Impact of P2Y12 inhibitors pretreatment on outcome and stent thrombosis following PCI: insights from the France PCI registry

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PURPOSE

- Pre procedural treatment with P2Y12 inhibitors is not recommended before percutaneous coronary intervention (PCI) by current guidelines in non-STEMI patients. However, this strategy was reported to improve stent implantation results and prevent subsequent device thrombosis.
- We aimed to investigate the impact of pretreatment with oral P2Y12 inhibitors on one-year outcome including acute and subacute stent thrombosis (AST/SAST) following non-urgent percutaneous coronary intervention (PCI).

METHODS

- All participants of the national France PCI registry included between 2014 and 2019 were considered and stratified according to pretreatment with oral P2Y12 inhibitors. Participants who underwent primary PCI for STEMI or emergent PCI were excluded.
- The composite of cardiovascular death, recurrent myocardial infarction, stent thrombosis and target lesion revascularization (major adverse cardiovascular events/MACE) was assessed during the first year of follow-up (Kaplan Meier curves).
- Secondary endpoints included acute (AST) + subacute stent thrombosis (SAST) and BARC ≥3 bleeding events incidence.
- Multivariable logistic regression models were performed to identify the predictors of AST/SAST in the cohort.

TABLE 1	Overall (n=44917)	P2Y12 inhibitors pretreatment (N=37772)	No P2Y12 inhibitors pretreatment (n=7145)	p
Baseline characteristics				
Age (y)	69.1 ± 11.7	68.9 ± 11.7	69.9 ± 11.2	<0.001
Male gender	75.8%	76.2%	73.8%	<0.001
Diabetes	29.2%	29.2%	29.3%	0.87
Hypertension	61.7%	61.6%	61.7%	0.95
Dyslipidemia	53.8%	54.9%	47.8%	<0.001
Active smoking	18.5%	18.9%	16.3%	<0.001
Severe Renal failure	1.3%	1.2%	1.5%	0.45
Hemodialysis	1.2%	1.2%	1.4%	0.12
Family history	23.6%	23.8%	22.2%	0.03
Previous PCI	37.8%	39.7%	27.4%	<0.001
Previous CABG	6.2%	6.2%	6%	0.46
Previous MI	17.5%	18.2%	13.6%	<0.001
PAD	11.4%	11.4%	11.6%	0.48
Clinical Presentation				
Acute coronary syndrome	33.9%	34.3%	31.3%	<0.001
Chronic coronary syndrome	66.1%	65.7%	68.7%	<0.001
Pharmacological characteristics				
Pre PCI Clopidogrel	43.5%	51.7 %	0	<0.001
Pre PCI Prasugrel	1.3%	1.5 %	0	<0.001
Pre PCI Ticagrelor	26.2%	31.1%	0	<0.001
Pre PCI unspecified P2Y12 Inh	13.2 %	15.7%	0	<0.001
Oral anticoagulation	9.4%	8.1%	16.7%	<0.001
Procedural characteristics				
Radial access	91%	92.6%	88.9%	<0.001
Femoral access	8%	7.4%	11.1%	<0.001
Total stent length (mm)	32.6 ± 21.7	32.7 ± 21.7	32.6 ± 21.8	0.45
Minimal stent diameter (mm)	2.9 ± 1.3	2.9 ± 1.3	2.9 ± 1.1	0.44

