

# The Variability of the Anti-Platelet Effect of Prasugrel in Patients with ST-Elevation Myocardial Infarction undergoing Primary Angioplasty

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# The Variability of the Anti-Platelet Effect of Prasugrel in Patients with ST- Elevation Myocardial Infarction undergoing Primary Angioplasty

NO DISCLOSURE

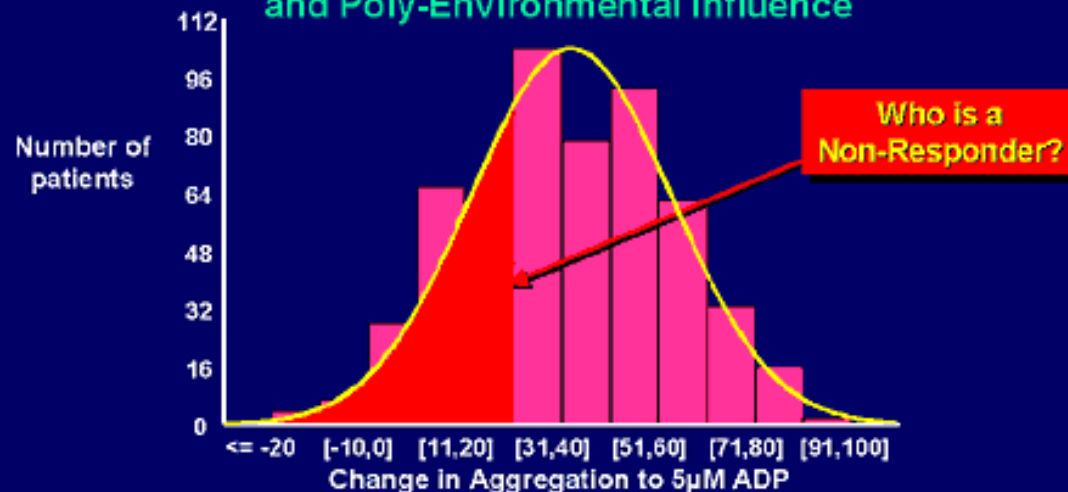


# Background

- More than a decade of DUAL ANTIPLATELETS THERAPY
- From CURE to TRITON TIMI 38

## Distribution of Responsiveness to Clopidogrel in 544 Individuals

A Normal Distribution: Consistent with a Poly-Genetic and Poly-Environmental Influence

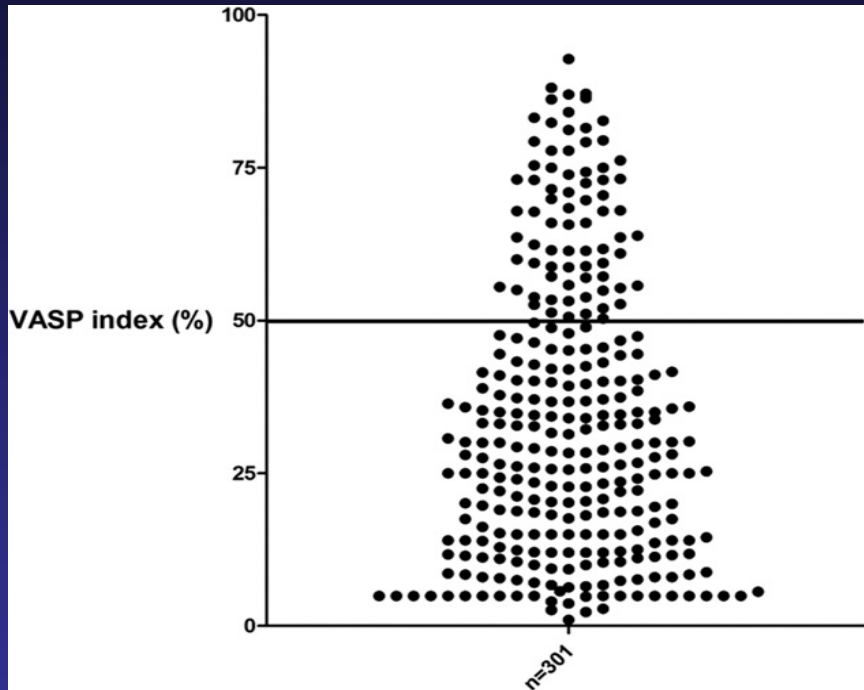


# Background

- Prasugrel -higher, more rapid and more consistent level of platelet inhibition
- Normal volunteers
- Stable CAD
- Few studies suggested that there is variability in PLT response to prasugrel , even fewer included patients with STEMI



