

Red blood cell transfusion volumes according to AIMS65 scores in patients with peptic ulcer bleeding

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Background/Aims: Fluid supplementation and red blood cell (RBC) transfusions form first-line management strategies to maintain circulating blood volumes in patients with upper gastrointestinal bleeding (UGIB). In this study, we aimed to analyze the utility of the AIMS65 score in predicting the volume of RBC transfusion required in patients with bleeding peptic ulcers.

Methods: In this single-center, retrospective study, data of patients admitted between January 2019 and December 2019 with suspected UGIB were retrospectively reviewed. The RBC volume transfused during pre- and post-endoscopic hemostasis was measured in relation to various patient factors including their AIMS65 scores.

Results: Transfusion rates, mean number of transfused RBC units, and duration of hospital stay differed significantly between patients with low and those with high AIMS65 scores. Patients with an AIMS65 score of 3 were transfused with more RBC units in the post-endoscopic hemostasis period, compared to that administered to those with an AIMS65 score of 0,1, or 2 (with a mean of 4.33 ± 2.07 and 2.67 ± 4.1 units transfused during the pre-endoscopic and post-endoscopic hemostasis periods, respectively).

Conclusions: Patients with UGIB and with an AIMS65 score of three were more likely to require RBC transfusions.

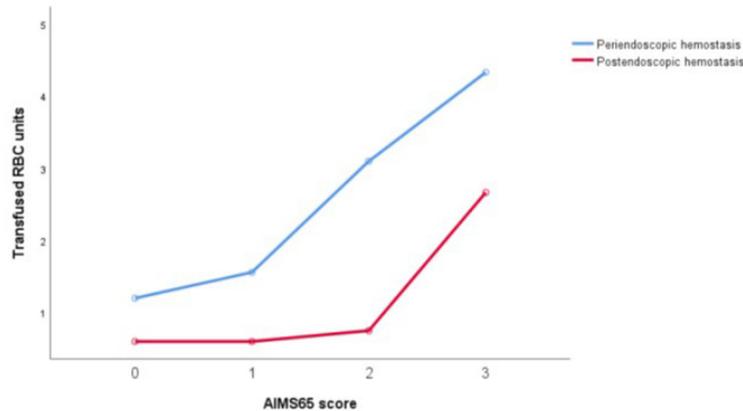


Figure 1. Relationship between the AIMS65 score and the number of red blood cell units transfused.

Pre-endoscopic RBC volume, transfused during the period from hospitalization or from the time of decision of hemostasis till the procedure was performed and hemostasis was achieved; and that administered after the procedure (post-endoscopic RBC volume, transfused from 0–7 days after endoscopic hemostasis).

Table 1. Forrest classification of peptic ulcers

Forrest class	Endoscopic appearance
I	Active bleeding
I a	Arterial, spurting bleeding
I b	Oozing bleeding
II	Stigmata of recent bleeding
II a	Visible vessel
II b	Adherent clot
II c	Flat pigmented haematin on ulcer base
III	Clean base

Table 2. Baseline characteristics of patients

	Non-transfusion (n=12)	Transfusion (n=43)	P-value
Age, y, mean ± SD	59.61 ± 17.03	69.95 ± 12.42	0.028
Alcohol	6 (33.3%)	11 (25.6%)	0.538
Smoking	9 (50.0%)	7 (16.3%)	0.006
Comorbidity			
Hypertension	12 (66.7%)	21 (48.8%)	0.202
Diabetes mellitus	5 (27.8%)	20 (46.5%)	0.175
Cardiovascular disease	0 (0%)	5 (11.6%)	0.131
Cardiovascular accident	4 (22.2%)	7 (16.3%)	0.582
Chronic renal failure stage 2-4	4 (22.2%)	7 (16.3%)	0.582
Hemodialysis	2 (11.1%)	1 (2.3%)	0.148
Liver disease	2 (11.1%)	5 (11.6%)	0.354
Bleeding developed in hospital	4 (22.2%)	6 (14.0%)	0.811
User location, gastric/duodenal ulcer	12 (66.7%)/6 (33.3%)	28 (65.1%)/15 (34.9%)	0.307
Forrest class			0.053
Ia	3 (16.7%)	3 (7.0%)	
Ib	4 (22.2%)	6 (14.0%)	
IIa	8 (44.4%)	31 (76.7%)	
IIb	3 (16.7%)	1 (2.3%)	
Symptom			0.049
No symptom	5 (27.8%)	5 (11.6%)	
Melena	5 (27.8%)	23 (53.5%)	
Hematemesis	0 (0%)	5 (11.6%)	
Both	8 (44.4%)	10 (23.3%)	
AIMS65*			0.008
0-1	15 (83.3%)	20 (46.5%)	
2-3	3 (16.7%)	23 (53.5%)	
Hb (g/dL) mean ± SD			
Initial at admission	10.19 ± 1.11	7.26 ± 1.11	0.000
24 hours after endoscopic hemostasis	9.43 ± 0.83	9.00 ± 1.16	0.134

AIMS65: albumin < 3 g/dL, INR > 1.5, alteration in mental status, systolic blood pressure ≤ 90 mm Hg, age ≥ 65 years.

Table 3. Comparison of the treatment outcomes between the transfusion and non-transfusion groups

	Non-transfusion (n=18)	Transfusion (n=43)	P-value
Initial hemostasis success	17 (94.4%)	39 (90.7%)	0.781
Recurrent bleeding	0 (0%)	4 (9.3%)	0.181
Additional treatment			0.888
Embolization	1 (5.6%)	4 (9.3%)	
Endoscopy	3 (16.7%)	7 (16.3%)	
Mortality in 30 days	1 (5.6%)	2 (4.7%)	0.882
Hospital stay, day, mean ± SD	9.5 ± 10.18	12.7 ± 15.60	0.342
Total procedure time, min, mean ± SD	7.85 ± 4.96	8.57 ± 12	0.673

Abbreviation: SD, standard deviation