Effects of Baseline Thrombocytopenia on Cardiovascular Outcomes in Patients Undergoing PCI at the Longest Follow-Up: A Systematic Review and Meta-analysis

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Background:

Thrombocytopenia (TP) before PCI has been associated with a higher incidence of bleeding and ischemic complications. We have conducted a metanalysis to evaluate the effect of baseline thrombocytopenia (bTP) on cardiovascular outcomes in CAD patients undergoing PCI.

Methods:

A literature search was performed using PubMed (MEDLINE), Embase, Cochrane and clinicaltrials.gov. We identified two groups: Patients with no Thrombocytopenia (nTP) before undergoing PCI (Platelets >150,000) and Thrombocytopenia (bTP) before PCI (Platelets <150,000). Primary end point was all-cause mortality at the longest follow up.Main summary estimate was random effects Risk ratio (RR) with 95% confidence intervals (CIs)

Results:

5 Retrospective studies with 42,579 patients with mean age 65.37 ± 10.7 in the nTP group and 68.4 ± 9.9 in the bTP group were included. Mean follow-up was 30 months. bTP group was associated with significantly increased incidence of all-cause mortality (RR=1.86, CI: 1.2-2.9, p=0.006), and bleeding (RR:1.72, CI: 1.1-2.9, p=0.04), as compared to nTP group at the longest follow-up. There was no difference between nTP and bTP groups in terms of Post-PCI MI, MACE and target vessel revascularization at the longest follow up.

Conclusion:

Baseline thrombocytopenia in patients undergoing PCI is associated with increased mortality and increased incidence of bleeding events.

Study name	Time point		Statis		Risk ratio and 95% CI					C 1				Statistics for each study					Risk ratio and 95% Cl					
		Risk	Lower	Upper	Z-Value	n-Value						Study name	1	ime point	Risk	Lower	Upper	achistudy			NIS.	c ratio and a		
Liu Setal	2018	0.855	0.482	1 516	-0.537	0.591		1	.	1	1				ratio	limit	limit	Z-Value	p-Value			-		
lto S (1) et al.	2010	1 727	1.548	1.078	9 767	0.000			-			Liu, S et al.	2	018	1.052	0.501	2.209	0.133	0.894			-		
Ito, G. (1) et al.	2010	2 927	2 225	4 540	15 200	0.000						Ito, S. (1) et	al. 2	018	1.693	1.439	1.991	6.364	0.000				_	
Vadau Mastal	2010	1.050	1 411	2 710	4 020	0.000				-		Raphael C	al. 2 Ental 2	016	0.725	0.469	1 120	-1.449	0.000			'	-	
Matic Dict al	2013	1.550	1.092	2.710	4.030	0.000						Yaday, M. e	tal. 2	015	1.767	1.147	2.722	2.583	0.010			۳.		
matic, D et al.	2014	1.713	1.002	2.715	2.200	0.022						Matic, D et a	1. 2	014	1.696	1.034	2.782	2.091	0.037					
		1.075	1.194	2.945	2.720	0.006		I		1					1.632	1.016	2.620	2.026	0.043					
(A)												(B)												
Study name	Time point		Statio	etice for as	ch etudu			Diek ,	three offer	95% (1		Study name	Time	point		Statisti	cs for ead	h study			Risk	ratio and 9	5% CI	
Study nume	Time point	Risk	Lower	Upper	7 Value			Naki	uto uno :	5576 61					Risk I ratio	Lower	Upper limit	Z-Value	p-Value					
		rauo	urnu	urriit	z-value	p-value	1	1	-	1	1	Liu, S et al.	2018	(0.648	0.328	1.280	-1.250	0.211	1				1
Liu, S et al.	2018	0.862	0.682	1.089	-1.243	0.214			.			Ito, S. (1) et a	il. 2018	1	1.024	0.851	1.232	0.250	0.802			<u> </u>		
Yadav, M. et al.	2015	1.389	1.178	1.638	3.911	0.000						ito, S. (2) et a	il. 2018	1	1.132	0.711	1.804	0.522	0.602			Ŧ		
		1.103	0.691	1.760	0.409	0.683			•			Yadav, M. et	al. 2015	1	1.242	0.954	1.618	1.608	0.108					
														1	1.071	0.906	1.267	0.808	0.419			- T		
							0.01	0.1	1	10	100													
																				0.01	0.1	1	10	100
(C)												(D)												

Figure-3 Prognostic Impact of Baseline Thrombocytopenia at long-term follow up in Coronary Artery Disease Patients Undergoing PCL. (A). All-cause Mortality, (B) Cardiac Mortality, (C) MACE, (D) Post-PCI Myocardial Infarction

Study name	Time point	Statistics for each study			Risk ratio and 95% Cl			Study name	Statistics for each study						Risk ratio and 95% Cl								
		Risk ratio	Lower limit	Upper limit	Z-Value	p-Value								Risk ratio	Lower limit	Upper limit	Z-Value	p-Value					
Liu, S et al.	2018	0.402	0.054	3.019	-0.886	0.376		+				Liu, S et al.	2018	0.866	0.663	1.130	-1.060	0.289					
Ito, S. (1) et al.	2018	1.289	0.903	1.842	1.397	0.162						Ito, S. (1) et al.	2018	1.015	0.945	1.091	0.413	0.680					
Ito, S. (2) et al.	2018	1.160	0.434	3.100	0.295	0.768			-			Ito, S. (2) et al.	2018	0.868	0.702	1.072	-1.314	0.189					
Yadav, M. et al.	2015	1.156	0.701	1.906	0.567	0.571			+			Yadav, M. et al.	2015	1.383	1.063	1.798	2.418	0.016					
		1.210	0.918	1.595	1.355	0.176			•					1.007	0.856	1.186	0.090	0.929			•		
							0.01	0.1	1	10	100								0.01	0.1	1	10	100

(E)												(F)	
Study name	Time point		Stati	stics for ea	ch study			Risk	atio and 95		Study name	Tin	
		Risk ratio	Lower limit	Upper limit	Z-Value	p-Value							
Liu, S et al.	2018	0.982	0.786	1.226	-0.163	0.870						Liu, S et al.	20
lto, S. (1) et al.	2018	1.401	1.219	1.609	4.753	0.000						Ito, S. (1) et al.	201
Ito, S. (2) et al.	2018	3.215	2.565	4.029	10.134	0.000						llo, S. (2) et al.	201
Raphael, C.E. et al	2016	2.098	1.112	3.960	2.287	0.022				•			
		1.720	1.019	2.903	2.031	0.042			•				
							0.01	0.1	1	10	100		

Study name	Time point		Stati	stics for ca	ch study		Risk ratio and 95% CI					
		Risk ratio	Lower limit	Upper limit	Z-Value	p-Value						
Liu, Setal.	2018	1.052	0.623	1.774	0.189	0.850			٠.			
lto, S. (1) et al.	2018	1.831	1.504	2.230	6.019	0.000						
llo, S. (2) et al.	2018	4.397	3.198	6.047	9.111	0.000						
		2.083	1.023	4.242	2.023	0.043			•			
							0.01	0.1	1	10	100	

(G)

(H)

Figure-4: Prognostic Impact of Baseline Thrombocytopenia on Long-term Follow-up in Coronary Artery Disease Patients Undergoing PCI. (E) Rate of Stent Thrombosis, (F) Rate of Target Vessel Revascularization, (G) Overall Bleeding Events, (H) Rate of Major Bleeding.