# Background



Thrombotic events at 1-year follow-up in HTPR (VASP index  $\geq 53.5\%$ ) compared with GR (VASP index  $< 53.5\%$ )

One year outcome	GR (n = 234)	HTPR (n = 67)	Log-rank P-Value
CV death	2	2	0.13
Recurrent ACS	3	8	$< 0.001$
Stent thrombosis	2	5	0.001
Revascularization	18	3	0.6
All MACE	7 (2.9%)	15 (22.4%)	$< 0.001$
All MACE + Revascularization	25 (10.7%)	18 (26.9%)	0.001

GR, good responders (VASP index  $< 53.5\%$ ); HTPR, high on-treatment platelet reactivity (VASP index  $\geq 53.5\%$ ); CV, cardiovascular; ACS, acute coronary syndrome; MACE, major adverse cardiovascular events.

*L. Bonello et al., J Am Coll Cardiol 2011*

*L. Bonello et al., J Thromb Haemost 2012*

# Methods

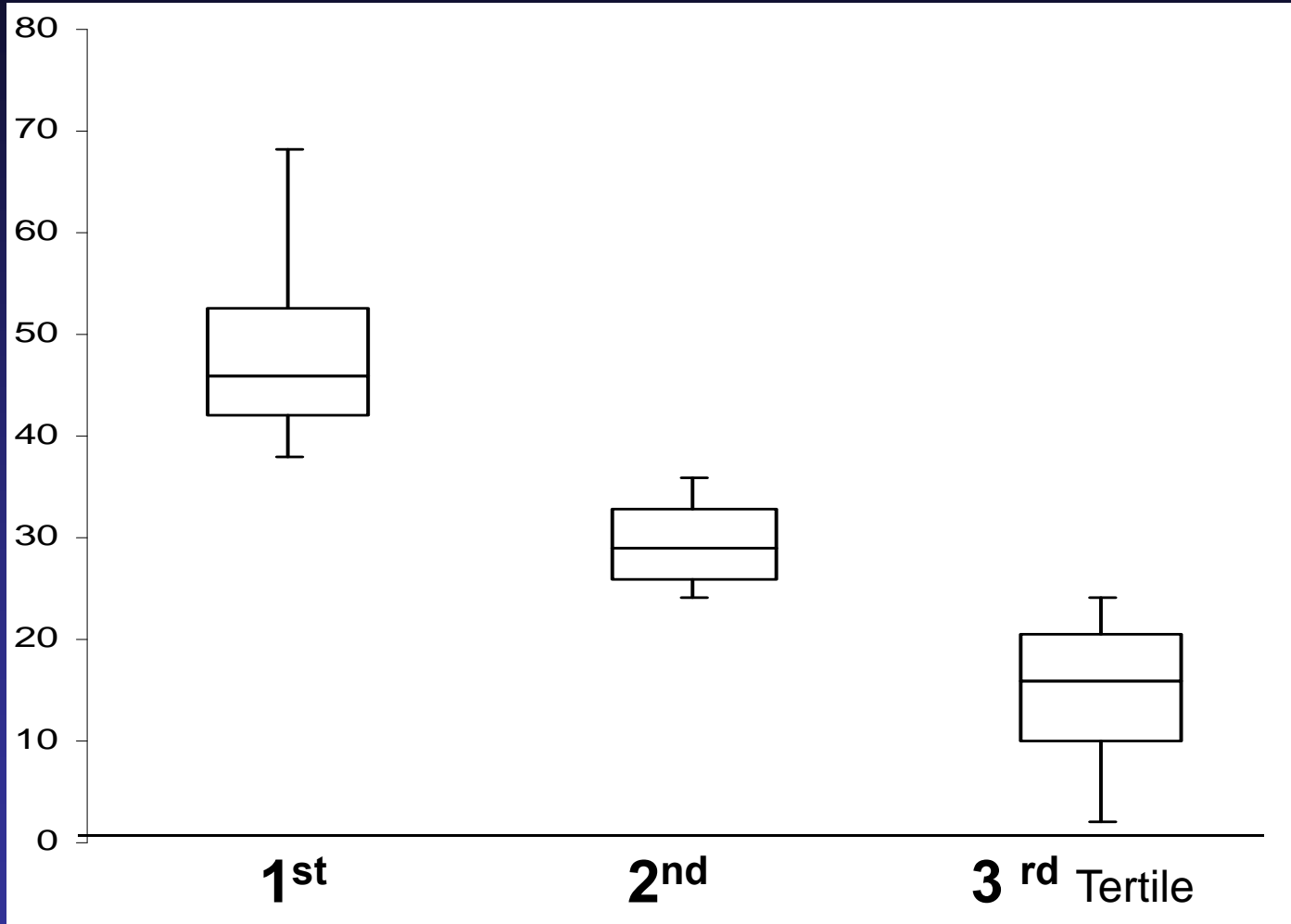
- Prospective study : 105 consecutive STEMI patients undergoing PPCI within 12 hours from the onset of symptoms
- 60 mg Prasugrel loadind dose , 10mg/d maintenance  
( Patients older than 75 years, weight<60kg, or with a history of stroke were excluded)
- Mean FU of 6 months

