

Effect of Direct Transportation to Thrombectomy-Capable Center vs Local Stroke Center on Neurological Outcomes in Patients With Suspected Large-Vessel Occlusion Stroke in Nonurban Areas The RACECAT Randomized Clinical Trial

Natalia Pérez de la Ossa, PhD; Sònia Abilleira, PhD; Tudor G. Jovin, PhD; Álvaro García-Tornel, PhD; Xavier Jimenez, PhD; Xabier Urrea, PhD; Pere Cardona, MD; Dolores Cocho, PhD; Francisco Purroy, PhD; Joaquín Serena, PhD; LUIS San Román Manzanera, PhD; Rosa María Vivanco-Hidalgo, PhD; Mercè Salvat-Plana, RN; Angel Chamorro, PhD; Miquel Gallofré, PhD; Carlos A. Molina, PhD; Erik Cobo, PhD; Antoni Davalos, PhD; Marc Ribo, PhD; for the RACECAT Trial Investigators

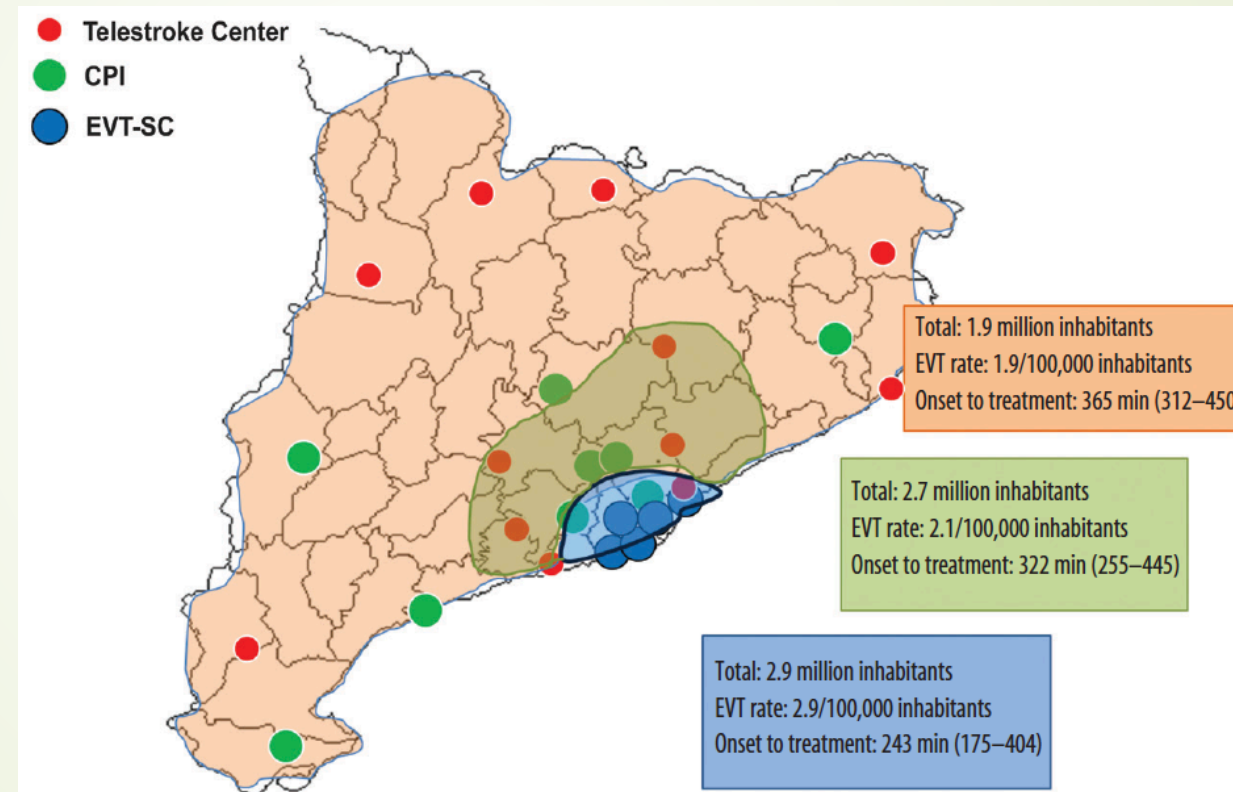


Marianne Barbieux-Guillot

neurologue CHU Toulouse

animatrice de filière ARS Occitanie

Accès à la thrombectomie en Catalogne selon le lieu d'alerte AVC





Rationnel

- ▶ Time is brain =
délai de recanalisation → pronostic fonctionnel
- ▶ Études non randomisées pour mothership suggérant meilleur pronostic fonctionnel vs drip and ship
- ▶ Mais retard potentiel (voire hors délai) de thrombolyse IV, transports futiles engendrant coûts, mobilisation inutile de moyens...
- ▶ Possibilité de screening de patients avec LVO en préhospitalier:
score RACE

