Comparison Of SVS Versus ESVS Carotid Guidelines For Treatment Of Asymptomatic Carotid Artery Stenosis: What Is Known For Sure And What Remains Controversial

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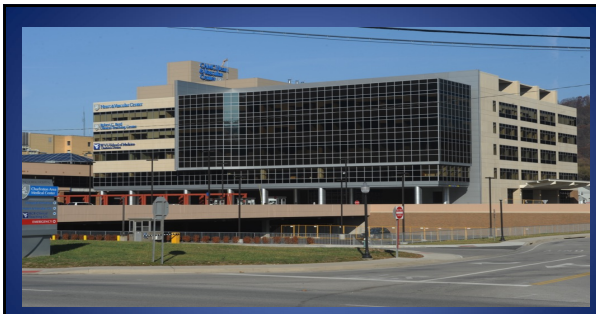

Speaker Disclosure

- Nothing to disclose

Background

- Previous SVS/ESVS guidelines recommend CEA in pts. w/≥60% ACS in average surgical risk pts. if periop stroke/death rate was <3%
- Several auth. felt these trials were long outdated & w/advances in BMT, Rx should be modified
- Should all ACS pts. only be offered BMT or are there certain pts. who may benefit from addt'l prophylactic CEA or CAS?
- Exact % of ACS pts. who should be offered intervention is not known at this time

(cont.)

Background (con't)

- Only 20% of pts. Will have TIA prior to stroke
- TIA can occur during sleep & these pts. cont. to be considered Asx (Leary et al, Cerebrovasc Dis, 2003)
- BMT improved sig. over past 20 yrs.; similarly, periop stroke rate for modern CEA in most series has been around 1% include. CREST trial (periop stroke rate in CEA pts. w/ACS was around 1.4%

(cont.)

SVS Recommendations

- Is CEA recommended over maximal medical therapy for low surgical risk asx patients?
  - Recommend CEA with best med rx for ≥70% st over maximal med rx alone, provided 30-day stroke/death rates are ≤3% and patient life expectancy exceeds 5 yrs (grade IB)

(AbuRahma A et al. Society for Vascular Surgery clinical practice guidelines for management of extracranial cerebrovascular disease. JVS 2022)

Asymptomatic High-risk for CEA

SVS

- TCAR is preferred over CEA and TFCAS in high surgical risk (both anatomically and physiologically)
- There are insufficient data to recommend TFCAS as primary therapy for neurologically asx pts with 70-99% diameter st.
- Data from CREST, ACT, and VQI suggest in properly selected asx pts, CAS may be equivalent to CEA in the hands of experienced interventionalists.
- Specifically, the combined stroke and death rate must be <3% to insure benefit for the pt.

Recommendation

- Asx pts with 70% or greater diameter stenosis should be considered for CEA, TCAR, or TFCAS for reduction of long-term risk of stroke, provided pt has a 3-5 yr life expectancy and perioperative stroke/death rates can be 3% or less.

(AbuRahma A et al. The Society for Vascular Surgery implementation document for management of extracranial cerebrovascular disease. JVS 2021)

Recommendation

Revascularization Technique	High Risk Criteria (based on clinical judgement)
Carotid Endarterectomy (CEA)	Neck irradiation Previous CEA Previous neck surgery Tracheal stoma Lesion above C2 Contralateral vocal cord injury Hostile neck due to obesity, immobility, or kyphosis Medical high risk

Recommendation

Revascularization Technique	High Risk Criteria (based on clinical judgement)
Trans-cervical Carotid Stent (TCAR)	Heavily calcified carotid lesion Lesion within 5 cm of clavicle CCA diameter <6 mm Neck irradiation Tracheal stoma Hostile neck due to obesity, immobility or kyphosis Medical high risk

Recommendation

Revascularization Technique	High Risk Criteria (based on clinical judgement)
Trans-femoral Carotid Stent (TF-CAS)	Age > 75 y/o Heavily calcified carotid stenosis Complex bifurcation stenosis >15 mm length Tortuous internal carotid artery Tortuous common carotid artery Type 3 or tortuous aortic arch Heavy atherosclerotic burden of arch