# Methods

- ADP-induced platelet aggregation (PA) was determined with light transmittance aggregometry (LTA) 72 hours post loading
- Follow-up for in-hospital complication and mean of 6 months after discharge
- MACE – re-infarction, urgent revascularization, stroke / TIA, severe CHF (FC III/IV), and/or CV death.

# Results – ADP Induced Platelets Aggregation

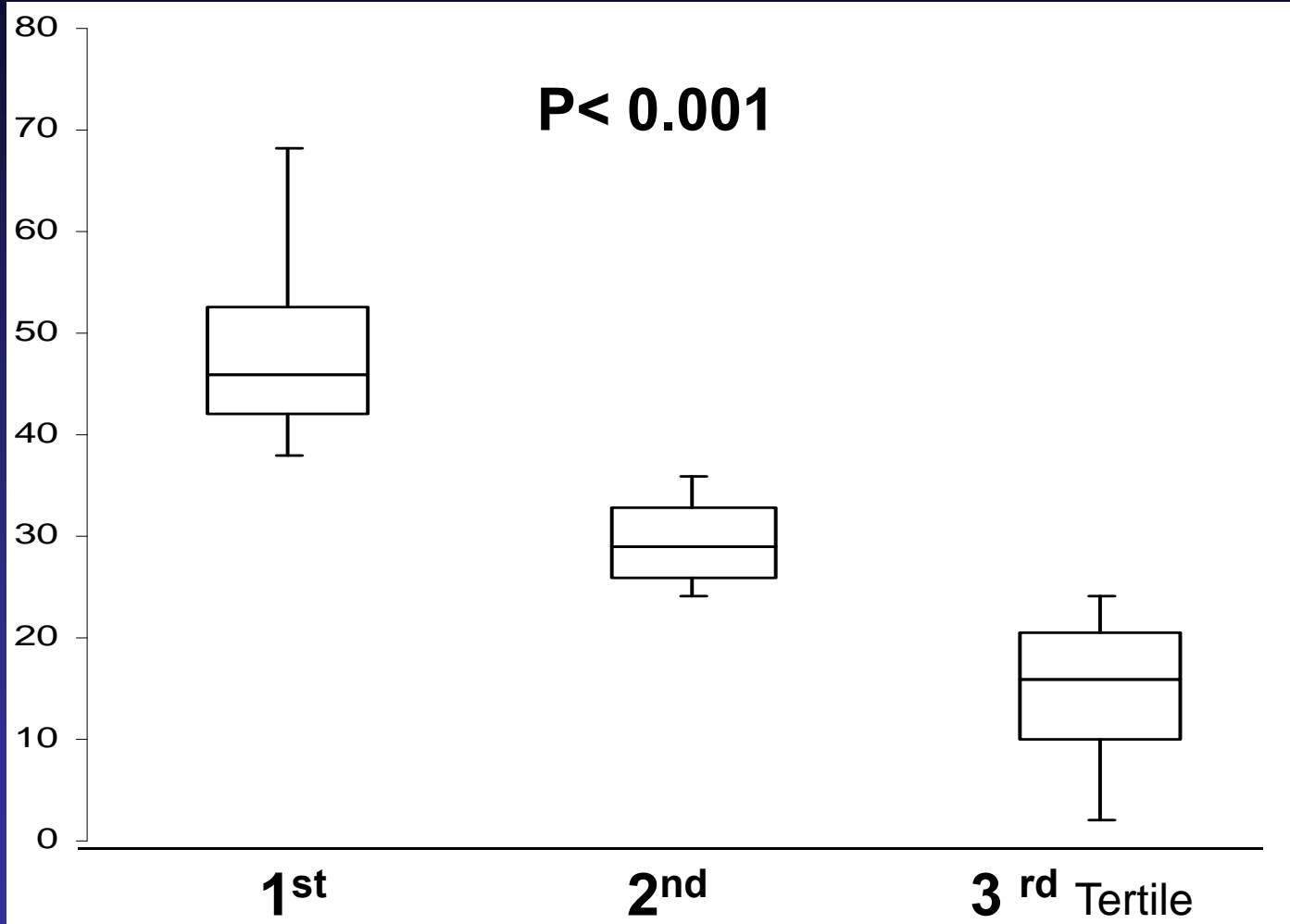
ADP- Induced Platelet Aggregation



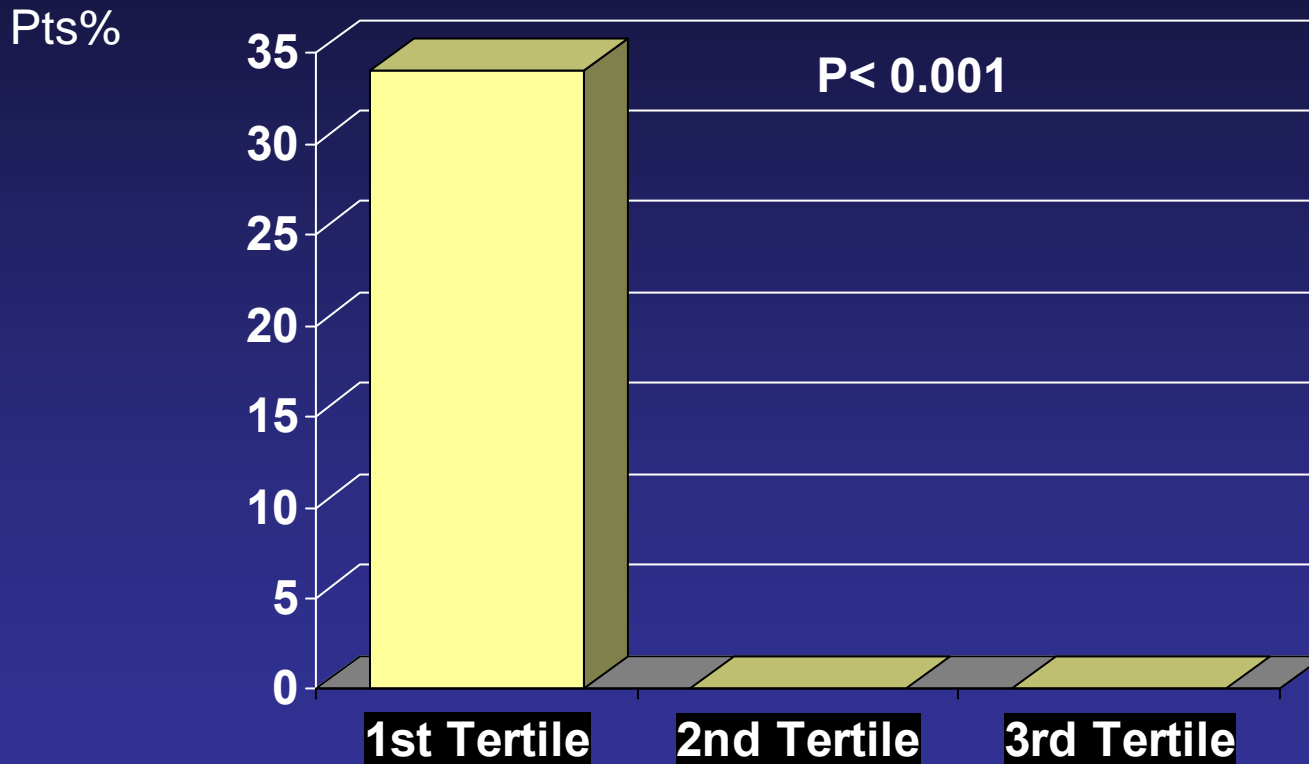


# Results – ADP Induced Platelets Aggregation

ADP- Induced Platelet Aggregation



# Results-Differences in Suboptimal Response



Sub-optimal responders – ADP induced PA  $\geq 50\%$



# Platelets Reactivity Results

	<b>ADP (%)</b>	<b>AA (%)</b>	<b>Epinephrine (%)</b>	<b>MPV (fL)</b>
<b>1st</b>	<b>50±13</b>	<b>33±23</b>	<b>51±19</b>	<b>8.9±0.8</b>
<b>2<sup>nd</sup> &amp; 3<sup>rd</sup></b>	<b>22±9</b>	<b>21±20</b>	<b>38±16</b>	<b>8.8±1</b>



# Baseline Characteristics (1)

Characteristics	1 <sup>st</sup> Trt	2 <sup>nd</sup> & 3 <sup>rd</sup> Trt	P VALUE
Age (years)	55±9	56±10	0.8
Male (%)	91	96	0.4
DM (%)	23	16	0.4
Fam . Hx (%)	43	29	0.2
<b><u>Smoking (%)</u></b>	<b><u>80</u></b>	<b><u>57</u></b>	<b><u>0.03</u></b>
Prior ASA (%)	23	24	0.9
Prior Statin (%)	20	30	0.3

