**Definite plaque echolucency is associated with a higher risk of ipsilateral ischaemic stroke during early follow up in the Asymptomatic Carotid Surgery Trial-1 (ACST-1)**

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**Introduction:** Several carotid plaque characteristics, including a thin fibrous cap, lipid necrotic core and intraplaque haemorrhage, have been suggested as potential markers to select patients at high risk for future stroke. On ultrasound, these “high risk” characteristics appear echolucent. The Asymptomatic Carotid Surgery Trial-1 (ACST-1) is the largest randomised controlled trial comparing carotid endarterectomy (CEA) with deferral of CEA in patients with severe asymptomatic carotid artery stenosis. We aimed to assess whether ultrasound characterized plaque echogenicity was a predictor for ischaemic stroke in asymptomatic patients randomized to deferred treatment in ACST-1.

**Materials/Methods:** 814 patients randomized to deferred surgery who had baseline plaque assessment confidentially classified as echolucent (>25% soft plaque) or non-echolucent (<25% soft plaque) were studied. Kaplan-Meier survival curves were used to calculate cumulative rates of ipsilateral ischaemic stroke in both groups.

**Results:** Life table analysis showed a significantly higher 5-year risk of ipsilateral stroke in patients with definite echolucent plaques (8.0%; 95% CI: 6.4 - 9.6) when compared to patients with definitely non-echolucent plaques (3.1%; 2.1 - 4.1) (*p=0.009*). After adjustments of other risk factors, plaque echolucency was associated with a 2.5 times increased risk of ipsilateral ischaemic stroke (HR 2.52, 95% CI: 1.20-5.25; *p=0.014*). The use of lipid lowering therapy was low in both groups during the first 5 years after randomization but rose significantly thereafter and during the later stages of follow-up, and was more commonly prescribed in patients with echolucent plaques (*p=0.001*). The risk of ipsilateral ischaemic stroke at 10 years was similar for both levels of echogenicity (*p=0.421)* as was the risk of any stroke at 10 years *(p=0.632*).

**Conclusion:** Definite plaque echolucency (>25% soft plaque) might be a predictor of ipsilateral stroke and is associated with a higher 5-year ipsilateral stroke risk in these trial patients with asymptomatic carotid disease. The similar stroke risk outcomes at 10 years for both groups could possibly be explained by a higher use of lipid lowering therapy during later follow-up in patients with definite echolucent plaques.