

## Continuation or Discontinuation of Anticoagulation in the Early Phase After Acute Ischemic Stroke

Hemorrhagic transformation is a potentially serious complication of an acute ischemic stroke (AIS). When a patient receiving chronic anticoagulation presents with a recurrent AIS, the decision to continue or withhold anticoagulation presents a challenging scenario to clinicians. Groot et al studied this question in the context of a post hoc analysis of the Preventive Antibiotics in Stroke Study. The authors compared 2 groups, continuation versus discontinuation of anticoagulation in patients with AIS, assessing 2 outcomes at 3 months: risk of major bleeding and thrombotic events. The sample included elderly patients with a commonly seen vascular risk factor distribution. Anticoagulant use at time of AIS was observed in 192 of 2101 patients (9%). Although all anticoagulant therapies were considered, most patients were treated with vitamin K antagonists (182, 95%) and the most common indication was atrial fibrillation (83%). Anticoagulation was discontinued in 35 of 192 (18%) patients, temporary in 24 of 35, and permanent in 11 of 35 patients. The main difference in baseline characteristics between the groups was stroke severity: median National Institutes of Health Stroke Scale (NIHSS) score of 13 versus 4 in the discontinuation versus continuation groups, respectively. Anticoagulation was more frequently discontinued in patients with severe stroke (NIHSS score of >15) compared with mild to moderate (NIHSS score of ≤15), 52% versus 13%, respectively.

No major bleeding occurred in either group. In unadjusted analysis, patients in whom anticoagulation was discontinued had more thrombotic events (11% versus 3%), higher mortality (31% versus 15%), and worse functional outcome modified Rankin Scale score (0–2, 20% versus 55%). These differences, however, were driven by stroke severity as they were no longer seen after adjustment for sex and NIHSS. Sensitivity analysis suggested lower odds of good outcome when anticoagulation was discontinued (adjusted odds ratio, 0.11; 95% confidence interval, 0.01–0.98). The study adds to knowledge in this challenging clinical scenario showing that anticoagulation is most frequently continued and suggests that concerns for higher bleeding risks may not be substantiated. However, more formal, unbiased systematic assessment of the stroke severity threshold where bleeding risk would outweigh the benefit of continuation of anticoagulant therapy in patients with AIS is needed. In addition, the findings of this study are not applicable to novel anticoagulant agents as only a few patients were on any of these therapies. Last, the study did not address the question of the optimal timing to restart anticoagulant therapy in such patients. See p 1762.

## Long-Term Prognosis of Patients With Transient Ischemic Attack or Stroke and Symptomatic Vascular Disease in Multiple Arterial Beds

Stroke burden remains high despite available preventive medical treatments. Atherosclerotic disease is the main underlying mechanism and leading cause of death and morbidity worldwide.

In this study, Rothwell et al evaluate the clinical value of considering systemic atherosclerotic involvement with symptomatic disease in cardiac and peripheral arterial territories in patients presenting with transient ischemic attack (TIA) or stroke. The sample is from the large population-based Oxford Vascular Study followed for 12 years for incident cardiovascular events. Patients were

categorized according to territory involved as single (TIA/stroke only), double, or triple disease (when cardiac and peripheral arterial disease were present). In 2554 patients with TIA or stroke, single territory disease was seen in 72%, double in 24%, and triple in 4%. As expected, the proportion of atherosclerotic risk factors increased when more territories were diseased and also the proportion of asymptomatic disease (carotid stenosis). In spite of more aggressive treatments, patients with multiple territory disease had higher 5-year risk of major cardiovascular events (stroke and nonstroke) and death (adjusted hazard ratio, 1.67; 95% confidence interval, 1.37–2.01). Interestingly, TIA/stroke plus peripheral arterial disease had higher 10-year risks than the combination of TIA/stroke plus coronary disease (61% versus 46%; hazard ratio, 1.58; 95% confidence interval, 1.03–2.43), but triple disease had highest risk when compared with single disease (64% versus 29%; hazard ratio, 2.68; 95% confidence interval, 1.86–3.86). This study highlights the value of recognizing systemic atherosclerotic involvement in patients with TIA or stroke. Continued efforts to target individuals at high risk are required to minimize the impact of atherosclerotic disease. However, the study also points out the residual risk observed even after using available therapies. It is likely that a combination of closer monitoring to achieve current treatment targets for modifiable risk factors and new therapies be needed to optimize preventive efforts. See p 1639.

## Beyond Large Vessel Occlusion Strokes: Distal Occlusion Thrombectomy

A major practice shift for acute ischemic stroke therapy took place as multiple clinical trials proved the benefit of endovascular therapy for patients with acute large artery occlusion strokes. Nogueira et al address the question of endovascular therapy in patients with acute distal occlusions that were not included in most trials but could still have disabling deficits. The authors report on a single-center experience over a 5-year period in a sample of 949 patients. Distal occlusions were observed in 69 patients and defined as occlusion involving the anterior cerebral artery, posterior cerebral artery or M3 segment branches of the middle cerebral cerebral artery. Endovascular therapy included primary (65%) and rescue procedures after proximal large vessel occlusion treatment (35%) targeting these vessels. Intravenous tPA (tissue-type plasminogen activator) was allowed but interventions were performed promptly. Complete or near-complete reperfusion (modified Treatment in Cerebral Ischemia, [mTICI] score 2b–3) was achieved in most patients (83%). They observed 5 cases (7%) of parenchymal hematoma, but only 3 were in the territory of the vessel occlusion (4%). No vessel perforations were seen. At 90 days, 30% had mRS score of 0 to 2 and 20% died. The small number of patients in subgroups prevents drawing firm conclusions, but relevant factors that may increase risk may include rescue procedures for posterior cerebral artery occlusions, older age, and longer time to revascularization.

The study has merit in showing that technology advances have allowed access and revascularization of small cerebral vessels. However, the study is biased by its design and may not reflect widespread practice and experience. The authors appropriately note the higher stroke severity (median NIHSS score of 18) observed than expected for this type of strokes. The results call for randomized trials to assess the benefit and risk involved in such procedures. Clearly defined deficits, inclusion, and exclusion criteria, including evaluation of the appropriate time windows, will clarify the role of distal occlusion thrombectomy in clinical practice. See p 1662.

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