ISCHEMIC STROKE DUE TO THE OCCLUSION OF THE CERVICAL INTERNAL CAROTID ARTERY: SAFETY AND EFFICACY OF EMERGENT CEA AND IVT.

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DISCLOSURES

	NO CONFLICT OF INTEREST	CONFLICT OF INTEREST	conflict specification
employment relationship	X		
owner / shareholder	X		
consultant	X		
lecturing activities	X		
advisory boards member	X		
research support / grants	X		
other fees (e.g. for clinical trials)	X		

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INTRODUCTION

ICA occlusion	transitory ischemic attack (TIA)
	amaurosis fugax
	cerebral infarct (cause of 4–15 % of all ischemic stroke)
	asymptomatic
symptomatic ICA occlusion	often severe persistent neurodeficit & high mortality rate (poor clinical outcome at 1 year post stroke in 75 % pts; mortality as high as 50% in T-type occlusion)
	pts w/ good clinical outcome carry high recurrent stroke risk – annually 10–14 % in pts w/ impaired CVRC vs 4–6 % w/ intact CVRC

Pessin MS, et al. N Engl J Med 1977; 296: 358-62; Mead GE, et al. Br J Surg 1997; 84: 990-2; Paciaroni M, et al. Schweiz Arch Neurol Psychiatr 1999; 50: 169-75; Rubiera M, et al. Stroke 2006; 37: 2301-5; Malferrari G, et al. Cerebrovasc Dis 2007; 24: 469-76; Smith WS, et al. Stroke 2009; 40: 3834-40; Hause S, et al. Vasa 2020; 49: 31-8; Mayer L, et al. Ann Transl Med 2020; 8: 1268

INTRODUCTION

No specific recommendation for cervical ICA occlusion recanalization with preserved patency of intracranial arteries
IVT remains the only standard treatment method in acute ischemic stroke (AIS)
Emergent carotid endarterectomy (CEA) represents an experimental alternative

INTRODUCTION

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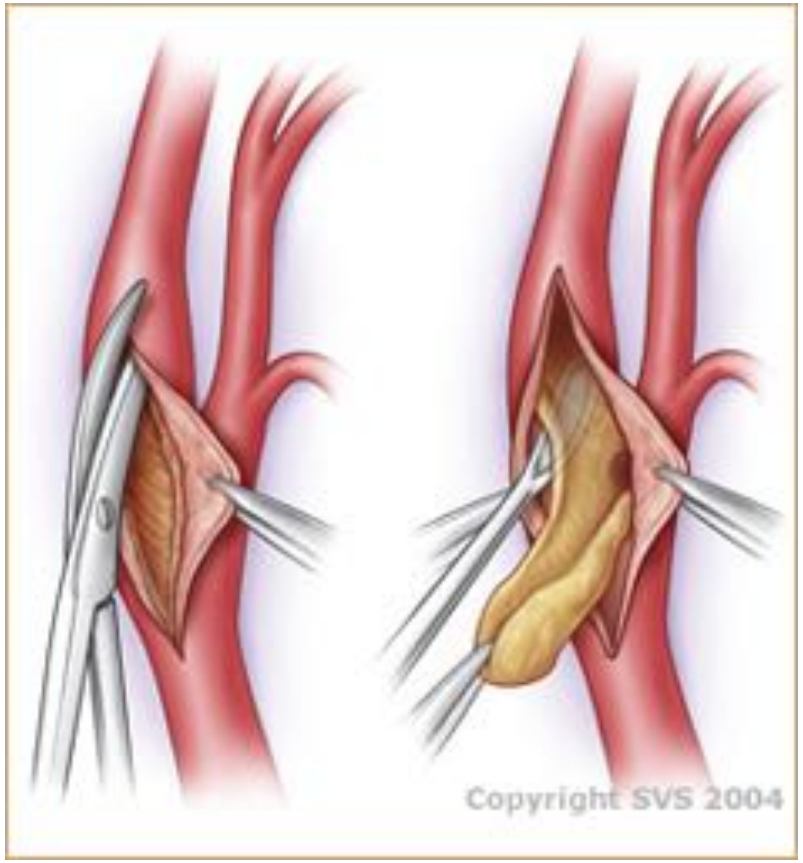
URL:https://mimsshst.blob.core.windows.net/drug-resources/SG/pic/Actilyse%20powd%20for%20infusion%2050%20mgcba3d385-d7b7-4192-b49b-9faa0140ab76.GIF



