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Poster Id 41321
Disclosures:

None

No conflict of interest
Introduction:

The overall risk of ischemic stroke from a chronically occluded internal carotid artery (COICA) is around 5-7% per year despite receiving the best available medical therapy. Here we propose a radiographic classification of COICA that could be used as a guide to determine the technical success and safety of endovascular recanalization of symptomatic COICA and to assess the changes in systemic blood pressure following successful revascularization.
Methods:

The radiographic imaging of 100 consecutive subjects with COICA were analyzed. A new classification of COICA are proposed based on morphology, location of occlusion, and presence or absence of reconstitution of the distal ICA. The classification was used to predict successful revascularization in 32 symptomatic COICA in 31 subjects (5/31, 16.13% female). Subjects were included if they had a COICA with ischemic symptoms refractory to medical therapy. Carotid occlusion was defined as 100% cross-sectional occlusion of the vessel lumen as documented on CT
angiography or magnetic resonance angiography and confirmed by digital subtraction angiogram (DSA).
Results:

Four types (A-D) of radiographic COICA were identified. Types A and B are more amenable for safer revascularization than types C and D. Recanalization was successful with a rate of 68.75% (22/32 [Type A: 8/8; Type B: 8/8; Type C: 4/8; and Type D: 2/8]). Perioperative complications rate was 6/352,1 (18.75%); [0/8 in Type A; 1/8 (12.50%) in type B; 3/8 (37.50%) in type C, and 2/8 (25.00 in type D] None of these complications led to permanent morbidity or mortality. Twenty of 31 (64.52%) subjects had an improvement in their symptoms on the 2-6 months follow-up. A statistically significant
decrease in systolic blood pressure (SBP) was noted in 17/21 (80.95%) of patients who had successful revascularization, which persisted on follow-up (p=0.0001). The remaining ten subjects who failed revascularization had no significant changes in SBP (p=0.73).
Summary:

This pilot study suggests that our proposed classification of COICA may be useful as an adjunct guide to determine the technical feasibility and safety of revascularization of symptomatic COICA using endovascular techniques and successful revascularization may lead to significant decrease in SBP post procedure. A phase-2b trial to assess the efficacy of this technique using our COICA classification in larger cohorts is warranted.