Prevalence and outcomes of ST-segment elevation myocardial infarction patients resulting from definite stent thrombosis

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BACKGROUND

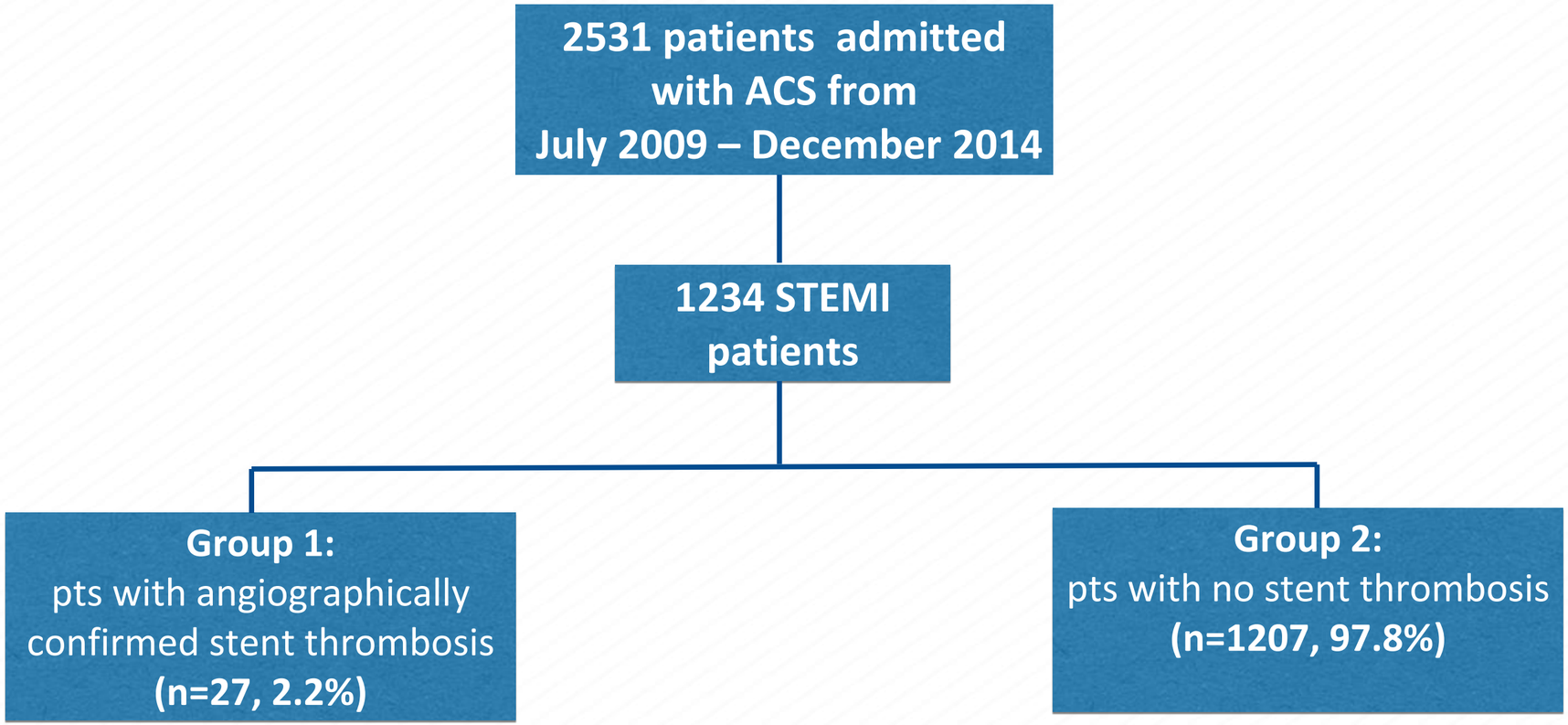
- Stent thrombosis (ST) is a **highly morbid complication** of percutaneous coronary intervention (PCI), which **manifests commonly as** ST-segment elevation myocardial infarction (**STEMI**).[1,2]
- It has been reported in **3 - 4.4%** of cases of STEMI in “real-world” contemporary population.[3,4]
- Treatment for stent thrombosis almost always requires emergent repeat PCI, although optimal reperfusion is only achieved in two thirds of patients. As a result, it has been associated with **30-day mortality rates of 10 % to 25%** and ≈ 20% of patients with a first stent thrombosis experience a recurrent stent thrombosis episode within 2 years.[5]

Purpose

- To evaluate the prevalence of stent thrombosis among STEMI patients and its outcome.