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Available from:
URL:http://www.albanyvsc.com/services-endarterectomy.html

AIM

assess the safety and efficacy of standalone CEA* and standalon IVT in AIS pts w cervical ICA occlusion and preserved patency of intracranial arteries

* in pts w no IVT indication / w IVT contraindication

assessment of combination of CEA and IVT was not the aim of this study

METHODS

Study type		retrospective	
		multicentric	
patient groups			
Treatment type	# pts	# men (%)	age (years), median (IQR)
CEA	39	21 (53,8 %)	71 (66–78)
IVT	32	23 (71,9 %)	65 (60–78)
CEA, carotid endarterectomy; IQR, interquartile range; IVT, intravenous thrombolysis			

METHODS

ASSESSED PARAMETERS	
basic characteristics	sex
	age
	mRS pre-stroke
	side of occlusion
	contralateral stenosis

METHODS

ASSESSED PARAMETERS	
History	arterial hypertension
	diabetes
	hyperlipidemia
	ischemic heart disease
	atrial fibrillation
	myocardial infarction
	heart failure
	peripheral arterial disease
	prior stroke / TIA
	smoking
TIA, transitory ischemic attack	

METHODS

ASSESSED PARAMETERS	
treatment prior to stroke	antiplatelets
	anticoagulation
	statins
pre-treatment NIHSS	
% of recanalization	
in CEA	„door-to-reperfusion time“
	„onset-to-reperfusion time“

METHODS

ASSESSED PARAMETERS	
complications	ischemic stroke
	TIA
	retinal ischemia
	hemorrhagic stroke
	acute MI
	other systemic hemorrhage
	surgery complications (in CEA)

METHODS

ASSESSED PARAMETERS		
clinical outcome	NIHSS in 24 h	
	decrease in NIHSS in 24 h	
	mRS at 3 months	0–2
		0–3 (good clinical outcome)
		6 (mortality)

METHODS

OUTCOME	
Primary	good clinical outcome at 3 months (mRS 0–3)
secondary	excellent clinical outcome at 3 months (mRS 0–2)
	3 month mortality (mRS 6)
	% recanalization rate
	ischemic stroke
	TIA
	hemorrhagic stroke
	other systemic hemorrhage

METHODS

STATISTICAL METHODS
Fisher’s exact test
Mann-Whitney trest
statistical significance was determined at the significance level α=0,05.

RESULTS

	CEA	IVT	*p*
#	39	32	
sex (men)	53,8 %	71,9 %	> 0,05
age (years), median (IQR)	71 (66; 78)	65 (60; 78)	> 0,05
mRS pre-stroke, median ± SD	0,3 ± 0,7	0,7 ± 2,1	> 0,05
side of occlusion - left side	66,7 %	68,8 %	> 0,05
contralateral stenosis	23,1 %	18,8 %	> 0,05

