Echogenic carotid plaque is associated with asymptomatic intracranial atherosclerotic disease in an employee health screening database

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Background & Purpose

Intracranial atherosclerotic disease (ICAD) is highly prevalent in Asians than Westerners. It has been demonstrated that risk profile of ICAD is significantly different from ECAD and the association between metabolic syndrome (MetS) and ICAD has been implicated.

We aimed to identify the prevalence of ICAD and ECAD in an employee health screening database and to investigate predictive factors of ICAD in the health screening.

Subjects & Methods

- A total of 103 subjects older than 40 years (56.9 ± 4.7 yr, male 93 cases) who received employee health screening between April and September in 2014
- Definition of ECAD and ICAD
  - **ECAD**: plaque size ≥ 1.1mm
  - **ICAD**: Global Stenosis Score (GSS) ≥ 1
- Semi-quantitative assessment of stenotic lesions of MCAs and basilar artery by MRA (Fig. 2)

Results

- ICAD was observed in 21 patients (20.3%).
- The number of MetS components was not independently associative with ICAD (Fig. 2).
- Logistic regression analysis with multivariate adjustment for major vascular risk factor demonstrated that echogenic of plaque was significantly associated with the ICAD (OR 3.69, 95%CI 1.02 - 13.3)(Fig. 3), however age was significant predictor of the risk profile of the ECAD (OR 1.19, 95%CI 1.02 - 1.40)(Fig. 4).
- The area under the curve (AUC) for the diagnosis of ICAD by carotid IMT was 0.655, the cut-off value of IMT ≥ 1.35 had a sensitivity and specificity of 85.7 and 51.9%, respectively.

Summary and Conclusions

This study demonstrated unique profile of cervico-cerebral atherosclerosis in asymptomatic Japanese people using health screening database.

1. Carotid US findings of atherosclerosis is highly predictive of ICAD than MetS or traditional risk factors.
2. Brain ischemic changes were associated with ECAD, but calcium score of aorta was not. Atherosclerotic findings in carotid US may be useful to screen people with asymptomatic ICAD in health screening.