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Simultaneous assessment of plaque morphology, cerebral micro-embolic signal status and platelet biomarkers in patients with recently symptomatic and asymptomatic carotid stenosis

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Abstract

The relationship between plaque morphology, cerebral micro-embolic signals (MES) and platelet biomarkers in carotid stenosis patients warrants investigation.

We combined data from two prospective, observational studies to assess carotid plaque morphology and relationship with cerebral MES and platelet biomarkers in patients with recently symptomatic (≤4 weeks of transient ischaemic attack (TIA)/ischaemic stroke) versus asymptomatic carotid stenosis. Plaque morphology on ultrasound was graded with Grey-Scale Median (GSM) and Gray–Weale (GW) scoring. Bilateral transcranial Doppler ultrasound classified patients as 'MES+ve' or 'MES-ve'. Full blood counts were analysed and flow cytometry quantified CD62P and CD63 expression, leucocyte-platelet complexes and reticulated platelets.

Data from 42 recently symptomatic carotid stenosis patients were compared with those from 36 asymptomatic patients. There were no differences in median GSM scores between symptomatic and asymptomatic patients (25 vs. 30; $P = 0.31$) or between MES+ve vs. MES-ve symptomatic patients (36 vs. 25; $P = 0.09$). *Symptomatic patients with GSM-echodense plaques* (GSM ≥25) had higher platelet counts (228 vs. 191 × 10^9/L), neutrophil–platelet (3.3 vs. 2.7%), monocyte–platelet (6.3 vs. 4.55%) and lymphocyte–platelet complexes (2.91 vs. 2.53%) than '*asymptomatic patients with GSM-echodense plaques*' ($P \leq 0.03$).

Recently, symptomatic carotid stenosis patients with 'GSM-echodense plaques' have enhanced platelet production/secretion/activation compared with their asymptomatic