RESULTS

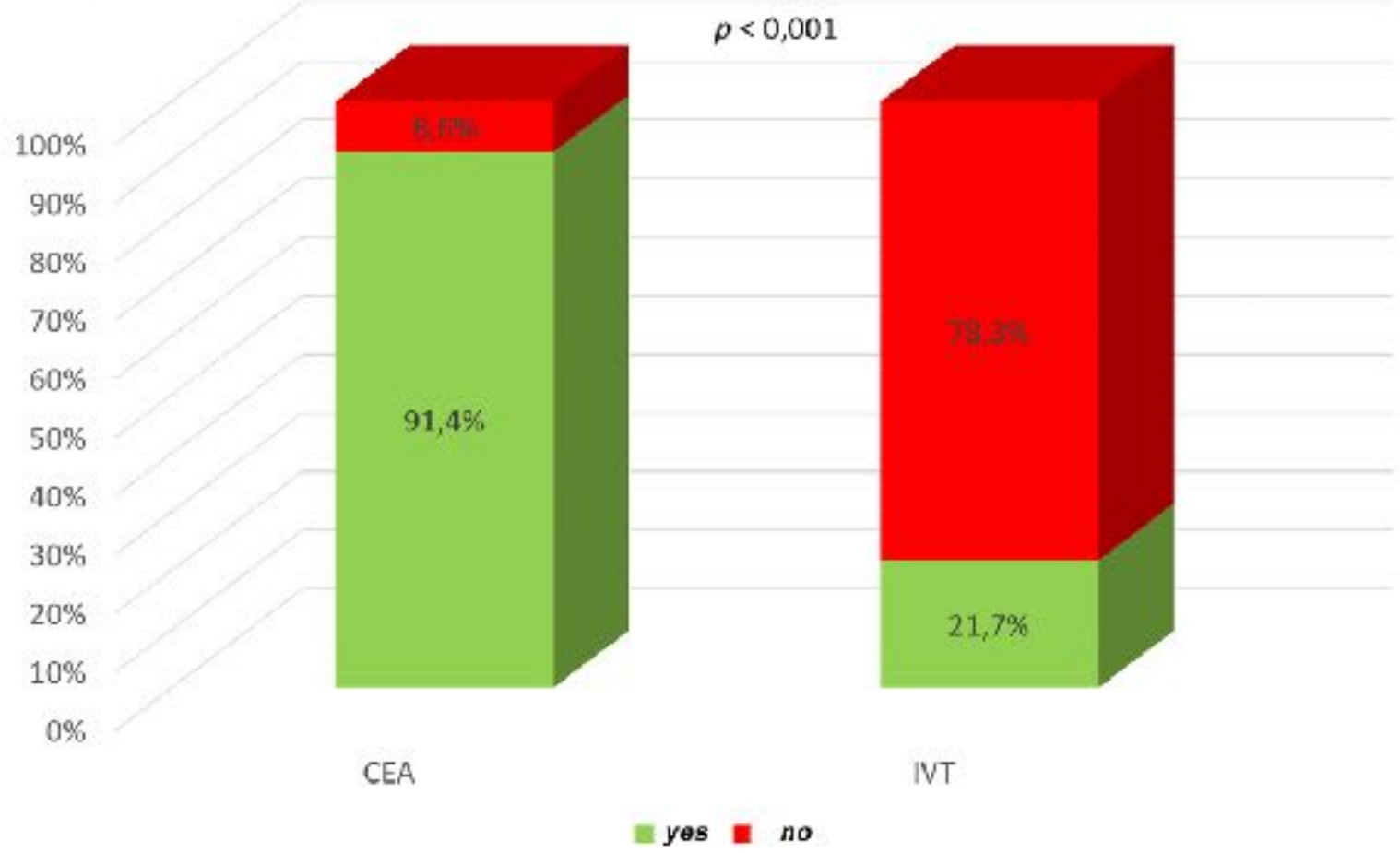
	CEA	IVT	*p*
History			
arterial hypertension	84,6 %	75,0 %	> 0,05
diabetes	33,3 %	18,8 %	> 0,05
hyperlipidemia	69,2 %	46,9 %	> 0,05
ischemic heart disease	28,2 %	18,8 %	> 0,05
atrial fibrillation	18,0 %	15,6 %	> 0,05
myocardial infarction	7,7 %	3,1 %	> 0,05
heart failure	7,7 %	3,1 %	> 0,05
peripheral artery disease	18,0 %	9,4 %	> 0,05
prior stroke/TIA	18,0 %	12,5 %	> 0,05
smoking	61,5 %	43,8 %	> 0,05

RESULTS

	CEA	IVT	*p*
treatment prior to stroke			
antiplatelets	**43,6 %**	**21,9 %**	**0,0043**
anticoagulation	**26,1 %**	**6,3 %**	**0,037**
statins	46,2 %	31,3 %	> 0,05
NIHSS pre-treatment, median (IQR)	7 (4; 12)	6 (4; 9)	> 0,05

