

The effect of drug therapy on the incidence of embolic complications of reconstructive interventions on the carotid arteries

Speaker: Ms. Olesia Osipova

Center of Vascular and Hybrid Surgery
E.N. Meshalkin National Medical Research Center of the
Ministry of Health, Novosibirsk, Russian Federation

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Disclosure

Speaker name: Olesia Osipova

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I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- ✓ I do not have any potential conflict of interest



Introduction

- One of the main problem of carotid artery revascularization remains embolic complications
- Therefore, it becomes necessary to search for approaches to the prevention of intraoperative embolism in carotid artery stenting (CAS) and carotid endarterectomy (CEA)



Aim

The aim was to evaluate the **effect of medical therapy** on reducing the risk of cerebral vascular microembolism and associated complications during open and endovascular carotid revascularizations



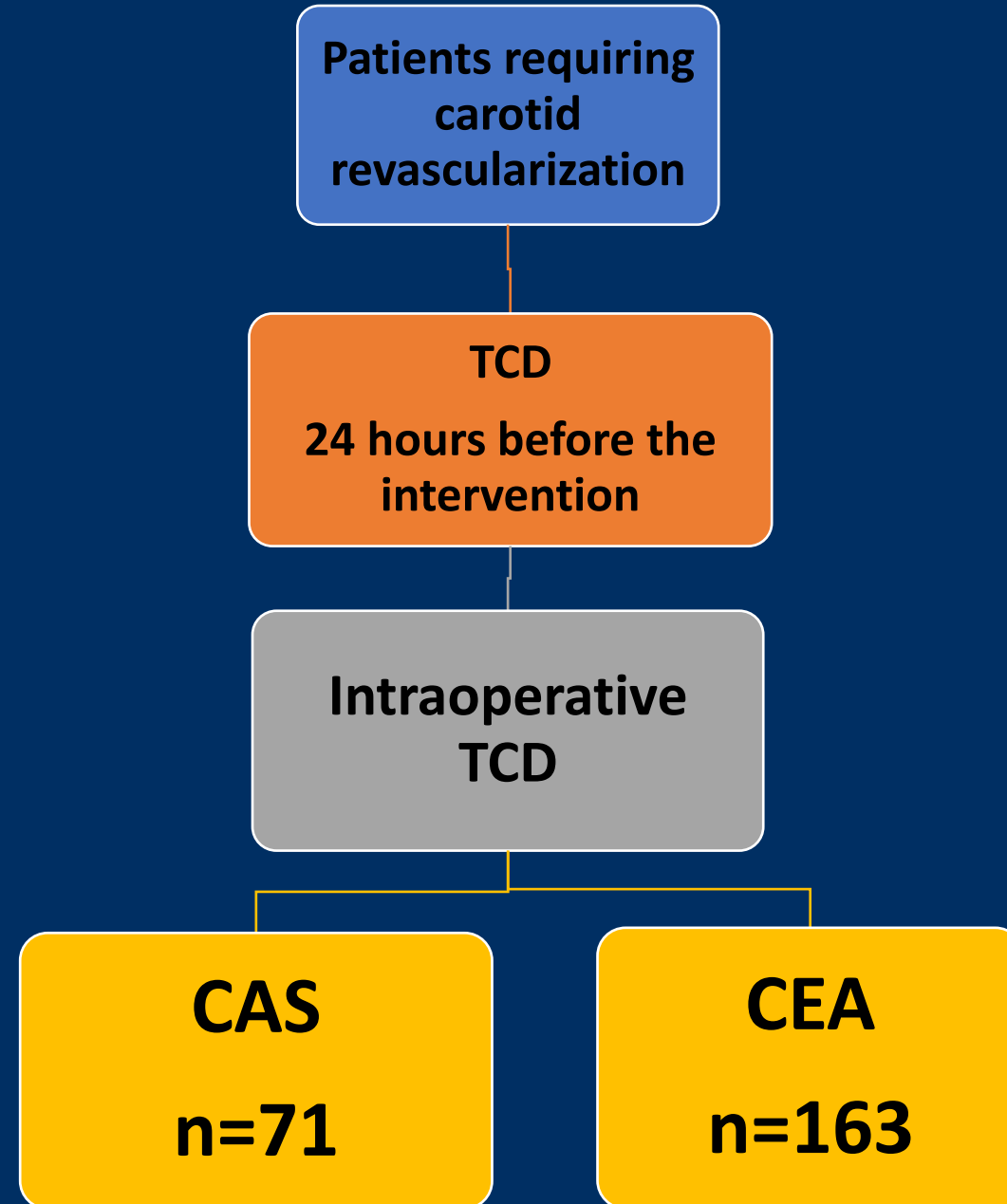
Study design

- ✓ A non-randomized **prospective** single-center study

Embolus Detection -

Intraoperative transcranial Doppler ultrasonography (TCD) with a 2 MHz sensor

Embolus protection system during CAS- distal filter



Endpoints

The primary endpoint :

cerebral embolism during CAS or CEA

The secondary endpoint:

