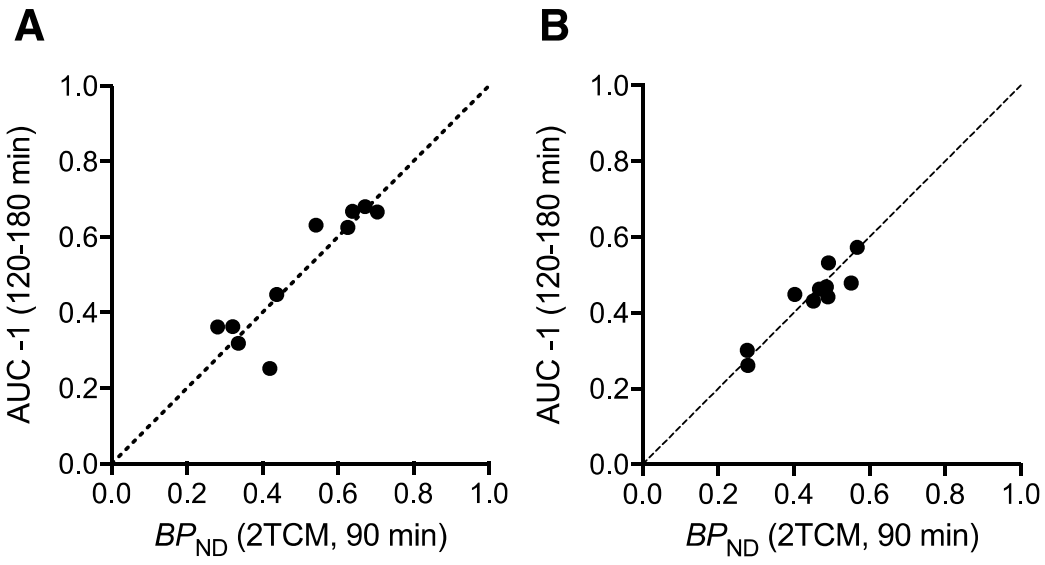
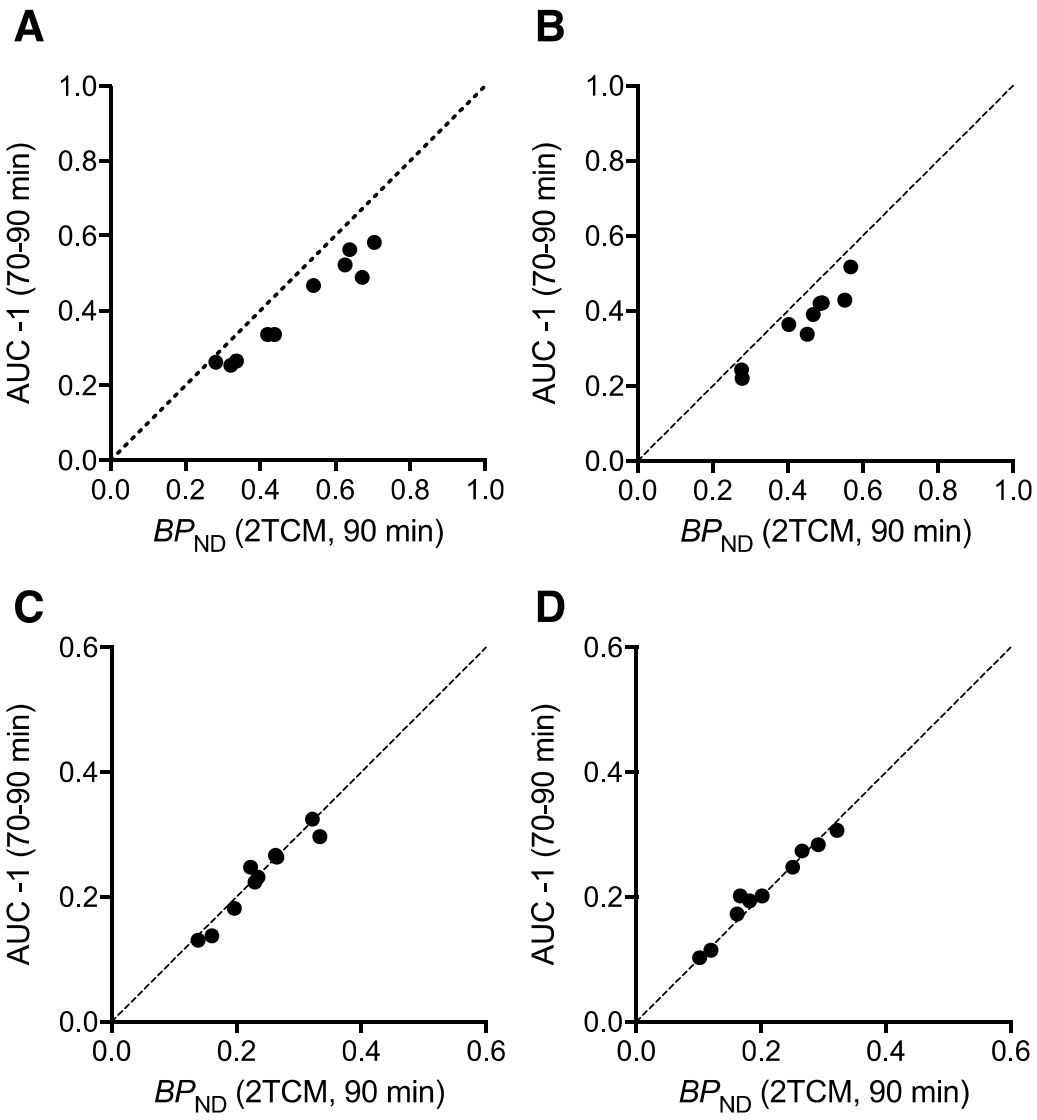