RESULTS

cervical ICA RECANALIZATION



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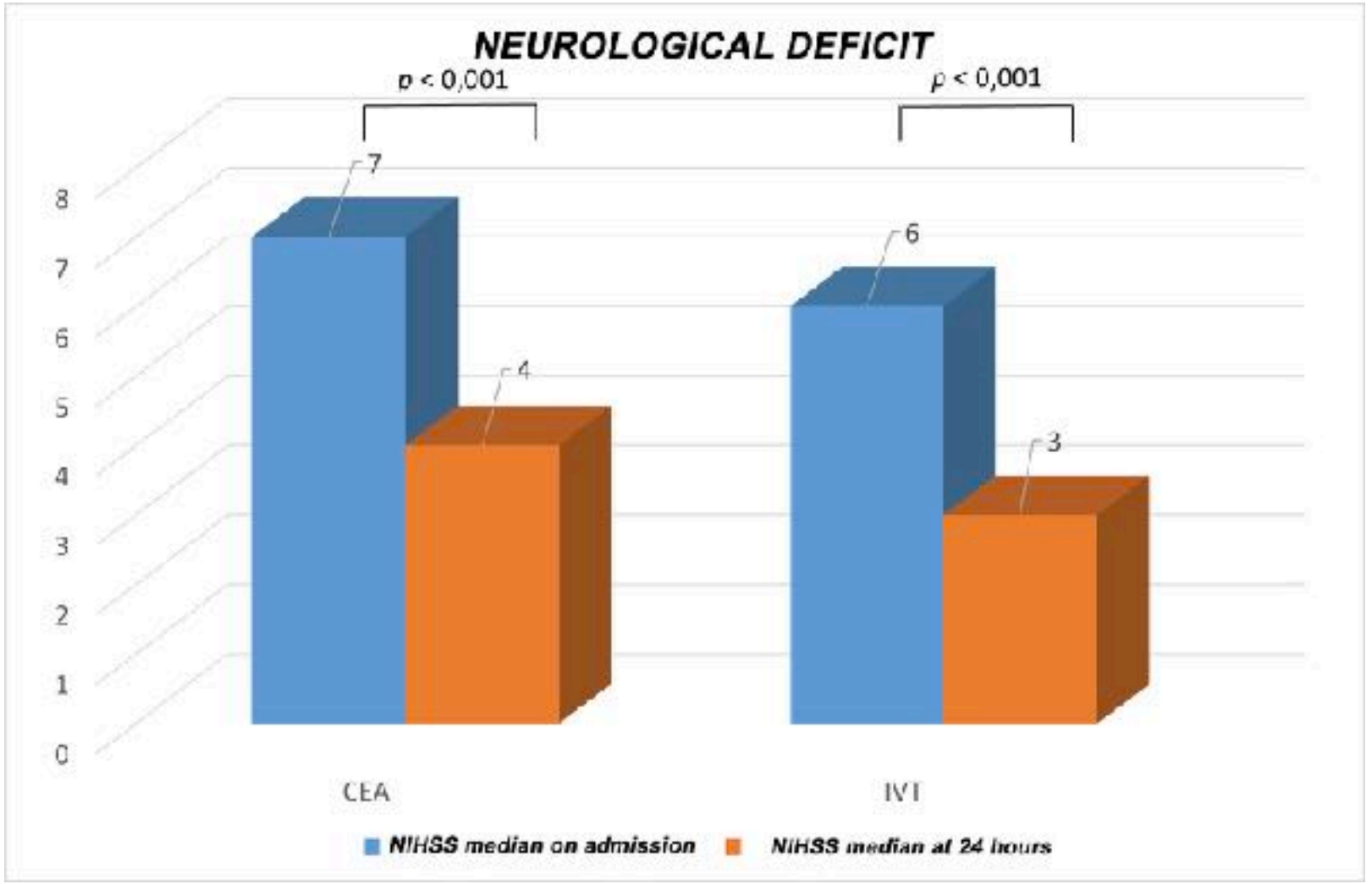
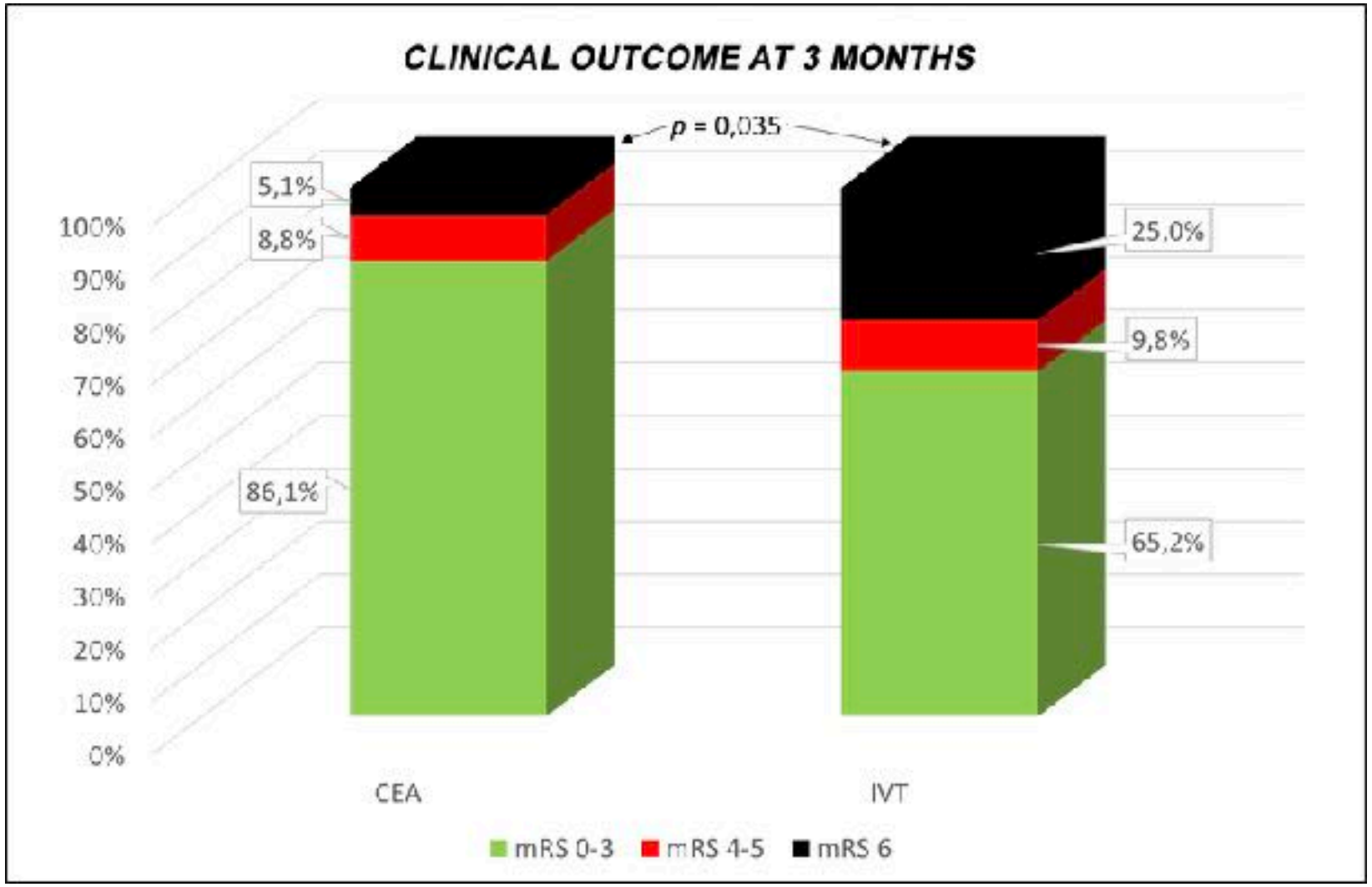
RESULTS