neurological event within 30 days after surgery



Baseline Characteristics

	CAS n=71	CEA n=163	P value
Age, years	67.09±8.2	65.7±7.3	0.16
Gender, male	50 (70.4%)	114 (69.9%)	0.53
Tobacco use	27 (38.0%)	46 (28.2%)	0.09
Hypertension	71(100%)	162 (99.4%)	0.69
Coronary artery disease	70 (98.5%)	162 (99.4%)	0.51
Heart failure	70 (98.5%)	162 (99.4%)	0.51
Dyslipidemia	13 (18.3%)	27 (16.6%)	0.43
Renal insufficiency	7 (9.9%)	17 (10.4%)	0.55
Atrial Fibrillation	10 (14.1%)	39 (23.9%)	0.06
Diabetes mellitus	18 (25.4%)	24 (14.7%)	0.51
Taking antiplatelet therapy more than 6 months before surgery	50 (70.4%)	131(80.4%)	0.06
Taking statin for more than 6 months before surgery	56 (78.9%)	147(90.2%)	0.01
TIA or stroke in the previous 6 months	23 (32.4%)	59 (36.2%)	0.34
Stenosis degree %	79.2±5.6	79.21±6.6	0.86
Lesion of contralateral ICA stenosis	20 (28.2%)	36 (22.1%)	0.2
occlusion	14 (70%)	23 (63.9%)	0.43
	6 (30%)	13 (36.1%)	

Overview of Intraoperative Embolism

	CAS n=71		CEA n=163		P-value
Embolism	47 (66.2)		36(22.1)		0.000
Gaseos	20 (42.5%)	p=0.38	16 (44.4%)	p=0.61	0.51
Solid	27 (57.5%)		20 (55.6%)		0.51
carotid artery catheterization	30 (42.3%)		-		
installation of an carotid filter	35 (49.3%)		-		
stent placement	8 (11.3%)		-		
stent deployment	6 (8.5%)		-		
predilatation	5 (7.1%)		-		
postdilatation	9 (12.7%)		-		
removal of the embolic protection system	3 (4.3%)		-		
isolation of the ICA	-		21 (12.9%)		
starting blood flow in ICA	-		30 (18.4%)		
Number of emboli	10 [5;31]		9 [5;13]		0.49

Predictors of Neurological Event

	Odds ratio	CI lower limit	CI upper limit	P-value
Embolism	33,08	3,49	33,08	0.0000
Solid emboli	4.68	1,54	21,95	0.00038
Gaseous emboli	10.66	3.49	32.51	0.0000
Number of emboli	1.30	1.14	1.48	0.0000

The table presents the results of the multivariable Logit regression with neurological event as the outcome.

Overview of Neurological Complication Until 30-Day Follow-Up for Both Study Groups

	CAS n=71	CEA n=163	P-value
"Amaurosis fugax " within 30 days	4 (5.6%)	2 (1.2%)	0.07
TIA within 30 days	8 (11.3%)	1 (0.6%)	0.0004
Stroke within 30 days	1 (1.4%)	3 (1.8%)	0.64
Neurological event	11(15.5%)	5(3.1%)	0.0012

count (percentage)

Predictors of Cerebral Embolism

	Odds ratio	CI lower limit	CI upper limit	P-value
CAS	7.10	3.82	13.16	0.0000
Age, years	0.99	0.95	1.02	0.68
Sex, Male	0.71	0.40	1.27	0.25
Tobaccouse	1.22	0.66	2.27	0.51
Renal insufficiency	0.72	0.28	1.86	0.50
Dyslipidemia	1.84	0.89	3.84	0.09
Atrial Fibrillation	0.56	0.27	1.15	0.11
Diabetes mellitus	1.58	0.79	3.18	0.18
Stenosis degree	1.02	0.90	1.07	0.27
Lesion of contralateral ICA	1.67	0.85	3.28	0.12
TIA or stroke in the previous 6 month	0.96	0.52	1.80	0.92
Open-cell stent	2.71	0.99	2.71	0.053

	Odds ratio	CI lower limit	CI upper limit	P-value
Taking antiplatelet drugs more than 6 months before surgery	0.77	0.39	1.51	0.45
Taking statin for more than 6 months before surgery	0.25	0.11	0.58	0.001
Taking both antiplatelet therapy and statin	0.08	0.01	0.40	0.001

The table presents the results of the multivariable Logit regression with cerebral embolism as the outcome.

Intra-group analysis of the effect of statin on intraoperative embolism

CAS group

	Odds ratio	CI lower limit	CI upper limit	P-value
Taking statins for more than 6 months before surgery	0.220	0.044	0.396	0.033

CEA group

	Odds ratio	CI lower limit	CI upper limit	P-value
Taking statins for more than 6 months before surgery	0.163	0.071	0.375	0.0001

Conclusions

- ✓ The most embolic episodes during the CAS is detected while carotid artery catheterization and filter positioning
- ✓ There was a relationship between postoperative early neurological complications and embolism both during CEA and CAS. Most episodes of microembolism remained asymptomatic
- ✓ Preoperative statin therapy can help to reduce the risk of intraoperative embolism

