Single center retrospective analysis of preoperative fibrinogen and transfusional requirements in cardiac surgery patients

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BACKGROUND AND GOAL OF THE STUDY

Fibrinogen is a key factor in the coagulation cascade.¹
We examined the association between preoperative fibrinogen levels and red blood cell transfusion in patients submitted to off-pump coronary artery bypass graft surgery in a University Hospital in Portugal.

MATERIALS AND METHODS

Single center retrospective analysis, with Local Ethics Committee approval. A random sample of records from 40% of the patients submitted to off-pump coronary artery bypass graft surgery in 2013 were assessed.
Inclusion criteria: patients without known coagulation disorders.
Statistic analysis: SPSS® v21.0 (Chi-square and Kruskal-Wallis tests; a simple binary logistic regression was performed to identify independent factors for transfusion; $p < 0.05$).

RESULTS

Characteristics related to preoperative fibrinogen concentration

Variables	Fibrinogen concentration mg/dL				p value
	Total (n=79)	1º tertile 223 - 293 (n=26)	2º tertile 294-367 (n=27)	3º tertile 368-606 (n=26)	
Age (years)	66.47 ± 9.41	63.81 ± 7,7	66.81 ± 8.6	68.77 ± 11,2	0,04
Gender (♂:♀)	62 (78.5):17 (21.5)	17 (65.4): 9 (34.6)	23 (85.29): 4 (14.8)	22 (84.6): 17 (21.5)	0,140
BMI (kg/m²)	28.05 ± 6.5	27.3 ± 3.0	27.6 ± 5.3	29.1 ± 9.7	0,972
Aspirin	42 (53.2)	15 (57.7)	12 (44.4)	15 (57.7)	0,535
Clopidogrel (with or without aspirin)	20 (25.3)	4 (15.4)	9 (33.3)	7 (26.9)	0,315
Preoperative:					
Hemoglobin (g/dL)	13,86 ± 1,43	14.0 ± 1.6	14.08 ± 1.3	13.5 ± 1.2	0,338
Platelet count (x10 ⁹ /L)	233,15 ± 79,8	212,3 ± 79,4	214,15 ± 52,3	273 ± 90.3	0,006
Fibrinogen (mg/dL)	340,6 ± 78,9	259.8 ± 20.8	333.41 ± 20.6	428.73 ± 60.5	< 0,001
INR	0.98 ± 0.07	0.99 ± 0.06	0.96 ± 0.05	0.98 ± 0.05	0,430
aPTT (s)	31.82 ± 3.6	31.2 ± 3.6	31.9 ± 3.3	32.5 ± 3.8	0,355
Number of grafts	2,16 ± 0,7	2,19 ± 0.8	2.22 ± 0.6	2.08 ± 0,7	0,637
Tranexamic acid (yes)	61 (77.2)	20 (76.9)	21 (77.8)	20 (76.9)	0,996
Duration of surgery (minutes)	137,84 ± 40,08	140,5 ± 42,3	139,4 ± 36.8	133,5 ± 42,1	0,757
Postoperative hemoglobin (g/dL)	10,42 ± 2,38	10.8 ± 1,6	10,7 ± 1.7	9.6 ± 3.2	0,248
Duration of hospitalization (days)	14,53 ± 16,31	11.2 ± 16.9	15.11 ± 15.9	17.2 ± 16,3	0,026

Data are expressed as the mean ± SD or number (%). aPTT, activated partial thromboplastin time, BMI, Body Mass Index; INR, International normalized ratio;

Simple binary logistic regression - Independent risk factors for red blood cell transfusion

Variable	OR (CI 95%)	p value
Age	1.1 (1.00-1.12)	0,028
Gender (♀:♂)	3.85 (1.24-11.89)	0,019

CONCLUSION

Although not statistically significant we observed a tendency for higher transfusion rates in groups with higher fibrinogen levels. Age and female gender are independent risk factors for red blood cells transfusion.