ANALYSIS OF THROMBI RETRIEVED FROM CEREBRAL ARTERIES OF PATIENTS WITH ACUTE ISCHEMIC STROKE

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METHODS: This report describes the histological analysis of thromboemboli retrieved by endovascular mechanical extraction from the middle cerebral artery (MCA) and intracranial carotid artery (ICA) of 25 patients with acute ischemic stroke.

RESULTS: The large majority (75%) of thromboemboli shared architectural features of random fibrin:platelet deposits interspersed with linear collections of nucleated cells (monocytes and neutrophils) and confined erythrocyte-rich regions. This histology was prevalent with both cardioembolic and atherosclerotic sources of embolism. “Red” clots composed uniquely of erythrocytes were uncommon and observed only with incomplete extractions, and cholesterol crystals were notably absent. The histology of thromboemboli that could not be retrieved from 29 concurrent patients may be different. No thrombus >3 mm wide caused stroke limited to the MCA, and no thrombus >5 mm wide was removed from the ICA. A mycotic embolus was successfully removed in 1 case, and a small atheroma and attached intima were removed without clinical consequence from another.

CONCLUSIONS: Thromboemboli retrieved from the MCA or intracranial ICA of patients with acute ischemic stroke have similar histological components, whether derived from cardiac or arterial sources. Embolus size determines ultimate destination, those >5 mm wide likely bypassing the cerebral vessels entirely. The fibrin:plate-let pattern that dominates thromboembolic structure provides a foundation for both antiplatelet and anticoagulant treatment strategies in stroke prevention. **Stroke 2006;37: 2086-2093.**

EFFECTS OF NORMAL, PRE-HYPERTENSIVE, AND HYPERTENSIVE BLOOD PRESSURE LEVELS ON PROGRESSION OF CORONARY ATHEROSCLEROSIS

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OBJECTIVES: The purpose of this study was to evaluate the effects of normal blood pressure (BP), pre-hypertension, and hypertension on progression of coronary atherosclerosis.

BACKGROUND: The Seventh Report of the Joint National Committee on the Prevention, Detection,

Evaluation, and Treatment of High Blood Pressure (JNC-7) classifies BP as normal, pre-hypertension, and hypertension. The effects of these categories on progression of coronary atherosclerosis are unknown.

METHODS: The 274 patients who completed the intravascular ultrasound (IVUS) substudy of the CAMELOT (Comparison of Amlodipine Versus Enalapril to Limit Occurrences of Thrombosis) trial were included. The entry criteria were > or =1 angiographic coronary stenosis >20% and diastolic BP <100 mm Hg. Patients underwent a baseline coronary IVUS, which was repeated after 2 years of amlodipine, enalapril, or placebo therapy. The BP was evaluated periodically, and the averages of the measurements were used in the analyses.

RESULTS: Mean BP throughout the study was 127.0 +/- 12.0/75.5 +/- 6.8 mm Hg. In multivariable analysis, significant determinants of progression included systolic BP (r = 0.16; p = 0.006) and pulse pressure (r = 0.14; p = 0.02). Patients with "hypertensive" average BP had a 12.0 +/- 3.6 mm3 (least-square mean +/- SE) increase in atheroma volume, those with "pre-hypertensive" BP had no major change (0.9 +/- 1.8 mm3), and those with "normal" BP had a decrease of 4.6 +/- 2.6 mm(3) (p < 0.001 by analysis of covariance; p < 0.05 for comparison of all pairs).

CONCLUSIONS: The most favorable rate of progression of coronary atherosclerosis is observed in patients whose BP falls within the "normal" JNC-7 category (i.e., systolic BP <120 mm Hg and diastolic BP <80 mm Hg). This study suggests that in patients with coronary artery disease, the optimal BP goal may be substantially lower than the <140/90 mm Hg level.

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DENTAL AND PERIODONTAL STATUS AND RISK FOR PROGRESSION OF CAROTID ATHEROSCLEROSIS: THE INFLAMMATION AND CAROTID ARTERY RISK FOR ATHEROSCLEROSIS STUDY DENTAL SUBSTUDY

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METHODS: We randomly selected 411 of 1268 participants from the prospective Inflammation and Carotid Artery Risk for Atherosclerosis Study and evaluated dental and periodontal status and oral hygiene at baseline measuring three World Health Organization-validated indices: DMFT (decayed, missing, filled teeth), SLI (Silness-Loe Index), and CPITN (community periodontal index for treatment needs), respectively. The degree of carotid stenosis was measured by duplex ultrasound at baseline and after median 7.5 months (range=6 to 9 months) to identify patients with progressive carotid stenosis.