ESVS Asx Standard Risk

- Recommend CEA for asx 60-99% st, in the presence of one or more imaging/clinical characteristics associated with an ↑ risk of late stroke, provided 30-day stroke/death rates are ≤3% and patient life expectancy exceeds 5 yrs (IIa Level B)
- For average surgical risk pts with an asx 60-99% stenosis in the presence of 1 or more imaging/clinical characteristic associated with an ↑ risk of late stroke, CAS may be alternative to CEA, provided 30-day stroke/death rates ≤3% and patient life expectancy exceeds 5 yrs (IIb Level B)

Clinical/Imaging Features Assoc. w/↑ Risk of Late Stroke in Asx Pts. w/50-99% Stenoses Treated Medically

- Silent infarction on CT (P=.002)
- Stenosis progression (P=.05)
- Vulnerable plaque (JBA on computerised plaque analysis) (P<.001)
- Intra-plaque haemorrhage on MRI (P<.01)
- Plaque lucency on Duplex US (P=.001)
- Spontaneous embolization on TCD (P=.001)
- Contralateral TIA/stroke (P=.0001)

(Naylor et al, Eur J Vasc Endovasc Surg, 2018)

Imaging / clinical parameter	Stenosis severity ± %	Study type	Annual rate of ipsilateral stroke	OR/HR of increased stroke (95% CI)
Silent ipsilateral infarction on CT[270]	60–99	Multicentre, obs.	Yes: 3.6% No: 1.0%	Yes vs. No: 3.0 (1.46–6.29); $p = .002$
Stenosis progression >20%[271]	50–99	Multicentre, obs.	Regression: 0.0% Unchanged: 1.1% Progression: 2.0%	Progression vs. unchanged: 1.92 (1.14–3.25); $p = .05$
Stenosis progression[272]	70–99	Multicentre, RCT		Regression: 0.7 (0.4–1.3) No change, comparator: Prog 1 sten grade 1.6 (1.1–2.4) Prog 2 sten grades 4.7 (2.3–9.6)
Plaque area on computerised ultrasound plaque analysis[273]	70–99	Multicentre, obs.	<40 mm^2: 1.0% 40–80 mm^2: 1.4% >80 mm^2: 4.6%	<40 mm^2: comparator 40–80 mm^2: 2.08 (1.05–4.12) >80 mm^2: 5.81 (2.67–12.67)
JBA on computerised ultraound plaque analysis[274]	50–99	Multicentre, obs.	<4 mm^2: 0.4% 4–8 mm^2: 1.4% 8–10 mm^2: 3.2% >10 mm^2: 5.0%	Trend, $p < .001$
Intraplaque haemorrhage on MRI[275]	50–99	Meta-analysis		Yes vs. No: OR 3.66 (2.77–4.95); $p < .01$
Impaired CVR[276]	70–99	Meta-analysis		Yes vs. No: OR 6.14 (1.27–29.5); $p = .02$
Plaque lucency on DUS[276]	50–99	Meta-analysis	Predominantly echolucent: 4.2% Predominantly echogenic 1.6%	Echolucent vs. echogenic: OR 2.61 (1.47–4.63); $p = .001$
≥1 spontaneous MES during ≥1 h TCD monitoring[277]	50–99	Meta-analysis		Yes vs. No: OR 7.46 (2.24–24.89); $p = .001$
Spontaneous embolisation plus uniformly or predominantly echolucent plaque[278]	70–99	Multicentre, obs.	Yes: 8.9% No: 0.8%	Yes vs. No: OR 10.61 (2.98–37.82); $p < .001$
Contralateral TIA/stroke[202]	50–99	Multicentre, obs.	Yes: 3.4% No: 1.2%	Yes vs. No: OR 3.0 (1.9–4.73); $p < .001$

OR/HR = odds ratio/hazard ratio; CI = confidence interval; CT = computed tomography; RCT = randomised controlled trial; JBA = juxtaluminal black area; MRI = magnetic resonance imaging; CVR = cerebral vascular reserve; DUS = duplex ultrasound; MES = microembolic signals; TCD = transcranial Doppler; TIA = transient ischaemic attack; obs. = observational.

Asymptomatic High-risk for CEA

ESVS

- For asx pts deemed by the multidisciplinary team to be high risk for surgery with asx 60-99% st in the presence of 1 or more imaging/clinical characteristics with an ↑ risk of late stroke on best med rx, CAS may be considered, provided anatomy is favorable, 30-day death/stroke rates are ≤3% and patient life expectancy exceeds 5 yrs (IIb Level B)