Number of Entry Tears Is Associated With Aortic Growth in Type B Dissections

Conclusions: The number of entry tears detected on the first computed tomography angiography (CTA) study following acute type B aortic dissection is a significant predictor of subsequent aortic growth.

Summary: Patients with uncomplicated acute type B aortic dissection treated conservatively by antihypertensive treatment have in-hospital mortality rates between 1% and 10%. Favorable initial outcomes, however, are mitigated by medium-term and long-term problems related to the aorta, such as aneurysm growth and rupture. These delayed problems result in survival rates of 56% to 92% at 1 year and 48% to 82% at 5 years (Tsai JT et al, N Engl J Med 2007;357:349-59). It is thought that impaired outflow of the false lumen or increased inflow to the false lumen can lead to an increase in mean and diastolic pressure in the false lumen. Acutely, this may lead to true lumen collapse and malperfusion and, on a more long-term basis, elevated pressure in the false lumen with increased aortic growth and risk for aortic rupture. The authors sought to determine whether the number of entry tears detected between the true and false lumen might help predict which patients with acute type B aortic dissection are at increased risk for late aortic dilation. The authors evaluated acute type B aortic dissection patients with uncomplicated dissection. Patients with a CTA obtained at clinical presentation and another CTA at least 90 days after medical treatment were included from the years 2005 to 2010. Aortic diameters were measured at five levels on the base line CTA and on last available CTA with annual aortic growth rate calculated. The number of entry tears between the true and false lumen were also determined. Number of entry tears and the location of entry tears in the aorta are then compared with aortic growth rates. There were 60 patients with 243 dissected segments. Mean growth rates during follow-up (median, 23.2 months, range, 3-132 months) were higher in patients with one entry tear (5.6 ± 8.9 mm) than those with two (2.1 ± 1.7 mm; P = 0.001) and three entry tears (mean, 2.2 ± 4.1; P = 0.010). Distance of the primary entry tear from the left subclavian artery did not have an effect on aortic growth rate (median, 38 mm; interquartile range, 24-137 mm; P = 0.434).

Comment: The data are somewhat limited by the fact that in the clinical setting, imaging of acute aortic dissections may vary with respect to the cardiac cycle, configuration of the aortic lumen, and changes of the flap during systole and diastole. Dynamic CT scanning rather than static scanning used in this study may have also identified additional entry tears. The aortic dissection process is complex and in some respects the data may argue for more routine use of dynamic CT imaging in patients with acute type B aortic dissection. It is only through improved understanding of the dissection process that better selection of patients with acute type B aortic dissection for immediate intervention will be determined.

Flow Reversal Versus Filter Protection: A Pilot Carotid Artery Stenting Randomized Trial

Conclusions: During carotid artery stenting (CAS) using a femoral approach, filter protection is more effective than flow reversal in reducing ischemic brain lesions.

Summary: Embolic protection devices (EPDs) have been associated with improved clinical outcomes in CAS (Kastrup A et al, Stroke 2003;34:813-9; and Garg N et al, J Endovasc Ther 2009;16:412-27). The most widely used EPDs are distal protective techniques using filter devices. An alternative strategy to protect the brain during CAS procedures is to use proximal protective techniques. With proximal protection, common and external carotid arteries are occluded promoting flow arrest or flow reversal of the target internal carotid artery. Theoretically, this establishes brain protection to cross and treat the carotid stenosis during CAS. This pilot trial was designed to compare flow reversal vs filter protection during CAS using femoral access techniques. The trial was a randomized, prospective, open-label (blinded outcomes), single-center, superiority trial. Patients undergoing CAS were randomly enrolled to have either flow reversal or filter protection during the procedure. The primary end points of the study were the incidence, number, and size of new ischemic brain lesions after CAS. Secondary end points included major adverse cardiac and cerebrovascular events, transient ischemic attack, and definitive ischemic brain lesions on fluid-attenuated inversion recovery magnetic resonance imaging at the 3-month follow-up. 3T magnetic resonance imaging was used to assess ischemic brain lesions. Neurologic outcomes were evaluated using the modified Rankin Scale and the National Institutes of Health Stroke Scale. There were 40 consecutive patients randomly assigned in the study. Compared with flow reversal (n = 20), filter protection (n = 20) resulted in a significant reduction in the incidence (15.8% vs 47.6%; P = 0.03), number (0.73 vs 2.6; P = 0.05), and size (0.81 vs 2.23 mm; P = 0.05) of new ischemic brain lesions. One patient in each group presented with a transient ischemic attack at the 3-month follow-up. No major adverse cardiac or cerebrovascular events occurred in the hospital or at the 3-month follow-up period.

Comment: One potential criticism of the study will be the learning curve effect. The principal operator for the trial has performed 450 CAS procedures, of which 412 cases used filter devices and only 27 cases used proximal protection devices with flow arrest and 12 cases with proximal protection and flow reversal prior to randomization in the trial. This was also a single-institution study. However, the authors have highlighted precise and specific predetermined end points for their study and the trial did demonstrate filter protection was more effective than flow reversal in reducing ischemic brain lesions during CAS. The results are what they are, but obviously larger trials will be necessary to confirm the author’s findings and the clinical implications of these findings.

Management and Outcomes of Major Bleeding During Treatment With Dabigatran or Warfarin

Conclusions: Patients experiencing major bleeding on dabigatran require more red cell transfusions, less plasma, shorter intensive care unit stays, and have a trend to lower mortality compared to those with major bleeding on warfarin.

Summary: Dabigatran is approved in more than 80 countries in the world for stroke prevention in patients with atrial fibrillation. There is superior stroke reduction with dabigatran 150-mg twice daily and noninferior stroke prevention with dabigatran 110 mg twice daily compared with warfarin with a target international normalized ratio of 2 to 3 (Connolly SJ et al, N Engl J Med 2009;361:139-51). With respect to bleeding, major bleeding in patients treated with dabigatran 150-mg twice daily is similar to that in patients treated with warfarin. In patients treated with dabigatran 110 mg twice daily, major bleeding is less than in patients treated with warfarin. In patients with venous thromboembolism, there is also a lower rate of bleeding with dabigatran 150-mg twice daily compared with warfarin with a target international normalized ratio of 2.0 to 3.0 (Schulman S et al, N Engl J Med 2009;361:2342-52). Warfarin has a half-life of 36 to 48 hours, but it’s anticoagulant effect can be reversed within 10 to 20 minutes by prothrombin complex concentrates and within 6 to 12 hours by vitamin K (Holbrook A et al, Chest 2012;141(2 Suppl):e152S-84S). Dabigatran does not have an antidote and has a half-life of 12 to 14 hours (Stangier J et al, Br J Clin Pharmacol 2007;64:292-303). In patients with life-threatening bleeding on dabigatran, hemodialysis might help restore hemostasis in combination with activated charcoal to prevent gastrointestinal absorption of recently ingested drug, as well as administration of prothrombin concentrates or recombinant factor VIIa as to the effect of reversal of dabigatran, however, is limited primarily to experimental and animal studies and isolated case reports. The objective of the study presented here was to describe management of major bleeding and outcomes after bleeding in large phase III trials evaluating the efficacy and safety of long-term dabigatran (≤6 months) compared with warfarin. Two independent investigators reviewed bleeding reports from 1034 individuals with 1121