

Platelet Kinetics of Prophylactic Platelet Transfusion in Adult Dengue

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Background

Thrombocytopenia is common in dengue. Prophylactic platelet transfusion is widely practiced but platelet response kinetics in adult patients is not well described.

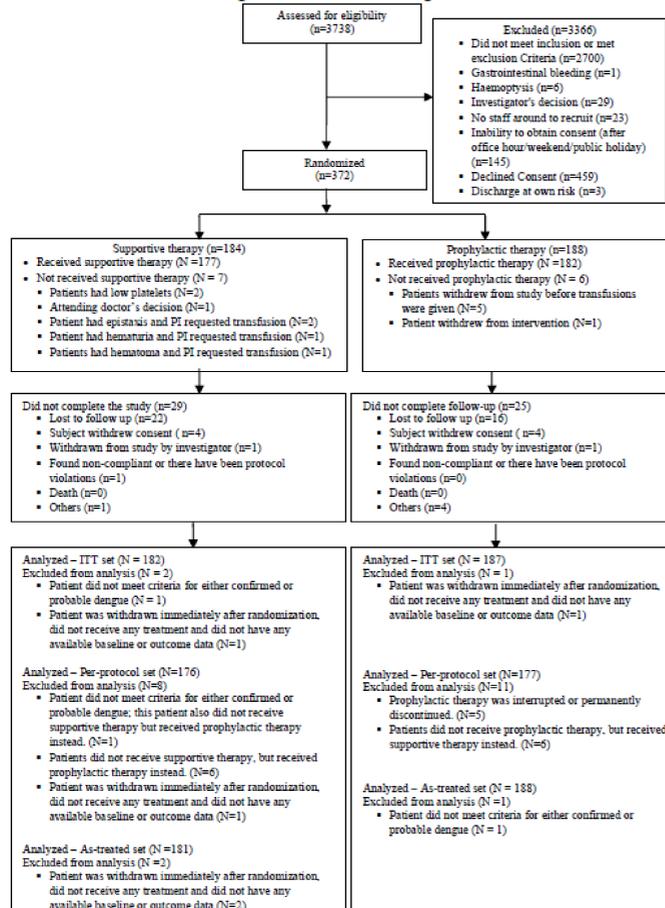
Methods

A multicenter, open-label, randomized study of prophylactic platelet transfusion versus supportive care in adult dengue patients with platelet counts $\leq 20 \times 10^3/\mu\text{L}$ was conducted in 5 hospitals in Singapore and Malaysia. Platelet outcomes studied were: platelet increment at 1, 12 and 24 hours post-transfusion, daily platelet count until discharge or study day 7, and median time to platelet count $>50 \times 10^3/\mu\text{L}$.

