



# Correlation of plasma soluble cluster of differentiation 40 ligand, alpha fetoprotein A, and pregnancy-associated plasma protein A with carotid plaque in patients with ischemic stroke

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**ABSTRACT.** This study investigated the correlation of plasma levels of inflammatory biomarkers [soluble cluster of differentiation 40 ligand (sCD40L), alpha fetoprotein A (fetuin-A), and pregnancy-associated protein A (PAPP-A)] with carotid plaque in patients with acute ischemic stroke. After undergoing color Doppler ultrasonography of the bilateral carotid arteries, 200 patients with acute ischemic stroke were grouped into plaque and non-plaque groups. The plaque group was further divided into stable and unstable plaque sub-groups by carotid plaque stability. Inter-group and -subgroup comparisons included demographic characteristics, current condition and medical history, and clinical laboratory and plasma inflammatory biomarker data, and logistic regression explored the correlations between plasma inflammatory biomarker levels and carotid plaques. Significantly higher sCD40L and fetuin-A levels were found in the plaque group than

in the non-plaque group (all  $P < 0.05$ ), with odds ratios (plaque vs non-plaque) of 6.372 and 4.101, respectively. Increased plasma inflammatory biomarker levels were accompanied by a high risk of carotid plaque formation. Similarly, significantly higher plasma sCD40L and PAPP-A levels were found in the unstable plaque subgroup than in the stable plaque subgroup (all  $P < 0.05$ ), and the odds ratios (unstable vs stable) were 5.290 and 4.125, respectively. Increased plasma inflammatory biomarker levels were accompanied by a high risk of carotid plaque instability. The study findings showed that plasma sCD40L, fetuin-A, and PAPP-A levels are associated with carotid plaque formation and instability. Fetuin-A and sCD40L might be predictors of carotid plaque formation, while PAPP-A and sCD40L might be predictors of carotid plaque instability.

**Key words:** Ischemic stroke; Carotid plaque; Fetuin-A; Soluble cell differentiation antigen 40 ligand; Pregnancy-associated plasma protein-A