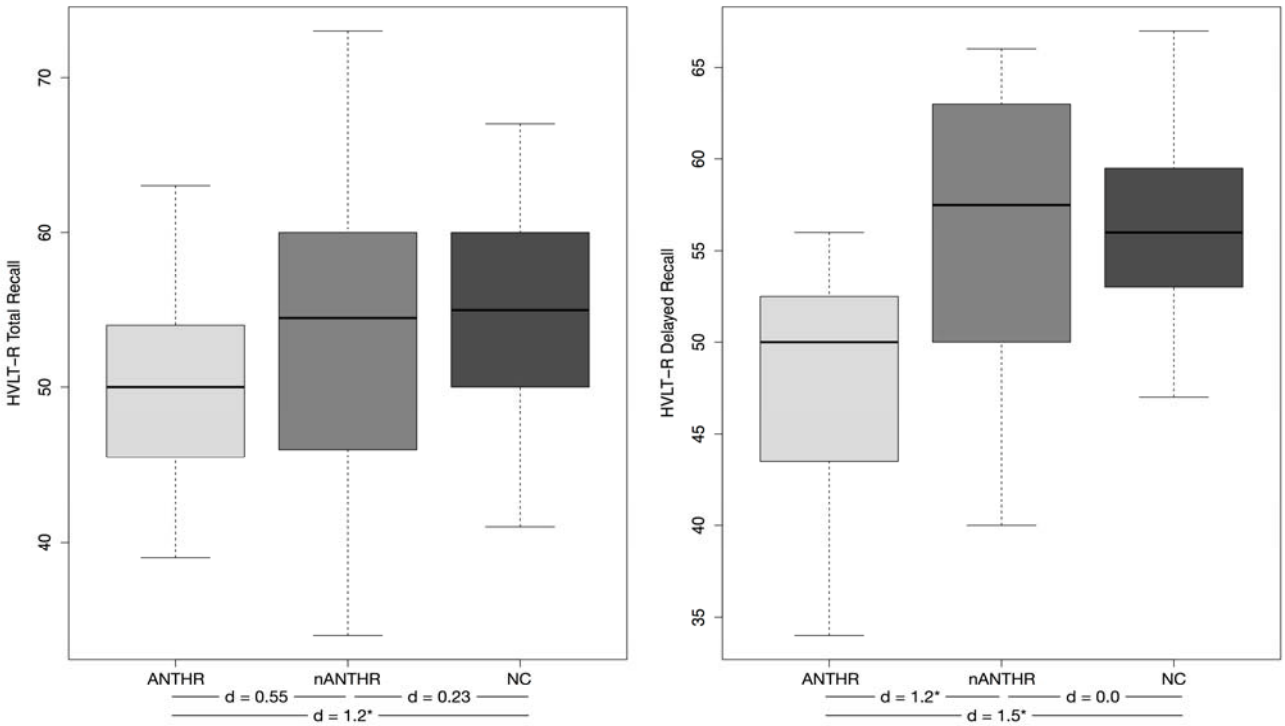
Functional volumes were realigned to the first scan of the session for each participant to reduce effects of head motion. Anatomic images were segmented and coregistered to the functional volume to improve normalization of the functional volume to a Montreal Neurological Institute (MNI) standard space template. Functional volumes were then smoothed (8mm full width half maximum) to reduce the effects of noise. Individual images were visually assessed for correct segmentation and spatial normalization. Functional volumes were further denoised to reduce motion and signal related artifacts using a wavelet despiking method [3]. Images were then examined using Artifact Detection Tools (http://www.nitrc.org/projects/artifact_detect) to identify any remaining motion and/or signal intensity outliers (z-threshold = 3, movement threshold =

1mm, rotation threshold = 0.05 mm). We determined a priori that any resting state volumes with more than 10% outlier images would be excluded from the study. No datasets required exclusion. Functional volumes were band pass filtered to 0.008 Hz - 0.09 Hz and the CompCor correction method was used to reduce physiological and other non-neuronal noise artifacts [4]. The realignment motion parameters were included as first level covariates and images with excessive motion/signal artifact were excluded from the analyses.

eReferences

1. Glover GH, Law CS. Spiral-in/out BOLD fMRI for increased SNR and reduced susceptibility artifacts. *Magn Reson Med.* 2001;46(3):515-522.
2. Northoff G, Qin P, Nakao T. Rest-stimulus interaction in the brain: a review. *Trends Neurosci.* 2010;33(6):277-284.
3. Patel AX, Kundu P, Rubinov M, et al. A wavelet method for modeling and despiking motion artifacts from resting-state fMRI time series. *NeuroImage.* 2014;95:287-304.
4. Chai XJ, Castanon AN, Ongur D, Whitfield-Gabrieli S. Anticorrelations in resting state networks without global signal regression. *NeuroImage.* 2012;59(2):1420-1428.

eFigure. Pairwise comparisons for Hopkins Verbal Learning Test Revised (HVLT-R).



The anthracycline (ANTHR) group showed significantly lower verbal memory performance compared to the non-anthracycline (nANTHR) and no-chemotherapy control (NC) groups. The nANTHR group demonstrated similar performance to NC controls. Total Recall is a measure of memory encoding and Delayed Recall is a measure of memory retention. D values reflect effect sizes from pairwise comparisons [* denotes comparisons with significant p values ($p < 0.03$, Bonferroni corrected)]. Boxes indicate the first quartile, median, and third quartile; whiskers indicate the minimum and maximum.