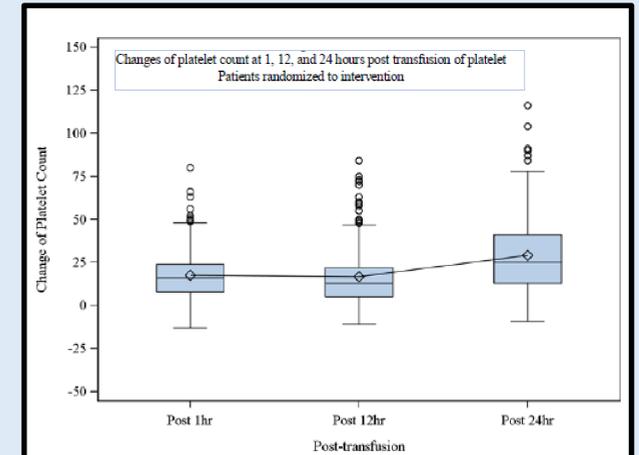
Results

182 patients were randomized to supportive care and 187 to prophylactic platelet transfusion with similar baseline age, gender, co-morbidities, clinical bleeding, warning signs and disease severity between the two groups. The median platelet increment ($\times 10^3/\mu\text{L}$) among transfused patients at 1 hour was 16 (interquartile range [IQR], 8-24), 12 hours was 13 (IQR, 5-22) and 24 hours was 25 (IQR, 13-41). Median platelet count change ($\times 10^3/\mu\text{L}$) was significantly lower in the non-transfused than transfused group on study day 2 (5 [IQR, -1-12] versus 13 [IQR, 3-22], $p < 0.001$), but was similar from study day 3 (27 [IQR, 12-47] versus 28 [IQR, 15-49], $p = 0.500$) to day 7 (111 [IQR, 47-299] versus 119 [IQR, 64.5-186], $p = 0.860$). By study day 7, 100 (55.0%) of supportive care and 109 (58.3%) of transfused group patients had platelet counts $>50 \times 10^3/\mu\text{L}$ ($p = 0.530$). Median time to platelet count $>50 \times 10^3/\mu\text{L}$ was 4 days in both groups ($p = 0.389$). More adverse events occurred in the prophylactically transfused than non-transfused group (13 [6.9%] versus 2 [1.1%], $p = 0.006$).

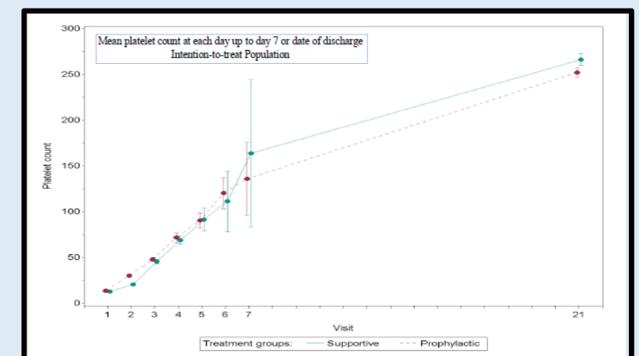
Figure 1: Consort flow diagram



Statistics	Platelet 1hr	Platelet 12hr	Platelet 24hr
Change compared to daily baseline			
N	224	229	155
Mean (Std)	17.56 (13.76)	16.68 (17.37)	29.23 (23.59)
Median (Q1, Q3)	16.00 (8.00 , 24.00)	13.00 (5.00 , 22.00)	25.00 (13.00 , 41.00)
Percent Change compared			
N	224	229	155
Mean (Std)	146% (133%)	132% (133%)	224% (199%)
Median (Q1, Q3)	121% (55% , 200%)	100% (35% , 194%)	179% (76% , 326%)



Analysis	Day	Statistics	Supportive	Prophylactic	Difference (95% CI)	P-value
Change of platelet count						
Day 2	N	179	181			
	Mean (std)	7.81 (12.26)	16.49 (17.68)		-8.68 (-11.84, -5.53)	0.000
	Median (Q1, Q3)	5.00 (-1.00, 12.00)	13.00 (3.00, 22.00)		-8.00 (-11.00, -5.00)	<.001
Day 3	N	149	147			
	Mean (std)	32.81 (28.45)	34.32 (27.63)		-1.51 (-7.93, 4.90)	0.643
	Median (Q1, Q3)	27.00 (12.00, 47.00)	28.00 (15.00, 49.00)		-1.00 (-9.00, 6.00)	0.500
Day 4	N	67	70			
	Mean (std)	56.63 (36.25)	57.89 (42.35)		-1.26 (-14.60, 12.09)	0.852
	Median (Q1, Q3)	54.00 (33.00, 76.00)	56.00 (22.00, 74.00)		-2.00 (-16.75, 16.00)	0.973
Day 5	N	18	24			
	Mean (std)	79.56 (52.93)	77.88 (39.49)		1.68 (-27.11, 30.47)	0.907
	Median (Q1, Q3)	72.50 (37.00, 106.00)	70.50 (40.50, 111.00)		2.00 (-39.50, 42.00)	0.849
Day 6	N	6	8			
	Mean (std)	100.5 (77.00)	109.0 (48.16)		-8.50 (-81.26, 64.26)	0.803
	Median (Q1, Q3)	78.00 (45.00, 136.00)	133.50 (58.50, 147.50)		-55.50 (-118.00, 56.50)	0.561
Day 7	N	3	4			
	Mean (std)	152.3 (131.0)	125.3 (77.46)		27.08 (-173.7, 227.91)	0.743
	Median (Q1, Q3)	111.00 (47.00, 299.00)	119.00 (64.50, 186.00)		-8.00 (-139.00, 234.50)	0.860



Conclusions

Platelet response to prophylactic platelet transfusion was transient. Adverse events were more common among platelet-transfused patients.