	CEA	IVT	*p*
door-to-reperfusion time	189,5 min		
onset-to-reperfusion time	447,5 min		
COMPLICATIONS	**20,5 %**	**43,8 %**	**0,043**
ischemic stroke	5,1 %	3,1 %	> 0,05
TIA	0 %	3,1 %	> 0,05
Hemorrhagic stroke	2,6 %	3,1 %	> 0,05
other systemic hemorrhage	0 %	3,1 %	> 0,05
surgery complications	10,3 %		

RESULTS


NEUROLOGICAL DEFICIT
p < 0,001
p < 0,001
8
7
6
5
4
3
2
1
0
7
4
6
3
CEA
IVT
NIHSS median on admission
NIHSS median at 24 hours

RESULTS


CLINICAL OUTCOME AT 3 MONTHS
p = 0,035
5,1%
8,8%
86,1%
25,0%
9,8%
65,2%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
CEA
IVT
mRS 0-3
mRS 4-5
mRS 6

CONCLUSION

In this retrospective multicentric pilot study, in patients with ischemic stroke (iCMP) with cervical ICA occlusion and preserved intracranial artery patency, the use of CEA alone was safe and, compared to the use of IVT alone, was associated with a significantly higher rate of recanalization of the occluded cervical ICA and significantly lower 3-month mortality.