The aim of this study is to investigate whether perfusion SPECT imaging could predict the conversion from MCI to AD.

**Methods:** MCI was diagnosed according to the criteria proposed by Petersen et al. Each patient underwent MMSE, WMS-R, and a questionnaire containing 31 items. Those with a MMSE score of 24 or more was defined as MCI. Ninety-eight MCI subjects were studied. The easy Z-score Imaging System (eZIS) and Voxel Based Stereotactic Extraction Estimation (vbSEE) was used for the quantitative assessment of brain SPECT images. A more than 20% decrease in the extent % in the level 3 in comparison to the control subjects was used to assess the hypoperfusion in the vbSEE analysis.

**Results:** The vbSEE analysis in AD showed significant hypoperfusion in the inferior parietal lobules and angular-, supramarginal-, middle temporal-, inferior temporal-, precuneus-, posterior cingulate gyrus. Hypoperfusion in more than 2 regions of those regions suggested AD. Forty-seven patients (48%) of 98 MCI patients showed hypoperfusion in more than 2 regions at the time of the first examination in our hospital. Thirty-five of the patients were followed for 1 to 4 years. They were divided into two groups, subjects with less than 2 hypoperfusion regions, and those with 2 or more, and analysed to determine if there was a difference in conversion to AD. The Logrank test demonstrated a significant difference (P<0.01).

**Conclusions:** The vbSEE analysis of SPECT imaging in MCI patients can predict whether or not these patients convert to AD in the near future.