学 位 論 文 の 要 旨

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主論文の題名

High-Risk Plaque for Carotid Artery Stenting Evaluated With 3-Dimensional T1-Weighted Gradient Echo Sequence

主論文の要旨

Preventing cerebral embolisms is a major concern with carotid artery stenting (CAS). We performed quantitative analyses of the characteristics of 47 carotid plaques before CAS by measuring the signal intensity ratio (SIR) and plaque volume using 3-dimensional T1-wighted gradient echo (3D T1GRE)images. We also evaluated diffusion-weighted images (DWI) of the brain before and after CAS to detect ischemic lesions (DWI lesions) from cerebral emboli. SIR (2.17 [IQR 1.50–3.07] versus 1.35 [IQR 1.08–1.97]; P=0.010) and plaque volume (456 mm^3 [IQR 256–696] versus 301 mm^3 [IQR 126–433]; P=0.008) were significantly higher in the group of patients positive for DWI lesions (P-group: n=26) than DWI lesion-negative patients (N-group: n=21). In multivariate logistic regression analysis, SIR (P=0.007) and plaque volume(P=0.042) were independent predictors of DWI lesions with CAS. Furthermore, SIR (rs=0.42, P=0.005) and plaque volume (rs=0.36, P=0.012) were positively correlated with the number of DWI lesions. From analysis of a receiver-operating characteristic curve, the most reliable cutoff values of SIR and plaque volume to predict DWI lesions related to CAS were 1.80 and 373 mm3, respectively. Quantitative evaluation of carotid plaques using 3D T1GRE images may be useful in predicting cerebral embolism related to CAS.