TABLE 1. RACE SCALE*	
Item	RACE Score
Facial palsy	
Absent	0
Mild	1
Moderate to severe	2
Arm motor function	
Normal to mild	0
Moderate	1
Severe	2
Leg motor function	
Normal to mild	0
Moderate	1
Severe	2
Head and gaze deviation	
Absent	0
Present	1

Aphasia (if right hemiparesis) <i>Ask the patient to "Close your eyes" and "Make a fist."</i>	
Performs both tasks correctly	0
Performs one task correctly	1
Performs neither task	2
Agnosia (if left hemiparesis)	
Patient recognizes his/her arm and the impairment	0
Does not recognize his/her arm or the impairment	1
Does not recognize his/her arm and the impairment	2
Score total	0-9
Abbreviations: RACE, Rapid Arterial Occlusion Evaluation. *See www.racescale.org for more information.	

Score > 4 :
85 % sensibilité
69 % spécificité de LVO



Objectifs Etude RACECAT

- Evaluer si le transport direct en mothership vers un centre de thrombectomie améliore le pronostic fonctionnel (mRS 90 J) contre un prise en charge en drip-and-ship chez les patients avec suspicion de LVO

Méthode Etude RACECAT

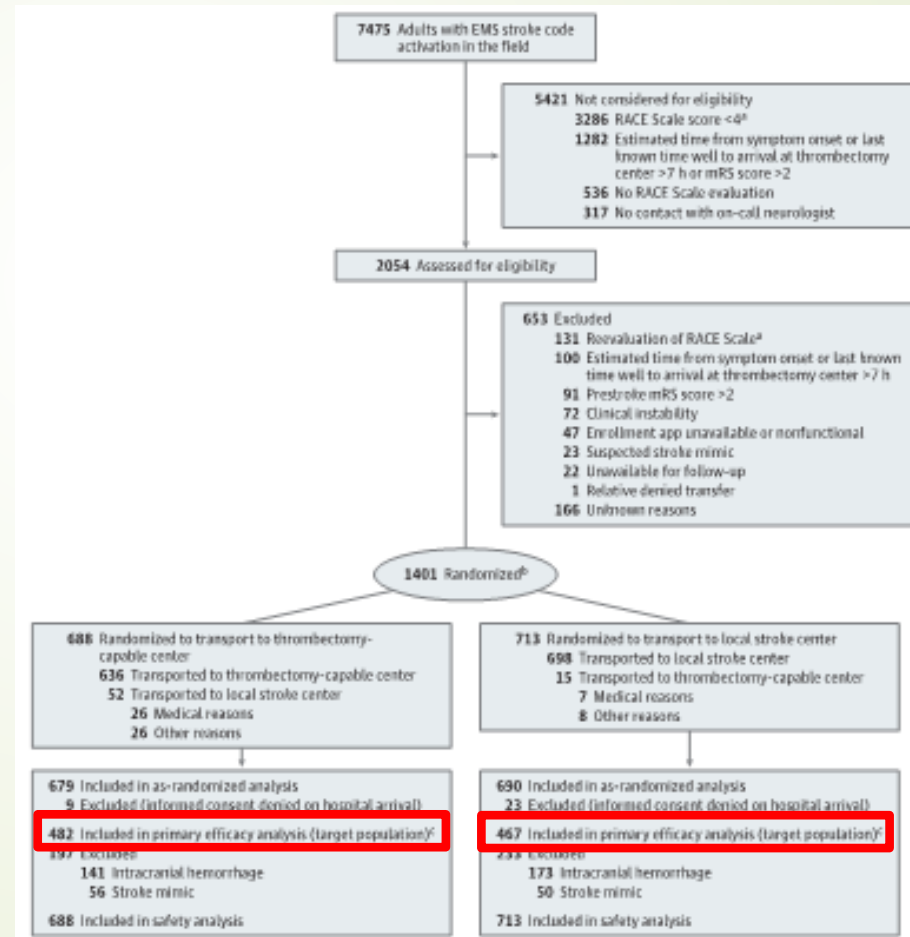
- Patients mRs 0-2
- Score RACE 5-9
- Zone géographique dont le centre référent ne dispose pas de thrombectomie
- Arrivée à un centre de thrombectomie estimée < 7h
- Randomisation par clusters géographiques