RESULTS: DMFT (P<0.01), SLI (P=0.048), CPITN (P=0.007), and

edentulousness (P=0.007) were associated with the baseline degree of carotid stenosis. Atherosclerosis progression was observed in 48 of 411 patients (11.7%). DMFT (adjusted odds ratio [OR]=1.11, 95% CI=1.01 to 1.22, P=0.032) and SLI (adjusted OR=1.77, 95% CI=1.09 to 2.79, P=0.021), but not CPITN (adjusted OR=1.51, 95% CI=0.89 to 2.45, P=0.16) were significant predictors of disease progression, irrespective of traditional cardiovascular risk factors and the baseline degree of stenosis. Edentulous patients had a significantly increased risk for disease progression as compared with patients with teeth (adjusted OR=2.10, 95% CI=1.06 to 4.16, P=0.33). CONCLUSIONS: Dental status, oral hygiene, and particularly tooth loss are associated with the degree of carotid stenosis and predict future progression of the disease.

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THE EFFECTS OF ATORVASTATIN ON CORONARY ENDOTHELIAL FUNCTION IN PATIENTS WITH RECENT MYOCARDIAL INFARCTION

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METHODS: Non-infarct-related coronary arteries of 48 patients with acute myocardial infarction who had undergone successful percutaneous transluminal coronary angioplasty were examined. Three groups were studied: hyperlipidemia with use of atorvastatin (Group 1, n=17), hyperlipidemia without statin use (Group 2, n=18), and normal cholesterol level controls (Group 3, n=13). Statin treatment was started at discharge. Acetylcholine (Ach) was infused into the coronary artery and the diameter was assessed by quantitative angiography at baseline and after 6 months. RESULTS: Acetylcholine given in doses of 1, 3, 10, and 30 mg/min increased the coronary artery diameter change in a dose-dependent manner. In the initial study, patients in the three groups had similar responses to Ach. The mean diameter change after 6 months was significantly improved in Group 1 compared with Groups 2 and 3 (-11 +/- 3% vs. -20 +/- 7% and -21 +/- 6%, respectively; $p < 0.01$ in each case). Multivariate regression analysis showed that atorvastatin ($p < 0.01$) was the significant determinant for improvement of endothelial function.

CONCLUSIONS: These findings suggest that atorvastatin improves endothelial function of the coronary artery in patients with myocardial infarction.

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COMPARISON OF FIXED-DOSE WEIGHT-ADJUSTED UNFRACTIONATED HEPARIN AND LOW-MOLECULAR-WEIGHT HEPARIN FOR ACUTE TREATMENT OF VENOUS THROMBOEMBOLISM

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DESIGN, SETTING, AND PATIENTS: Randomized, open-label, adjudicator-blinded, noninferiority trial of 708 patients aged 18 years or older with acute venous thromboembolism from 6 university-affiliated clinical centers in Canada and New Zealand conducted from September 1998 through February 2004. Of the randomized patients, 11 were subsequently excluded from the analysis of efficacy and 8 from the analysis of safety.

INTERVENTIONS: Unfractionated heparin was administered subcutaneously as an initial dose of 333 U/kg, followed by a fixed dose of 250 U/kg every 12 hours (n = 345). Low-molecular-weight heparin (dalteparin or enoxaparin) was administered subcutaneously at a dose of 100 IU/kg every 12 hours (n = 352). Both treatments could be administered out of hospital and both were overlapped with 3 months of warfarin therapy.

MAIN OUTCOME MEASURES: Recurrent venous thromboembolism within 3 months and major bleeding within 10 days of randomization. RESULTS: Recurrent venous thromboembolism occurred in 13 patients in the unfractionated heparin group (3.8%) compared with 12 patients in the low-molecular-weight heparin group (3.4%; absolute difference, 0.4%; 95% confidence interval, -2.6% to 3.3%). Major bleeding during the first 10 days of treatment occurred in 4 patients in the unfractionated heparin group (1.1%) compared with 5 patients in the low-molecular-weight heparin group (1.4%; absolute difference, -0.3%; 95% confidence interval, -2.3% to 1.7%). Treatment was administered entirely out of hospital in 72% of the unfractionated heparin group and 68% of the low-molecular-weight heparin group.

CONCLUSION: Fixed-dose subcutaneous unfractionated heparin is as effective and safe as low-molecular-weight heparin in patients with acute venous thromboembolism and is suitable for outpatient treatment.
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