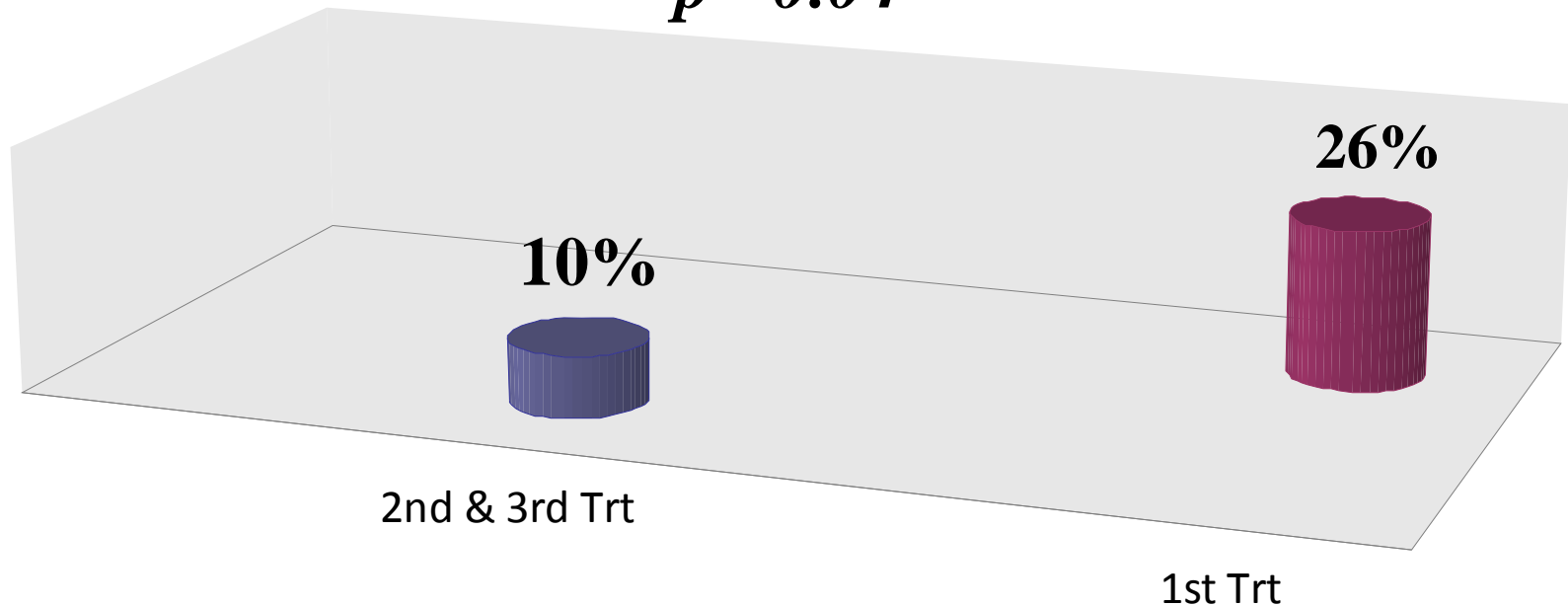
# Baseline Characteristics ( 2)

<b>Characteristics</b>	<b>1<sup>st</sup> Trt (%)</b>	<b>2<sup>nd</sup> &amp; 3<sup>rd</sup> Trt (%)</b>	<b>P VALUE</b>
Prior MI	17	18	0.9
Prior PCI	11	21	0.3
Prior CABG	0	1	0.5
Prior Angina	20	16	0.6
Multivessel Disease ( $\geq 2$ )	59	60	0.9

# Clinical Outcome

MACE (%)

$p = 0.04$



# Conclusions

- ***Significant variability in PLT response to prasugrel treatment***
- ***Smoking adversely affects PLT response to therapy***
- ***Sub-optimal response to prasugrel was associated with worse 6 months clinical outcome***



# Limitations of the Study

- Small sample size
- Underpowered to detect platelet response effect on (ischemic) clinical outcome





# Thank You



Sheba Medical Center  
Tel Hashomer



# MACE

	<b>1<sup>st</sup> Trt</b> (%)	<b>2<sup>nd</sup> &amp; 3<sup>rd</sup> Trt</b> (%)	<b>P Value</b>
Reinfarction	2.9	3	0.1
Recurrent Angina	11	9	0.66
Urgent PCI	5.7	3	0.63
Severe CHF	14.3	0	<0.001
CV Death	0	1	0.48