1 - Chechi T, Vecchio S, Vittori G, Giuliani G, Lilli A, Spaziani G, et al. ST-segment elevation myocardial infarction due to early and late stent thrombosis a new group of high-risk patients. J Am Coll Cardiol 2008;51:2396–402.
2 - Armstrong EJ, Feldman DN, Wang TY, Kaltenbach LA, Yeo K-K, Wong SC, et al. Clinical presentation, management, and outcomes of angiographically documented early, late, and very late stent thrombosis. JACC Cardiovasc Interv 2012;5:131–40.
3 - Parodi G, Memisha G, Bellandi B, Valenti R, Migliorini A, Carrabba N, et al. Effectiveness of primary percutaneous coronary interventions for stent thrombosis. Am Cardiol 2009;103:913–6.
4 - ErgelenM, Gorgulu S, Uyarel H, Norgaz T, Aksu H, Ayhan E, et al. The outcome of primary percutaneous coronary intervention for stent thrombosis causing ST-elevation myocardial infarction. Am Heart J 2010;159:672–6
5- Kirtane AJ, Stone GW. How to minimize stent thrombosis. Circulation.2011; 124: 1283-1287

METHODS



- For each group we compared clinical features and adverse events.
- Primary endpoint was the occurrence of cardiovascular death at 1 year; follow-up was completed in 96% of patients.

RESULTS

- ***Baseline Patients' Characteristics on Admission***

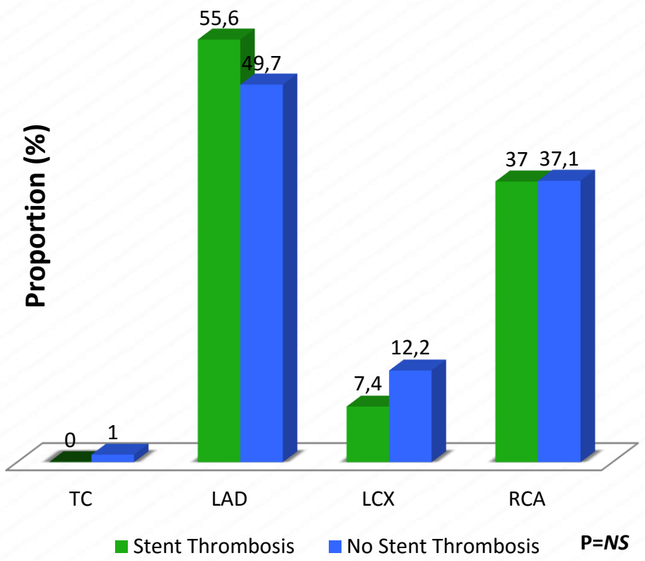
Variables	Group 1 (n 27)	Group 2 (n 1207)	*P*
Age (years)	59 ± 11	62 ± 14	NS
Women (%)	14.8	19.1	NS
Cardiovascular Risk Factors			
Hypertension (%)	48.1	57.2	NS
Diabetes (%)	37	22	NS
Dyslipidaemia (%)	63	49.8	NS
Smoking (%)	40.7	38.6	NS
Previous smoker (%)	23.1	16.7	NS
Previous Vascular Disease			
Myocardial Infarction (%)	92.6	7.8	**<0.001**
Angina (%)	25.9	7.8	**0.005**
PTCA (%)	100	4.6	**<0.001**
CABG (%)	0.0	1.1	NS
Stroke (%)	3.7	6.1	NS

