The effect of prehospital P_2Y12 receptor inhibition in primary PCI for ST-segment elevation myocardial infarction: the ATLANTIC-Elderly analysis

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Background & Purpose

- Despite representing 1/3 of the ACS, elderly (≥75 years) represent <15% the ACS trial.
- In elderly, there was no net benefit of prasugrel vs clopidogrel and the absolute benefit of ticagrelor was amplified although there were more fatal intracranial bleeds .
- STEMI is a high thrombotic burden situation where a strategy of early administration of oral P2Y12 inhibitors is not evidence-based.
- ATLANTIC (NCT01347580) was a randomized, double-blind, placebo-controlled trial that evaluated pre-hospital (in-ambulance) versus in-hospital (in-cath lab) ticagrelor 180 mg loading dose in STEMI patients transferred for PCI.
- We examine whether the main results of the ATLANTIC trial differ according to age class.

Methods

- ATLANTIC-ELDERLY compared ≥75 vs <75 year-old patients according to pre-hospital or in-hospital ticagrelor administration in terms of :
  - (1) prior cardiovascular history;
  - (2) initial clinical features;
  - (3) culprit artery reperfusion prior to PCI;
  - (4) management,
  - (5) reperfusion of the culprit artery
  - ((6) other ATLANTIC endpoints.

Results

Characteristic	< 75 years (n=1558)	≥ 75 years (n=304)	P-value
Age, years; median [q1;q3]	57 [50;64]	80 [77;83]	
Female, n (%)	216 (13.9%)	153 (50.3%)	<0.0001
Weight, kg; median [q1;q3]	80 [71;90]	70 [61;80]	<0.0001
Risk factors			
Hypertension, n (%)	590 (37.9%)	205 (67.4%)	<0.0001
COPD, n (%)	48 (3.1%)	28 (9.2%)	<0.0001
Chronic renal failure, n (%)	18 (1.2%)	16 (5.3%)	<0.0001
Prior cardiac history, n (%)			
Prior MI, n (%)	121 (7.8%)	38 (12.5%)	0.0069
Prior CABG, n (%)	6 (0.4%)	6 (2.0%)	0.0070
TIA, n (%)	11 (0.7%)	11 (3.6%)	0.0002
Ischaemic stroke, n (%)	10 (0.6%)	8 (2.6%)	0.0045
Procedure & Management			
Killip Class I, n (%)	1416 (90.9%)	265 (87.2%)	0.0455
Chest pain to PCI	50 (6-345)	82 (4-231)	<.0001
GP IIb/IIIa inhibitor before PCI	466 (29.9%)	67 (22.0%)	0.0055
IV anticoagulant	1389 (89.2%)	253 (83.2%)	0.0034

Table 1. Baseline characteristics

- Comorbidities were more frequent in elderly versus younger patients (Table) and the main indicators of risk or severity were more frequent while diagnostic/management delays and total ischemic time were significantly longer.
- There were no significant differences in terms of culprit coronary artery (Table).
- Elderly patients were significantly less likely to be treated with aggressive antithrombotics.

	Age ≥ 75 (n=304)	Age <75 (n=1558)	OR (95% CI) (>1 favors <75)	P-value
Co-primary endpoint				
Lack of pre-PCI TIMI 3 flow	237 (86.5%)	1155 (82.2%)	1.64 [0.10;2.45]	0.017
Lack of pre-PCI ≥70% ST-SER	225 (90%)	1169 (86.7%)	1.44 [0.89;2.32]	0.137
Lack of post-PCI ≥70% STSER	113 (51.6%)	543 (43.9%)	1.33 [0.97;1.82]	0.079
Lack of post-PCI TIMI 3 flow	67 (27.5%)	222 (17.1%)	1.68 [1.19;2.39]	0.0036
Clinical endpoints				
Death/MI/stroke/UR	30 (9.9%)	45 (2.9%)	3.67 [2.27;5.93]	<0.0001
All-cause mortality	26 (8.5%)	23 (1.48%)	6.45 (2.75;15.11)	<0.00001

Table 2. Co-primary and clinical endpoints (30 days of first loading dose according to age after adjustment for major confounders*).

- Elderly tended to have more frequently major bleedings (TIMI major 2.3% versus 1.1%; OR 2.13 [0.88; 5.18], p=0.095).
- There was no significant interaction between time of ticagrelor administration (pre-hospital versus in-lab) and class of age for all outcomes.

Conclusion

- Elderly patients (≥75 years) who represented one fifth of the patients randomized in the ATLANTIC trial, had less successful mechanical reperfusion and a six-fold increase in mortality at 30 days, likely due to comorbidities and possible undertreatment.
- The effect of early ticagrelor was consistent irrespective of age.

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