Calcul effectif

- Hypothèses
- ratio 3:1 pour AVC ischémiques vs non ischémique
- 6% de différence de handicap à 90 J
- => effectif nécessaire 1754

Résultats

- Arrêt prématuré de l'étude en juin 2020 après 2^e analyse intermédiaire : inclusion 70 % (n=1225) pour futilité



Résultats

Characteristics	Target population ^b		As-randomized population ^c	
	Thrombectomy-capable center (n = 482)	Local stroke center (n = 467)	Thrombectomy-capable center (n = 679)	Local stroke center (n = 690)
Age, median (IQR), y	77 (67-84)	76 (66-84)	76 (66-84)	74 (64-83)
Sex, No. (%)				
Female	219 (45.4)	209 (44.8)	293 (43.2)	308 (44.6)
Male	263 (54.6)	258 (55.2)	386 (56.8)	382 (55.4)
Travel time >60 min to a thrombectomy-capable center, No. (%)	270 (56.0)	254 (54.4)	376 (55.4)	378 (54.8)
Medical history, No. (%)				
Hypertension	352 (73.5)	331 (72.4)	478 (71.3)	476 (70.4)
Dyslipidemia	238 (49.7)	212 (46.4)	316 (47.2)	314 (46.4)
Diabetes	122 (25.5)	105 (23.0)	172 (25.7)	166 (24.6)
Atrial fibrillation	120 (25.1)	129 (28.2)	159 (23.7)	170 (25.1)
Prestroke anticoagulation treatment	90 (18.8)	82 (17.9)	121 (18.1)	118 (17.5)
Ischemic stroke or TIA	86 (18.0)	75 (16.4)	118 (17.6)	103 (15.2)
Coronary heart disease	83 (17.3)	65 (14.2)	100 (14.9)	81 (12.0)
Smoking	70 (14.6)	67 (14.7)	98 (14.6)	94 (13.9)
Peripheral vasculopathy	24 (5.0)	15 (3.3)	31 (4.6)	22 (3.3)
Prestroke modified Rankin Scale score 0-2, No. (%) ^d	435 (90.3)	426 (91.2)	618 (91.0)	636 (92.2)
RACE Scale ^e				
Median (IQR) score	7.0 (6.0-8.0)	7.0 (6.0-8.0)	7.0 (6.0-8.0)	7.0 (6.0-8.0)
Score of 5-7, No. (%)	314 (65.3)	297 (63.6)	463 (68.3)	463 (67.1)
Score of 8-9, No. (%)	167 (34.7)	170 (36.4)	215 (31.7)	227 (32.9)
NIHSS score at hospital arrival, median (IQR) ^f	16 (9-20)	16 (11-21)	17.0 (11.0-21.0)	17.0 (11.0-21.0)

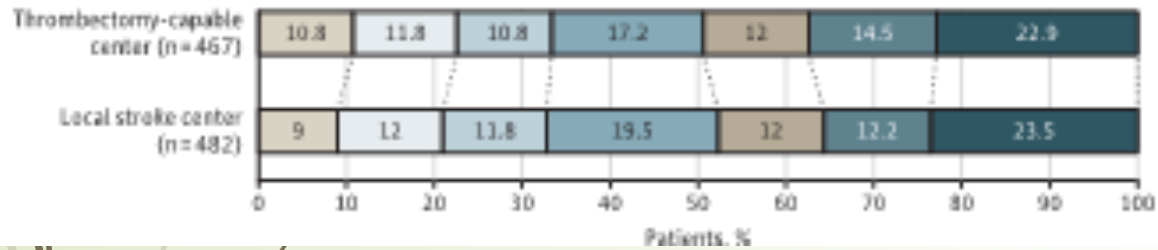
Résultats

Large-vessel occlusion detected at any hospital, No. (%)				
Yes	333 (69.1)	303 (64.9)		
No	137 (28.4)	116 (24.8)		
No determination	12 (2.5)	48 (10.3)		
Time from stroke onset to randomization, median (IQR), min	67 (44-164)	59 (40-111)	68 (45-148)	56 (42-126)
Time from randomization to first hospital arrival, median (IQR), min	61 (35-86)	21 (13-32)	59 (35-85)	22 (14-33)