- ***Clinical Presentation***

Variables	Group 1 (n 27)	Group 2 (n 1207)	*P*
Systolic pressure (mmHg)	125± 21	127± 21	NS
Heart rate (bpm)	79	77	NS
Killip classification > 2 (%)	7.4	4.1	NS
Cardiogenic shock (%)	11.1	5.9	NS
Anaemia (%)	3.7	22.4	**0.017**
Clearance creatinine < 60 mL/min/1,73 m^2 (%)	14.8	17.6	NS
Blood Analysis			
Haemoglobin (g/dl)	14.9 ± 1.8	13.9 ± 1.9	**0.008**
Platelets (x10^3)	453 ± 89	170 ± 58	**0.014**
Peak of troponin (ng/mL)	72. ± 84	92 ±119	NS
Left systolic dysfunction (%)	77.8	75.9	NS
Right systolic dysfunction (%)	7.4	6.3	NS
Severe coronary disease (%)	11.1	17	NS

RESULTS

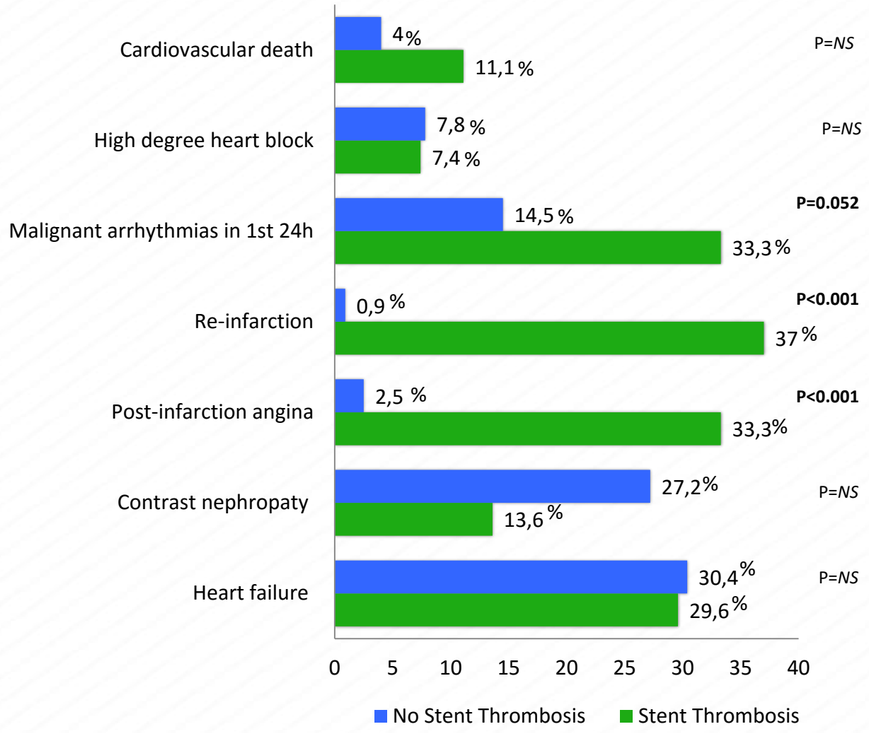
- ***Infarct related artery***



- ***In hospital treatment***

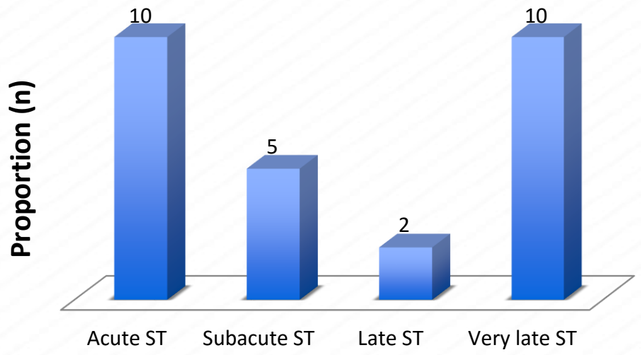
Variables	Group 1 (n 27)	Group 2 (n 1207)	*P*
Time symptoms-reperfusion	3h:06’	4h:29’	NS
Revascularization (%)	96.3	93.8	NS
Medical Treatment			
Glycoprotein IIb/IIIa inhibitors (%)	48.1	20.3	**0.001**
Aspirin (%)	100	99.2	NS
Clopidogrel (%)	100	99.2	NS
ACE inhibitor (%)	88.9	86.5	NS
Beta blocker (%)	92.6	85.8	NS
Statins (%)	100	98.2	NS
Diuretics (%)	22.2	33.6	NS
Inotropics (%)	14.8	9.6	NS