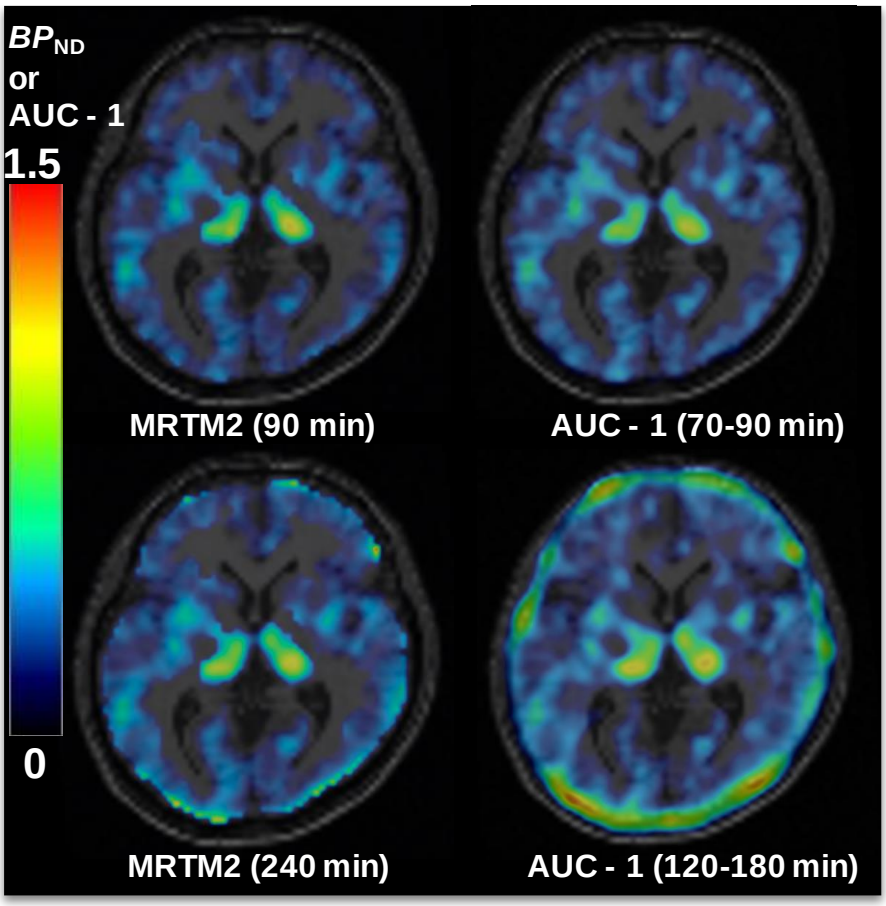
Supplemental Figure. 1

Correlations between BP_{ND} values estimated with 2TCM from 90-min scan data and (AUC ratio - 1) values of 120–180-min data in the midbrain (A) and thalamus (B)



Supplemental Figure. 2

Correlations between BP_{ND} values estimated with 2TCM from 90-min scan data and (AUC ratio -1) values of 70–90-min data in the midbrain (A), thalamus (B), insular cortex (C), and frontal cortex (D).



Supplemental Figure. 3

Representative transaxial parametric images at a level of mid thalamus of (*S*,*S*)-^{18}F-FMeNER-D_2 estimated from scan data of various scan lengths. Parametric images of MRTM2 BP_{ND} from 90-min dynamic scan data (top-left) and (AUC ratio - 1) from 70–90 min data (top-right) showed minimal effects of spillover from adjacent to the skull. However, parametric images of MRTM2 BP_{ND} from 240-min dynamic scan data (bottom-left) and (AUC ratio - 1) from 120–180 min data (bottom-right) showed overestimation in the superficial cortices adjacent to the skull.

Supplemental discussion
Reference region

Occipital cortex is often used as reference tissue for the quantification of (*S*,*S*)-^{11}C-MRB, because specific binding of (*S*,*S*)-^{18}F-FMeNER-D$_2$ was reported to be minimal in a postmortem study (*1*). However, the presence of NET density in the occipital cortex has been inconsistently reported by other paper (*2*). In our PET analysis, we found a significant amount of specific binding in the occipital cortex. Thus, further investigation to confirm the use of the occipital cortex as reference tissue would be needed.

Based on the postmortem study, NET density in the white matter was very low (*2*) and Takano used white matter as a reference region for the quantification using AUC ratio method (*3*). We found that the white matter was useful as reference tissue for AUC ratio quantification with 120-180 min scan data, although it was not useable for BP_{ND} quantification with 90 min dynamic scans or AUC ratio with 70-90min scan data for the reason explained below. Using the white matter as reference tissue, the (AUC ratio - 1) of 120–180 min data matched well with the BP_{ND} values estimated with the 2-tissue compartment model with the 240-min data in the high-binding regions such as the midbrain ($r^2 = 0.83$) and thalamus ($r^2 = 0.89$). Coefficient of variance of the (AUC - 1) values of 120–180 min data in the midbrain and thalamus were 15% and 20% for white matter as the reference region and 27% and 20% for caudate as the reference region, respectively. Meanwhile, for BP_{ND} quantification, we were not able to estimate k_2' values for the white matter region, which is necessary for quantification of BP_{ND}. Furthermore, we were unable to estimate (AUC ratio - 1) of 70–90 min data because the kinetics with 70-90 min scan data in the white matter region was not stable.

References

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