Characteristics	Target population ^b		As-randomized population ^c	
	Thrombectomy-capable center (n = 482)	Local stroke center (n = 467)	Thrombectomy-capable center (n = 679)	Local stroke center (n = 690)
Time from stroke onset to first hospital arrival, median (IQR), min	142 (100-231)	88 (61-145)	140 (99-216)	91 (64-155)
Time from stroke onset to first hospital arrival of 4 h, No. (%)	370 (76.8)	403 (86.3)	535 (78.8)	592 (85.8)
Transferred to thrombectomy-capable center, No. (%)		302 (64.6)		
Time from arrival to discharge at referral hospital (calculated in patients transferred), median (IQR), min		78 (63-97)		
Time from arrival at first hospital to intravenous alteplase administration, median (IQR), min	30 (22-40)	33 (25-48)		
Time from thrombectomy-capable center arrival to groin puncture, median (IQR), min	71 (49-97)	43 (32-59)		

Résultats

A Patients with ischemic stroke or TIA (primary analysis)



Outcomes	Thrombectomy-capable center	Local stroke center	Absolute difference (95% CI)	Unadjusted OR or HR (95% CI)	Adjusted OR or HR (95% CI)
Primary efficacy outcome (Target population)					
Modified Rankin Scale score at 90 d, median (IQR)	3 (2-5) [n = 482]	3 (2-5) [n = 467]		OR, 0.99 (0.78-1.24)	OR, 1.03 (0.82-1.29)
Secondary efficacy outcomes					
Modified Rankin Scale score at 90 d in as-randomized population, median (IQR)	4 (2-6) [n = 679]	4 (2-6) [n = 690]		OR, 1.00 (0.83-1.21)	OR, 1.05 (0.86-1.27)
Modified Rankin Scale score at 90 d in patients with intracranial hemorrhage, median (IQR)	5 (4-6) [n = 141]	5 (4-6) [n = 173]		OR, 0.67 (0.42-1.07)	OR, 0.72 (0.44-1.18)
Treatment with intravenous alteplase in target population, No./total (%)	229/482 (47.5)	282/467 (60.4)	-12.9 (-19.2 to -6.6)	OR, 0.59 (0.45-0.70)	
Treatment with thrombectomy in target population, No./total (%)	235/482 (48.8)	184/467 (39.4)	10.1 (3.8 to 16.5)	OR, 1.46 (1.13-1.89)	
Time from symptom onset to intravenous alteplase administration in target population, median (IQR), min ^b	155 (120-195)	120 (89-168)	34.5 (22 to 45)		
Time from symptom onset to groin puncture in target population, median (IQR), min ^b	214 (172-330)	270 (215-347)	-56 (-72 to -29)		
Dramatic early favorable response in target population, No./total (%) ^c	115/482 (23.9)	134/467 (28.7)	-4.8 (-10.4 to 0.7)	OR, 0.77 (0.58-1.04)	OR, 0.76 (0.55-1.02)
Safety outcomes (safety population)^d					
Mortality at 90 d, No./total (%)	188/688 (27.3)	194/713 (27.2)	0.1 (-0.4 to 0.4)	HR, 0.99 (0.81-1.22)	HR, 0.96 (0.78-1.18)
Mortality at 90 d in patients with intracranial hemorrhage, No./total (%)	69/142 (48.6)	72/182 (39.6)	7.2 (-3.7 to 18.3)	HR, 1.30 (0.92-1.82)	HR, 1.21 (0.86-1.70)
Clinical worsening requiring intubation during transfer, No./total (%)	7/688 (1.0)	5/713 (0.7)	0.3 (-0.6 to 1.2)	OR, 1.45 (0.46-4.61)	OR, 1.52 (0.49-4.77)
Clinical worsening at 24 h, No./total (%) ^e	208/688 (30.2)	217/713 (30.4)	0.2 (-0.4 to 0.5)	OR, 0.99 (0.78-1.24)	OR, 0.99 (0.79-1.23)



Limites

- Résultats concernant zones géographiques > 30 minutes d'un centre de thrombectomie
- Patients < 7 H des symptômes
- Imagerie centre initial : 44 % des patients drip-and-ship sans imagerie vasculaire
Vs 2.5 % en mothership
- Sous-dimensionnement de l'étude
- Non respect de l'orientation fixée chez 350 patients

Perspectives

- Résultats à répliquer
- Dans d'autres zones