- ***In hospital adverse events***

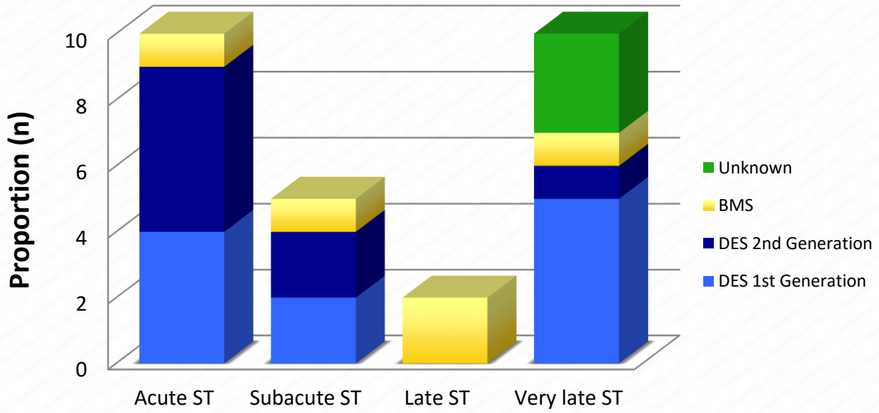


RESULTS

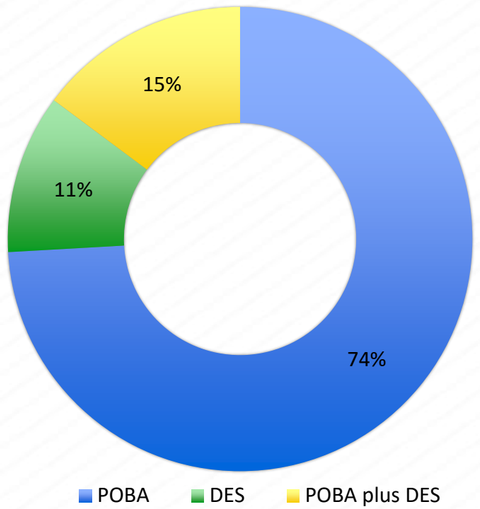
Stent thrombosis classification



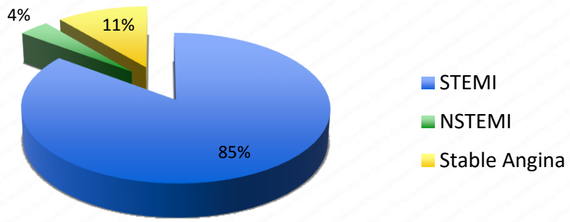
Type of stent previous implanted



Stent thrombosis patients revascularization

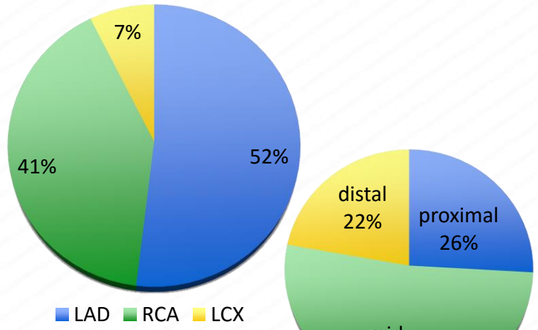


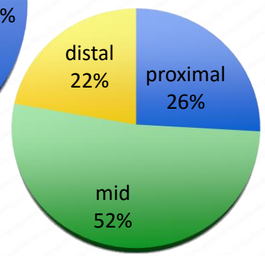
Previous context of stent implantation



multivessel disease	44,4%
multisegment disease	7,3%

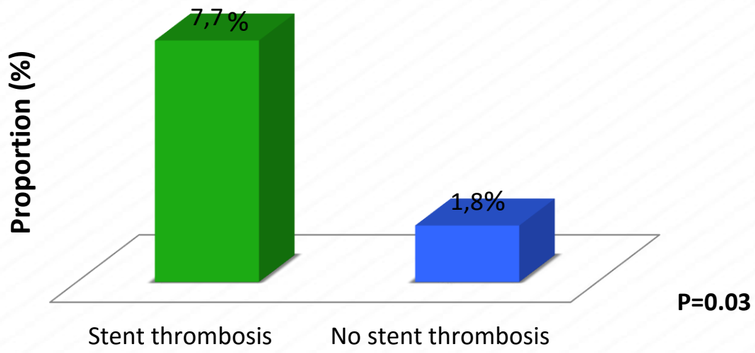
ST-vessel and segment affected





RESULTS

- ***1-year cardiovascular mortality***



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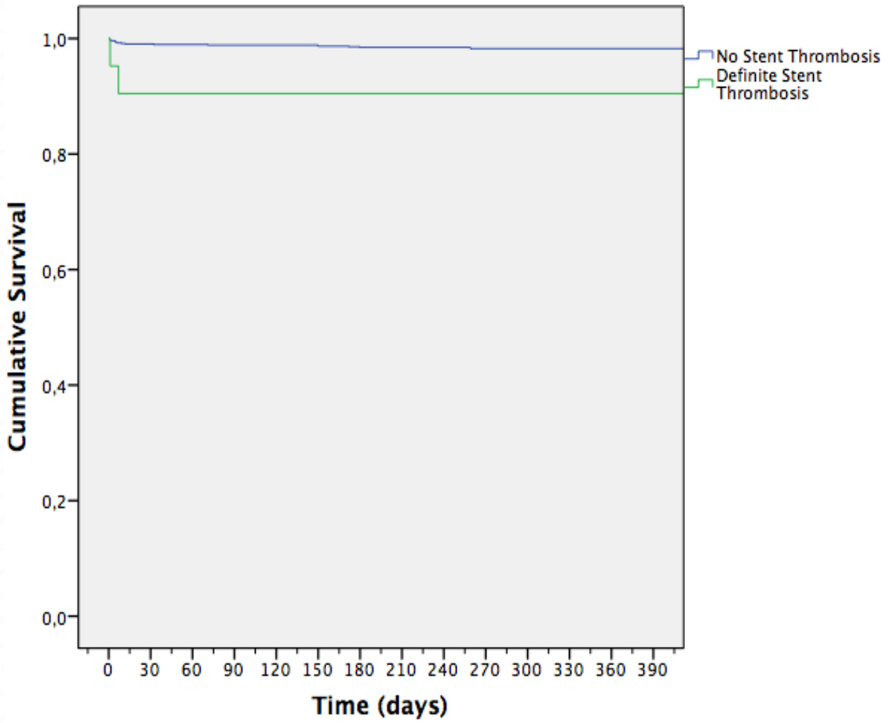

Kaplan-Meyer Survival curves

CONCLUSION

- Stent thrombosis accounts for 2.2% in our cohort of STEMI patients, being the majority treated with balloon angioplasty.
- The more frequent clinical presentation was acute and very late stent thrombosis, the last mainly due to 1st generation drug eluting stents.
- Stent thrombosis patients need more frequently triple antiplatelet therapy and suffer more malignant arrhythmias, post-infarction angor and reinfarction.
- Our patients with definite stent thrombosis did not have poorer in-hospital survival compared with those with native coronary disease, but they had higher cardiovascular death at one-year follow-up.