Figure 1

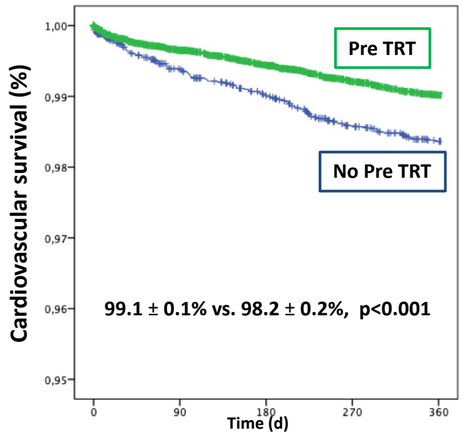
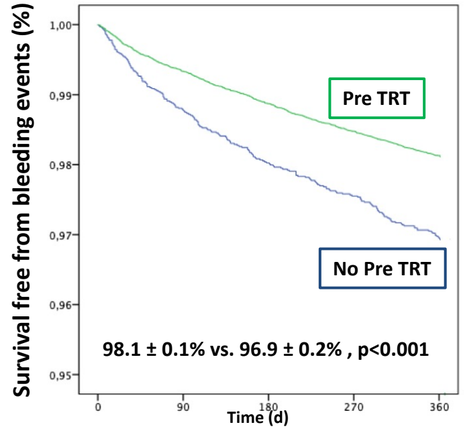


Figure 2



RESULTS

- 44916 participants were selected (**Table 1**) and 84% were pretreated with oral P2Y12 inhibitors.
- Participants who were pretreated were younger, more frequently men, active smokers, with more unstable lesion, (**Table 1**/ p<0.001 for all). They were also less frequently exposed to chronic oral anticoagulants than others.
- The rate of event -free participants according to the primary study endpoint at one-year did not differ according to pretreatment status (94.6±0.1% vs 94.4±0.1%, p=ns log rank analysis).
- However, the cardiovascular survival was higher in pre-treated compared to non pre-treated (**Figure 1**). In addition, the survival free from major bleedings was also higher in pre-treated patients compared to non pre-treated patients (**Figure 2**).

  A Total of n=141 definite AST + SAST (0.3%) were reported following PCI . This incidence was significantly lower in pre-treated versus non pre-treated participants (0.3% vs. 0.5%, p=0.004).
- Independent predictors of AST/SAST were unstable lesions, diabetes, total stent length, acute coronary syndrome, whereas minimal stent diameter, radial access and pretreatment with P2Y12 inhibitors were protective factors (**Table 2**).

TABLE 2	Univariable analysis OR (IC 95%)	p	Multivariable analysis OR (IC 95%)	p
Age	0.99 (0.98 : 1.1)	0.38		
Gender male	0.86 (0.6 : 1.25)	0.44		
Previous MI	1.19 (0.79 : 1.8)	0.41		
PAD	1.53 (0.98 : 2.4)	0.06	1.38 (0.87 : 2.17)	0.14
Hemodialysis	3.1 (1.27 : 7.6)	0.013	1.92 (0.75 : 4.89)	0.17
Diabetes	**1.67 (1.2 : 2.3)**	**0.003**	**1.64 (1.16 : 2.3)**	**0.005**
Active smoking	1.06 (0.69 : 1.61)	0.79		
Hypertension	1.15 (0.81 : 1.63)	0.42		
Normal LVEF	1.03 (0.66 : 1.6)	0.9		
Acute coronary syndrome	**1.49 (1.07 : 2.08)**	**0.019**	**1.72 (1.23 : 2.4)**	**0.002**
P2Y12 inhibitors pretreatment	**0.57 (0.39 : 0.84)**	**0.005**	**0.54 (0.37 : 0.8)**	**0.002**
Radial access	**0.4 (0.26 : 0.62)**	**<0.001**	**0.47 (0.3 : 0.73)**	**0.001**
Total stent length, per mm	**1.01 (1.01 : 1.02)**	**<0.001**	**1.01 (1.01 : 1.02)**	**<0.001**
Min. stent diameter, per mm	**0.57 (0.44 : 0.74)**	**<0.001**	**0.58 (0.43 : 0.79)**	**<0.001**

CONCLUSIONS

- In this large cohort, pretreatment with oral P2Y12 inhibitors prior to PCI was associated with better cardiovascular survival without increased incidence of major bleeding events.
- Although acute and subacute stent thrombosis were very rare events, they were favored by the absence of pre PCI P2Y12 inhibitors pre treatment.